KHAZANAH RESEARCH INSTITUTE

Green Industrialisation in Malaysia

Structural Challenges and Opportunities

Yin Shao Loong
Azfar Hanif Azizi

30th November 2023
UNCTAD Multi-year Expert Meeting, Geneva

Table of Contents

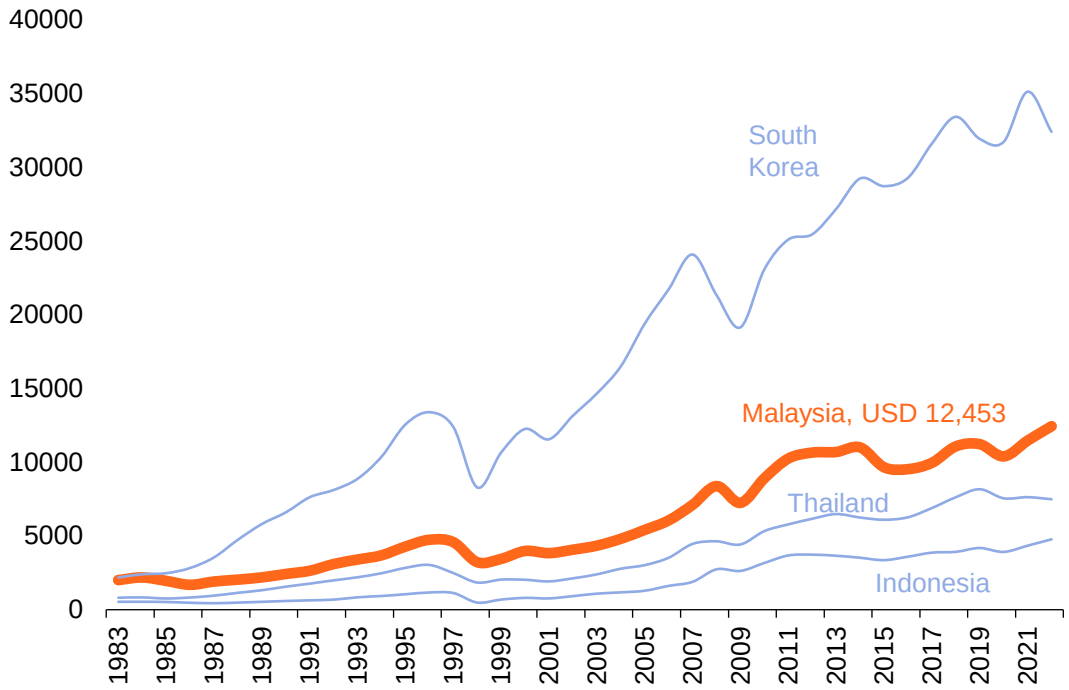
Introduction

Description

Introduction: Malaysia's Economy

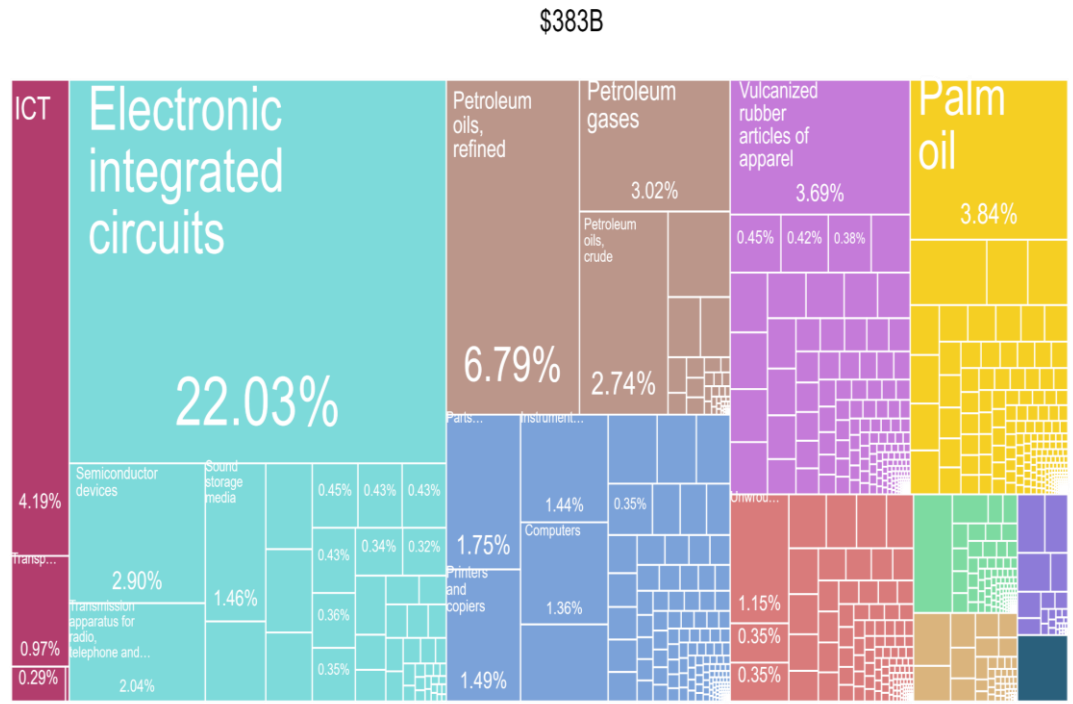
Malaysia is an upper-middle income economy with a diversified production base. Among Malaysia's top exports are Electrical & Electronic, Oil & Gas, rubber products & palm oil products

GDP per capita (USD)



Source: CEIC data

Malaysia's export mix in 2021



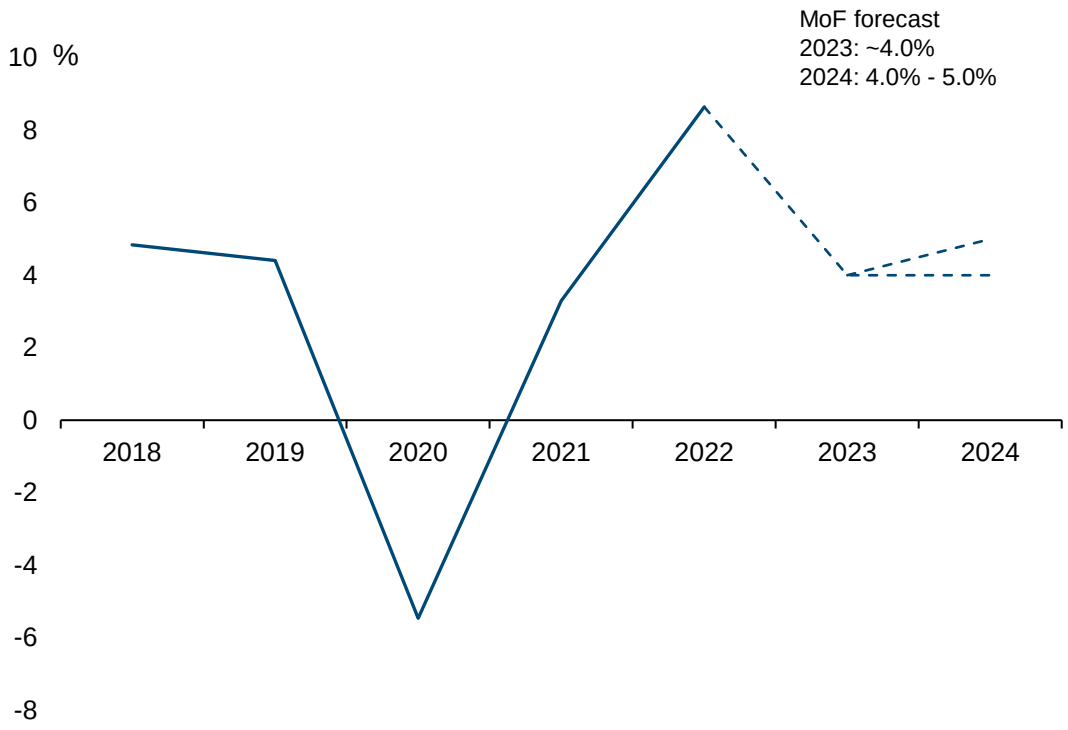
Source: Harvard Atlas of Economic Complexity

Macroeconomic and Climate Outlook

Description

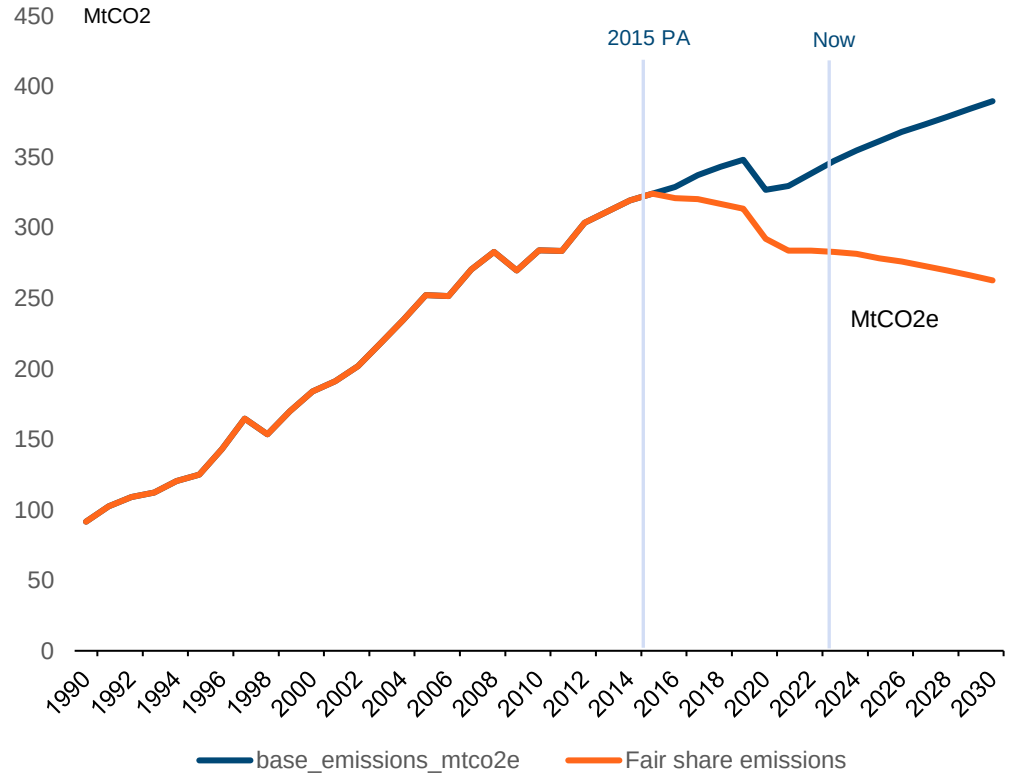
Macroeconomic and Climate Outlook

Malaysia's GDP, % change y-o-y



.Source: DOSM and Ministry of Finance Malaysia (2023)

Malaysia's CO2 Emissions, Fair Share and BAU (excluding sinks)



Source: Holz et. al (2019) with KRI staff calculations (2023)

Malaysia became a net emitter in 2004 due to its high sinks

History of Industrialisation in Malaysia

Description

Industrial Policy in Malaysia: A History

	Import Substitution 1 (IS1) (1958 - 1968)	Export Oriented 1 (EO1) & IS1 (1968 - 1980)	IS2 & EO1 (1980 - 1985)	EO2 & IS2 (1985-2023)
Reason	• *Generate employment and tackle import leakage* • *To diversify from tin and rubber* • *WB advice*	• *Penang state-gov drive* • *Issues in IS1* • *MNC outsourcing* • *Align with New Economic Policy*	• *Issues in EO1* • *PM Mahathir's 'Look East Policy'* • *Malay entrepreneurship creation* • *Technological development*	• *BoP imbalance* • *Recession* • *Lower costs due to Plaza Accord, GSP, labour flexibilisation*
Sector Focus	• *Semi-finished consumption goods* • *1963 – e.g. liquor, petroleum, tobacco, motor vehicles* • *Late 1960s – manufacturing subsectors*	• *US electronics* • *Resource-based: increased processed of rubber, tin, palm oil, timber*	• *Iron and steel* • *Automotive and motorcycle engines* • *Petroleum refining* • *Cement*	• *Resource based: food processing, rubber, oil palm, wood-based, chemical and petrochemical, metal* • *Non-resource: electrical machinery, transport equipment, machinery and engineering products, apparel, ferrous metal*
	1958	**1968**	**1980**	**1985-present**
Institutions	• *Tariff Advisory Board (1963)* • *FIDA (now MIDA) (1966)*	• *Penang Development Corporation*	• *Heavy Industry Corporation of Malaysia (HICOM) (1980)*	• *HRDC, MTDC, MIGHT, MSC to strengthen STI*
Instruments	• *Tariffs: ad hoc (1963), manufacturing sectors (1965: 50%, 1969: 65%), higher tariff for more processed goods (1969: ERP 45% - 85%)* • *Tax incentives – pioneer status*	• *Export processing zones (EPZ) or free trade zones (FTZ) licensed manufacturing warehouse (LMW)* • *Full foreign-ownership* • *Tax incentives - pioneer status, investment tax credits, accelerated depreciation allowance, double-deduction for training and R&D* • *MNC-bias industrial relations*	• *Direct government investment* • *Vendor-development program* • *JV with foreign firms* • *Higher tariffs and quotas for steel and automotive* • *Gov't subdsidised capital* • *Controlled domestic competition* • *Some disciplining by the state*	• *Relaxed local shareholding rules* • *Industrial Master Plans & ETP* • *Infrastructure development* • *Tax and tariff holidays* • *Simplified approval process* • *Wider-scope double deductions* • *Extended tax relief* • *Incentives for local sourcing* • *Export credit refinancing*
Issues	• *Small domestic market* • *BoP imbalance* • *Weak linkages* • *Poor job creation* • *No pressure to export*	• *Non-integration of EO and IS sectors* • *Limited range of products*	• *Disappointing results due to stiff int'l competition primarily in the 1980s* • *High production and management costs* • *Weak linkages* • *Lack of effective disciplining*	• *Labour shortages* • *No industrial upgrading – lack of shift to OBM* • *New foreign sites* • *CA imbalance of goods account* • *New foreign sites* • *External pressure to liberalise*

New Economic Policy (NEP) and Industrialisation

NEP was introduced in the 2nd Malaysia Plan (1971-1975) following 1969 racial riots to redistribute wealth and income among races

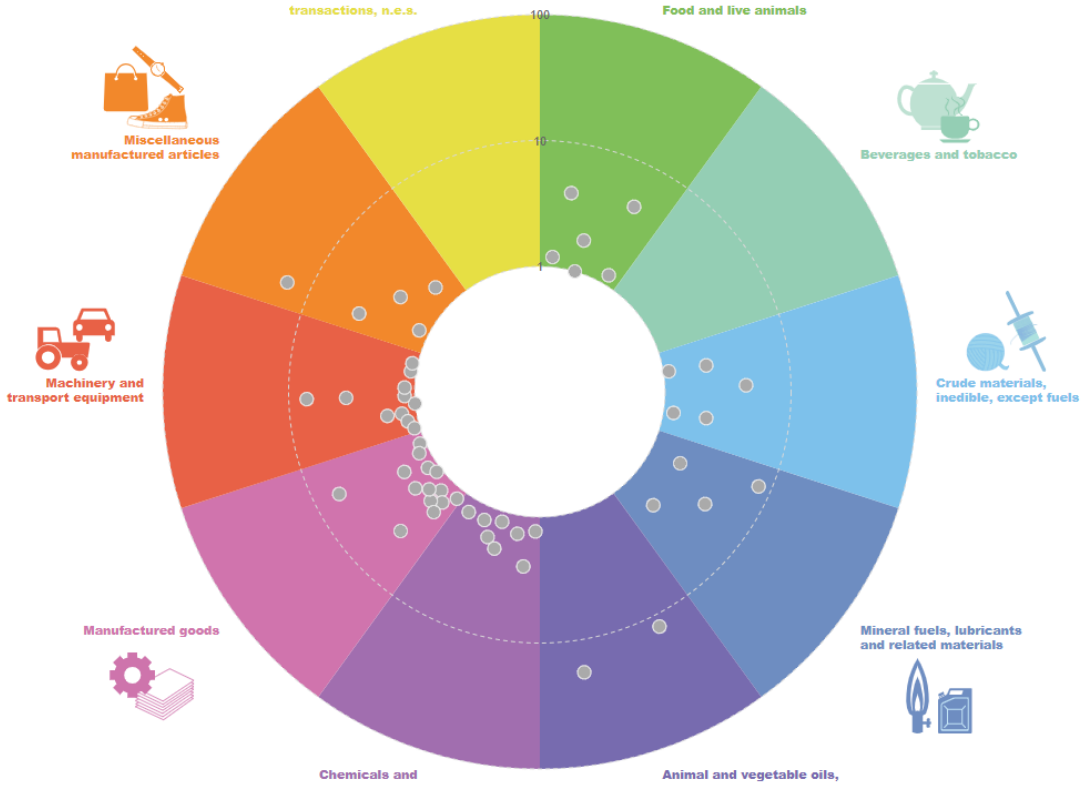
- NEP was a two-pronged policy to promote unity and productivity by:
    i. **Removing the identification of race with economic function**
    ii. **Eradicating poverty irrespective of race**
- The dominant ruling bloc led by UMNO, an ethnic Malay party, interpreted the riots as resulting from resentment over wealth and income distribution unfavourable to Malays.
- **Colonial legacy** of divide and rule and **ethnic division of labour** led to a biased distribution of wealth and income along racial lines. Ethnic Chinese were concentrated in mining and urban areas involved in commerce, ethnic Indians in administration and plantations, while the Malay masses were confined to agriculture and their elite were accommodated in the colonial bureaucracy.

The authorities felt that affirmative action had to be pursued together with growth, thus opening the path of industry-based development

- These measures could only be implemented within a framework that did not disturb the interests of the ownership class. Thus, **redistribution had to be based on new wealth created**.
- The need for growth with a pro-Malay/Bumiputera outcome meant the government **opened doors to foreign capital**, mostly E&E, to avoid stimulating local ethnic Chinese capital.
- The **government** was also **directly involved in the economy** and used incentives to industrialise the country in a way that would benefit the Malays/Bumiputera.
    - The government set a 30% Bumiputera equity ownership target through trust agencies that owned companies in various industries.
    - Later, programs such as privatization and vendor-development programs were also used.

Industrial policies have made resource-based products internationally competitive

Malaysia's revealed comparative advantage 2022



Source: UNCTAD

- Malaysia successfully followed a **related-diversification** strategy for **oil palm**, **rubber**, and **petroleum** towards higher-value segments.
- Diversification was **not through market** forces alone.
  - State intervention to **accumulate productive capabilities** was used to overcome market barriers
  - Key policies include **capacity development programs**, **R&D support, export promotion**, and **quality control**
- **Domestic ownership** played a key role in the drive to diversify. Prior foreign ownership showed reluctance.
- **Political context** influenced the **direction** of diversification. Rural political base, national ownership of resources, long-term plans, and continuity of a dominant executive leadership all played a role.

Market following policies only had a modest impact on functional upgrading in semiconductors

Semi's emergence had **little to do with intervention** other than financial incentives, security, and subsidized infrastructure at FTZs, which managed to attract FDI inflows.

There is some presence of horizontal technological development in the 80s, which was induced by competition.

The industry could not be based on ISI due to specificity of semi specialization and the small domestic market

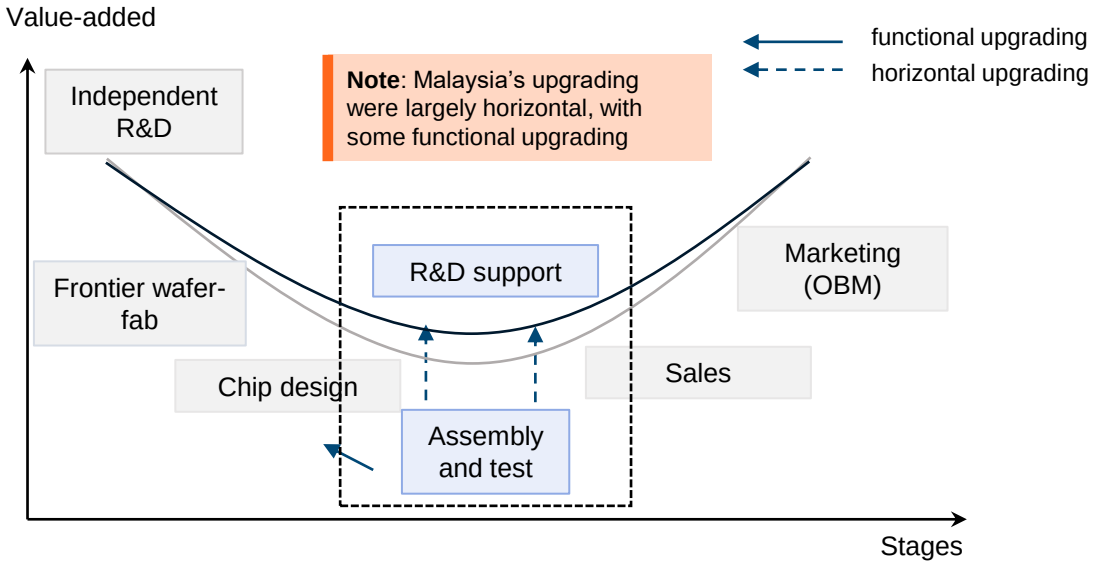
But the policies **did not lead to institutional change** required to spur significant functional upgrading.

Gov't responded in the early 1990s by establishing state-owned fabs (Silterra), the Action Plan for Industrial Technology Development (APITD) offering grants to state fabs, and launched MTDC (venture cap).

But these institutions **also failed** to spur functional upgrades.

Capital support extended to foreign firms since 2005 induced functional upgrading but further upgrades were **hampered** by **lack** of **skilled labour** and **frontier R&D** by **universities** and **labs.**

We have achieved **a high level** in several capabilities including chip design, wafer fab, and R&D but none in the frontier.



Source: Adapted from Rasiah (2017) with authors' own modifications

Technology competency and capability, semiconductor firms, 2015

Level	Type	HR		Process		Product	
		National	Foreign	National	Foreign	National	Foreign
4	Engineering	4	21	4	21	4	21
5	Early R&D	1	20	1	20	1	20
6	Mature R&D	0	7	0	7	0	7
7	Lead technology	0	0	0	0	0	0
	N	4	21	4	21	4	21

Source: Rasiah (2017)

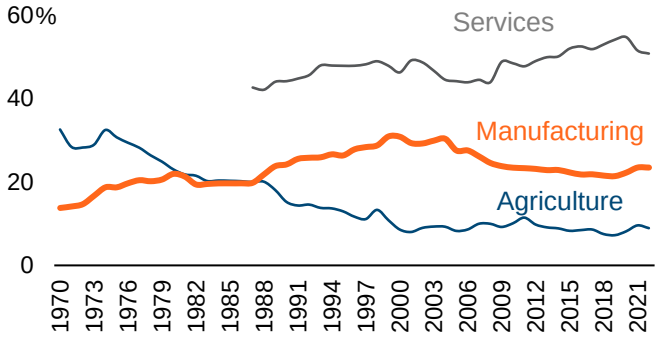
The policies transformed the economy and improved welfare

Manufacturing began to contribute more to the economy than agriculture in the 1980s. It's share though has been declining since mid-2000s signaling deindustrialization.

Meanwhile, the use of industrial policies along with the NEP, especially during the early to mid-IS2 period, have **reduced foreign ownership** and increased Bumiputera ownership.

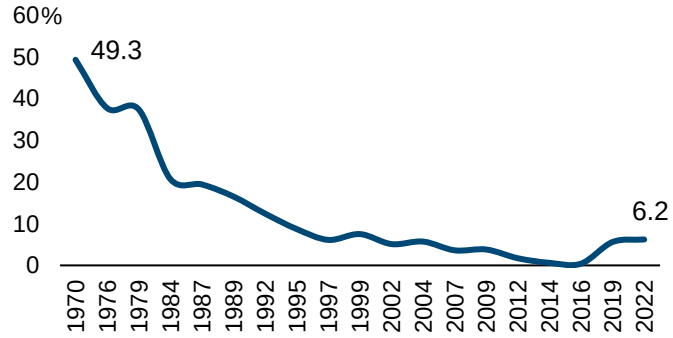
Furthermore, during the NEP period, poverty rates have also declined along with interethnic inequality. Thus, there has been **some success** in the pursuit of **NEP's twin goals**. This however is arguably at the cost of competitiveness.

Sector contribution to GDP



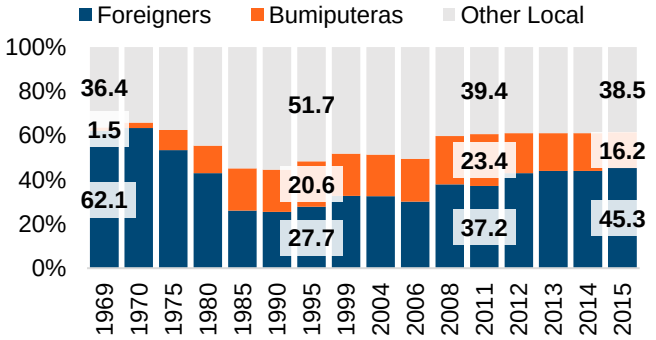
Source: World Bank (2023)

Poverty rate



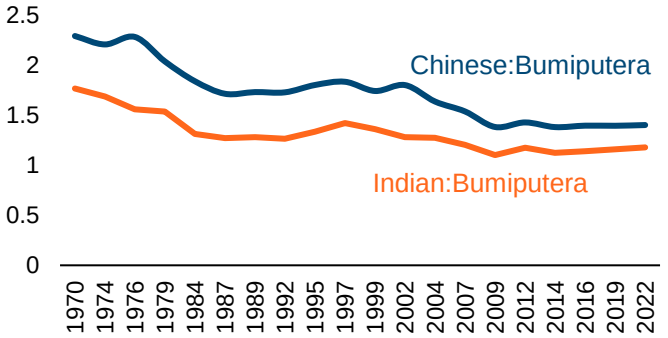
Source: DOSM (2023)

Ownership of Share Capital of Malaysian Limited Companies (1969-2015)



Source: ET. Gomez (2013) and the Government of Malaysia (2019)

Interethnic income ratio

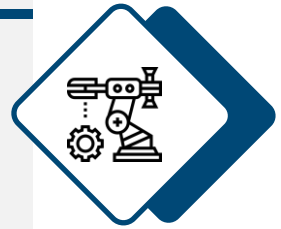


Source: DOSM (2023)

Green Industrialisation in Malaysia: State of readiness, opportunities, and challenges

Capabilities

- Palm oil and rubber – Strong R&D and upstream capabilities
- E&E – testing machines, process R&D, PV, medical devices
- Automotive industry – chassis design and manufacturing capabilities
- Drone – competitive players e.g. Aerodyne
- Institutional support – tax relief, research universities
- IoT - 5G infrastructure and companies in programming
- Diversified industries – O&G, construction, services

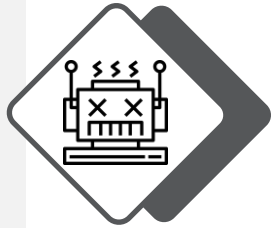


Opportunities

- Global green transformation agenda opening windows of opportunity
- Some basic capabilities of current industries can be combined
- Opportunity to impose conditionalities for tech transfer
- Capability acquisition, e.g. R&D, through partnerships and foreign buyouts
- Greater scope of regional cooperation, e.g. ASEAN grid
- Conditional rent creation for local players with remaining policy space

Weaknesses

- Deindustrialisation
- Constrained policy space – FTAs and austerity
- State retreat from direct investment - low public sector risk appetite
- Linkages - enclave and dualism, as well as weak NIC e.g. in E&E
- MNC dependent and lack of local OBM players
- Lack of large local firms willing to cross-subsidise different sectors
- Local demand – small market, high debt levels, high inequality
- Lack of technology upgrading - modest R&D spending
- Talent issues – lower STEM enrolment, brain drain, R&D talent, NEP
- Inability to discipline bumiputera firms due to political settlements
- Lack of tech transfer requirements for FDI
- Poor commercialization
- Monetary policy is vulnerable to external factors
- Shrinking CA surplus impacting forex earnings

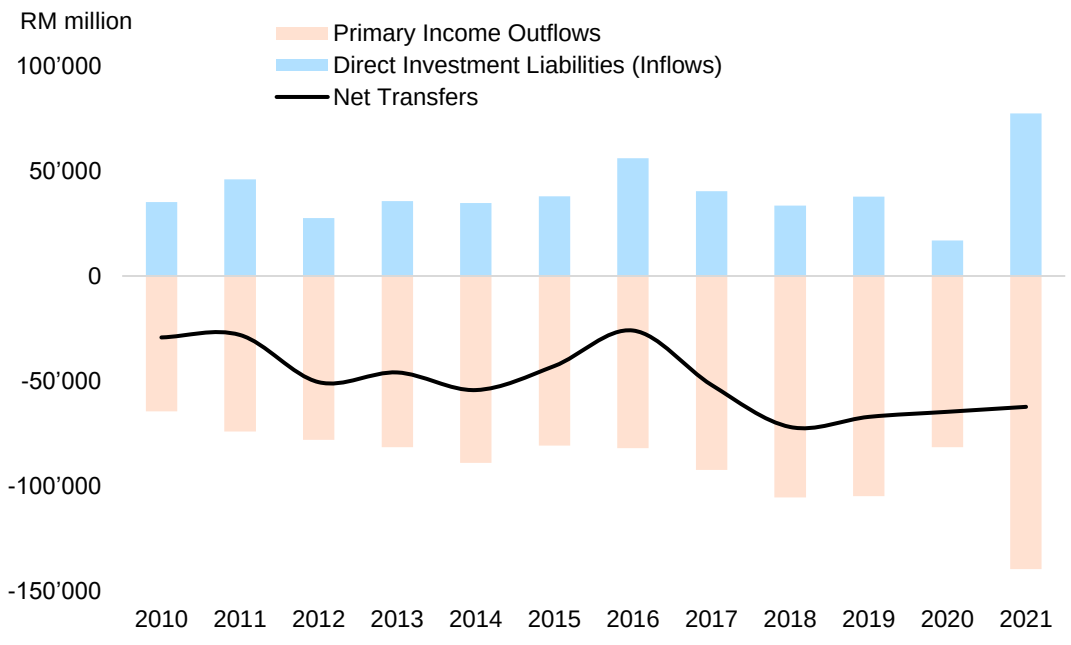


Threats

- Non-tariff measures
- Opening up of new low-cost sites
- Widening advantage gap of early innovators
- Inaction to build/rebuild basic capabilities
- Supply disruptions and cost of living crisis leading to changing gov't priorities in spending
- Lack of political support for industrialization
- Political disruption and lack of direction
- Macroeconomic instability due to weakening external position

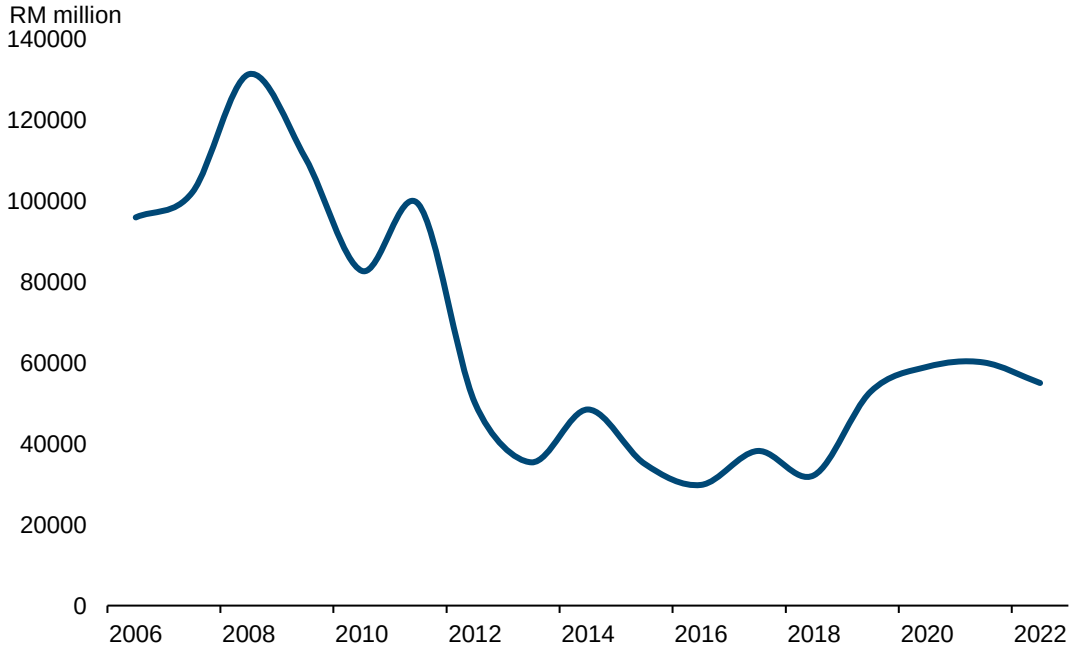
Dependency on FDI and loss of competitiveness exposes the economy to external vulnerabilities

Primary Income Outflows, FDI, and Net Transfers



Source: BNM

Current Account Surplus

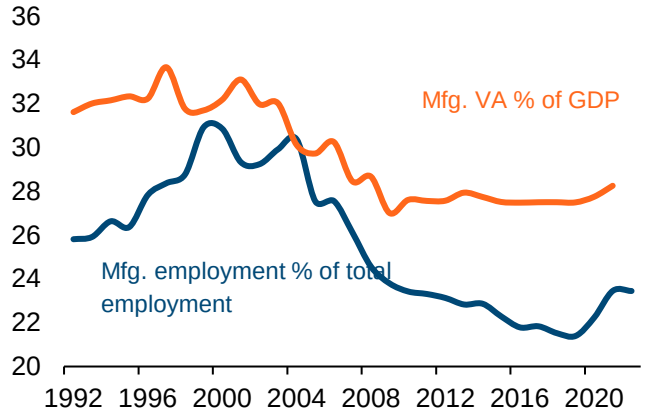


Source: DOSM

FTA utilisation is only 10% despite signing 16 FTAs to date (7 bilateral; 9 regional)

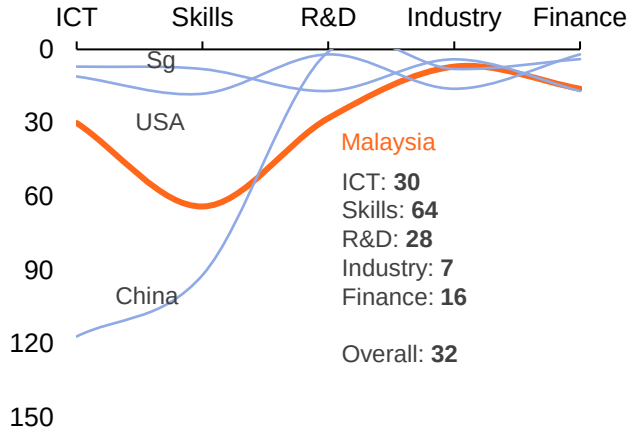
Deindustrialisation, skill attrition, and R&D issues are key stumbling blocks in the green transition

Share of manufacturing value added and employment



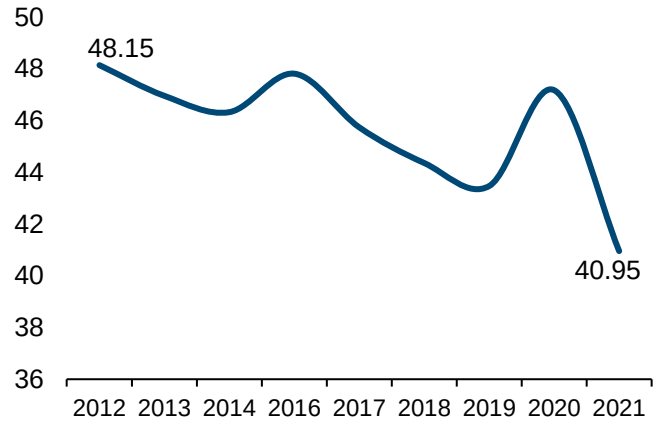
Source: World Bank (2023)

UNCTAD's readiness to use frontier technology



Source: World Bank (2023)

STEM enrollment in Malaysia



Source: Idris, Govindasamy, and Nachiappan (2023)

- **Deindustrialisation and insufficient industrialisation in Malaysia resulted from the loss of competitiveness** when lower cost sites opened up and a failure to upgrade technologically. The inability to upgrade has been attributed to several factors, including the pro-Bumiputera policies that failed to encourage the development of competitive industrialists (Sen and Tyce 2019) and lack of R&D (Chandran et. al 2009). Malaysia only spends 0.95% of GDP for R&D compared to China at 2.41%
- **The loss of industrial capability may then lead to further loss of competitiveness** as skills accumulated become eroded. The lack of technological and corresponding economic upgrade especially in R&D roles makes the job less attractive and leads to a vicious cycle of declining aggregate skill levels.

Turning over a green leaf: recent industrial policies

Industry 4WRD (2018)

The report focuses on the development of the IR4.0 ecosystem, guided by 5 themes, which are:

- Upskilling and reskilling the labour pool
- Funding support to kickstart adoption
- Developing a good digital infrastructure to enable reliable IR4.0 operations
- Involving SMEs to ensure a holistic step up in productivity
- Fostering significant evolution in innovation capabilities

The report also recognizes the role of regulations, such as those related to data integrity, security and analysis, to foster IR4.0 adoption.

National Energy Transition Roadmap (2023)

The roadmap developed the Responsible Transition Pathway 2050 to shift Malaysia's energy systems to depend less on coal and crude oil, to lower-carbon systems.

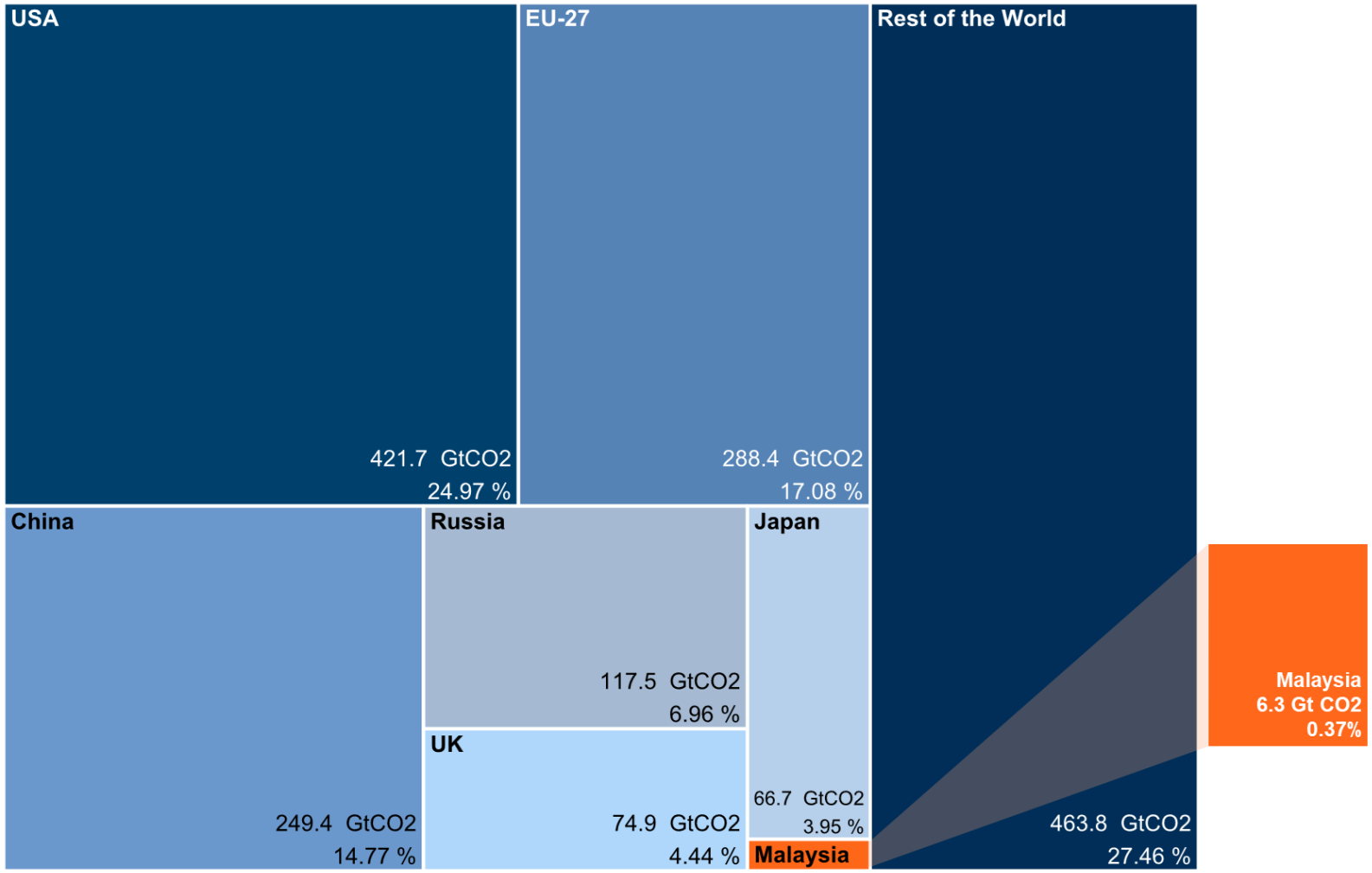
By 2050, natural gas (56%) and renewables (23%) are expected to be the main sources of energy. 80% of the transport fleet is planned to be electrified and the public transport modal share is expected to rise to 60:40 from 20:80 today.

As such, the report highlighted plans to provide incentives to develop renewable energy industries (e.g. for hydrogen and bioenergy) and power storage facilities.

Structural Transformation and Climate

Climate Resilient Development & the New Industrial Master Plan

Small share of emissions, significant transition costs



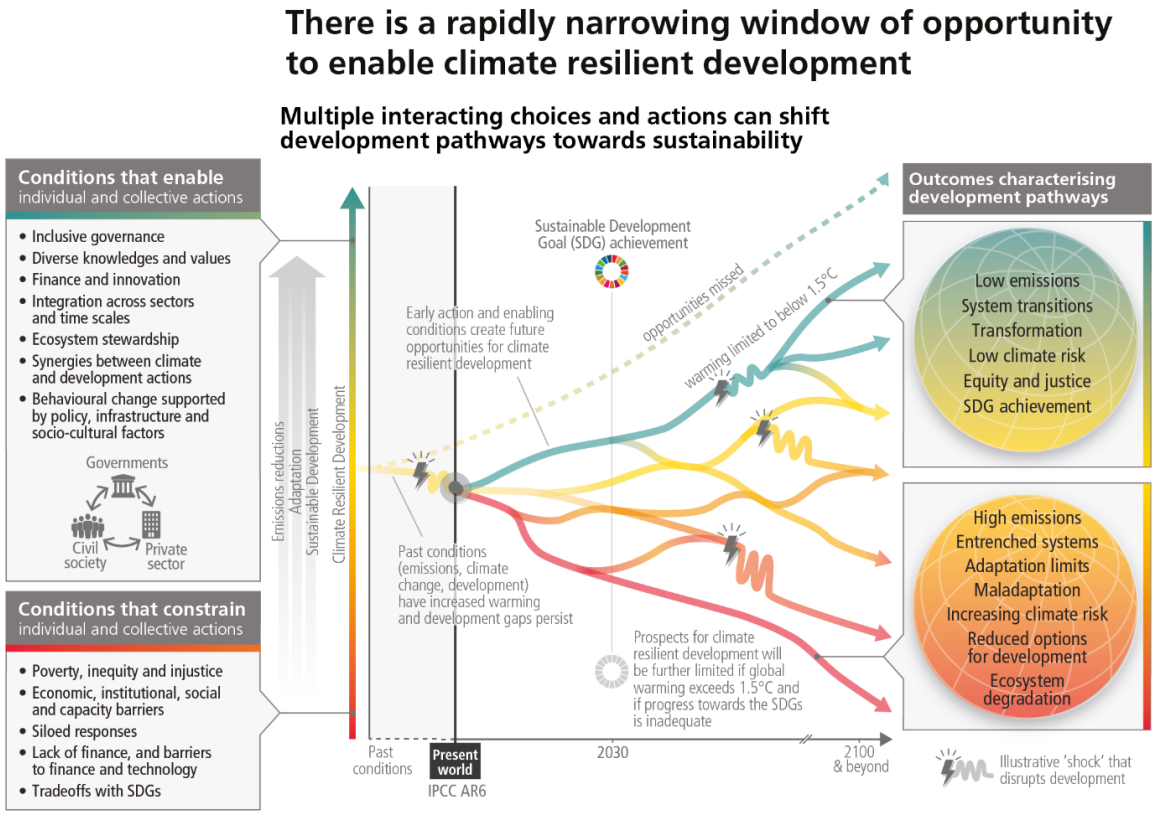
Malaysia is responsible for less than 1% of historical and current annual emissions.

Our emission peers are **Pakistan**, **Egypt**, **Uzbekistan** and **North Korea**.

However, as we shall see later, energy transition costs remain significant even for a low-emission developing country.

Source: Our World in Data (2020), KRI visualisation

Narrowing window of opportunity to enable climate resilient development



Climate-resilient development is a process of implementing climate action, including greenhouse gas mitigation and risk reduction adaptation measures, to support sustainable development for all.

The longer a country and the world delays taking joint adaptation and mitigation action, the harder it will be to achieve an optimal climate resilient outcome.

Earlier action avoids future costs. Pursuing 'co-benefits' can be efficient.

Reducing physical risk is not entirely a function of how much domestic mitigation a country undertakes. It is a function of domestic adaptation measures and total global mitigation efforts.

Source: IPCC (2023).

Structural Transformation and Climate Change

Mitigation | **Adaptation** | **Means of Implementation** | **Loss & Damage**

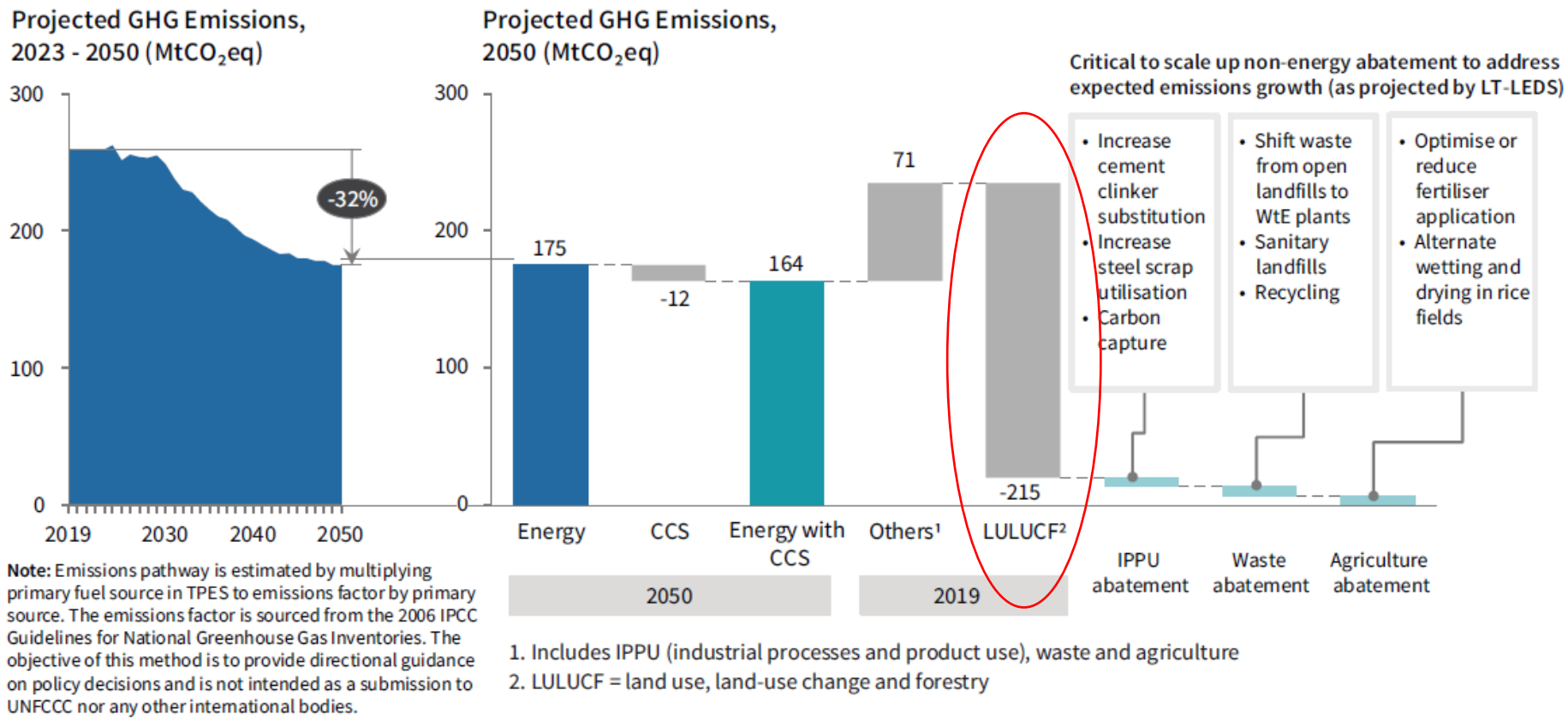
Failure to achieve **climate resilient development (CRD)** can negatively impact national development outcomes by curtailing lives and livelihoods, and even loss of sovereign territory via sea-level rise. Over 70% of Malaysia's population dwells in coastal zones, which include critical infrastructure such as ports and warehousing. CRD is emerging as both a precondition for, and means to, catch up.

While export prospects may be limited, aspects of climate mitigation and adaptation have the potential to increase capabilities and incomes via **new industries and associated services**. However, transition costs can compete with available finances for other forms of economic diversification. Current estimates are:

- **RM 1.2 trillion (US$ 255 billion) for energy transition (estimated minumum) until 2050** – National Energy Transition Roadmap (2023)
- **RM 392 billion (US$ 83 billion) for flood adaptation (estimated) over the next 50 years[1]** – NRECC (Climate and Energy) Minister.

Financing climate resilient development may require development of new tools or fresh combinations of existing ones, such as the use of offshore bonds, development finance institutions, and sustainability-linked sukuk or bonds. More active participation in international climate finance fora would also help.

Mitigation pathway to 2050



Note: Emissions pathway is estimated by multiplying primary fuel source in TPES to emissions factor by primary source. The emissions factor is sourced from the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. The objective of this method is to provide directional guidance on policy decisions and is not intended as a submission to UNFCCC nor any other international bodies.

1. Includes IPPU (industrial processes and product use), waste and agriculture
2. LULUCF = land use, land-use change and forestry

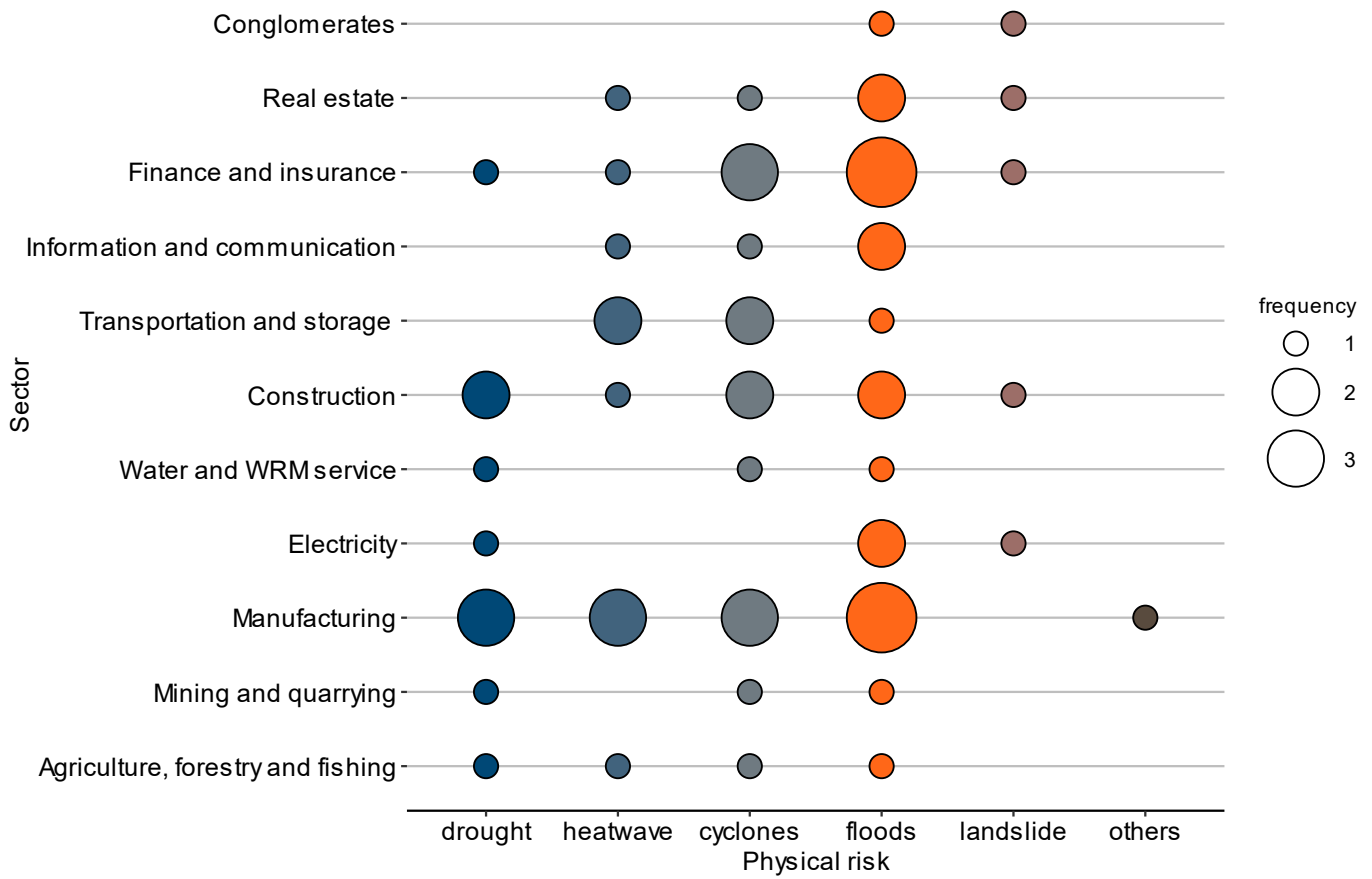
- By 2050, **sinks (LULUCF)** would cover 91% of emissions, up from 65% in 2019. Sinks are expected to remain **constant** relative to 2019 levels.
- Removals and sinks and **critically under-financed**. Beyond an Ecological Fiscal Transfer of a mere US$31million nationwide, policy discussion on solutions is limited to sub-standard tools such as carbon credits and carbon taxes.

Source: National Energy Transition Roadmap (2023).

Industries are facing climate risks; adaptation needs to accelerate.

1. Of 28 companies supporting the Taskforce on Climate-related Financial Disclosures (TCFD) framework, all sectors reported **physical risks** across multiple climatic drivers.
2. **The manufacturing sector is exposed to most risk types.** Sectors are vulnerable to risks of not just one, but **combined** physical impacts, requiring different forms of adaptive measures to enhance resilience of their operations on multiple fronts.

Chronic physical risks reported by Malaysian companies under the TCFD framework, 2022.



Source: KRI's compilation

Yet, with industry adaptation needs we expect to see the rise of an adaptation industry

New Industrial Master Plan 2030 Strategic Framework

VISION

Our vision for Malaysia is to have:

- Competitive industry with high economic complexity
- High income and skilled workforce
- Strong domestic linkages
- New and existing industry clusters
- Balanced and inclusive participation
- Sustainable development

GOALS

- Increase economic complexity
- Create high-value job opportunities
- Extend domestic linkages
- Develop new & existing clusters
- Improve inclusivity
- Enhance ESG practices

MISSIONS

MISSION 1
Advance economic complexity

STRATEGIES AND ACTION PLANS

21 Strategies
62 Action Plans

1.1 Expand to high value-added activities of the value chain
- 1.1.1 Create global IC design champions from Malaysia
- 1.1.2 Attract global leader to establish wafer fabrication in Malaysia
- 1.1.3 Shift from basic to specialty chemical
- 1.1.4 Build Malaysian champions for game changing advanced materials
- 1.1.5 Identify high value-added opportunities in the aerospace, pharmaceutical and medical devices sectors

1.2 Develop entire ecosystem to support the high value-added activities
- 1.2.1 Build strong local SMEs in manufacturing and related services to support the industry champions
- 1.2.2 Integrate value chains between:
  - M&E and Medical Devices
  - Semiconductor and EV
  - Chemical and Pharmaceutical

1.3 Establish cooperative 'vertical integration' for global value chain
- 1.3.1 Leverage alliance with ASEAN countries to integrate the semiconductor, advanced materials and clean energy value chain
- 1.3.2 Develop vertical integration programmes through IndustryConnect conferences

1.4 Foster Research, Development, Commercialisation and Innovation (RDCI) ecosystem
- 1.4.1 Assign specific topics and KPIs to universities for industrial-linked R&D
- 1.4.2 Digitalise IP application and launch enhanced National IP Policy

1.5 Increase manufacturing exports
- 1.5.1 Implement national trade advocacy campaign to increase industry utilisation of FTAs
- 1.5.2 Rejuvenate "Made in Malaysia" branding
- 1.5.3 Address trade restrictive non-tariff measures (NTMs) and compliance of standards
- 1.5.4 Update FTA based on geopolitical conditions

5 Strategies, 15 Action Plans

Mission-based Projects:
- MBP 1.1 Create global IC design champions in EV, RE and AI
- MBP 1.2 Attract new advanced wafer fabrication in Malaysia
- MBP 1.3 Deepen to specialty chemical vertical
- MBP 1.4 Groom champions in 4 game changing advanced materials

MISSION 2
Tech up for a digitally vibrant nation

2.1 Accelerate technology adoption
- 2.1.1 Enhance Industry4WRD programmes to increase technology adoption
- 2.1.2 Accelerate digital infrastructure rollout (JENDELA)

2.2 Shift away from low-skilled labour model
- 2.2.1 Introduce multi-tiered levy mechanism for low-skilled labour to accelerate automation
- 2.2.2 Introduce automation condition in new Manufacturing Licence

2.3 Spur technology innovation
- 2.3.1 Nurture local technology solution providers to support Technology Adoption Programme
- 2.3.2 Develop generative and industrial AI solution leaders and system integrators
- 2.3.3 Drive data analytics through a national digital platform for manufacturing

2.4 Accelerate government digitalisation and integration
- 2.4.1 Digitalise end-to-end government touch points across business life cycle

4 Strategies, 8 Action Plans

Mission-based Projects:
- MBP 2.1 Transform 3,000 smart factories
- MBP 2.2 Establish Malaysia as Generative AI Hub

MISSION 3
Push for Net Zero

3.1 Accelerate transition towards sustainable practices
- 3.1.1 Develop sectoral decarbonisation pathways to guide transition
- 3.1.2 Decarbonise "hard-to-abate" sectors
- 3.1.3 Introduce carbon policy, accounting and tax
- 3.1.4 Launch iESG framework and transition programmes

3.2 Transition to renewable and clean energy
- 3.2.1 Enhance adoption scheme for energy efficiency or renewable energy
- 3.2.2 Accelerate availability and accessibility of renewable energy source for the industry

3.3 Catalyse new green growth areas
- 3.3.1 Catalyse EV as a key growth driver
- 3.3.2 Grow carbon capture, utilisation and storage (CCUS) as a new sector
- 3.3.3 Develop circular economy framework for the industry

3.4 Shift towards green infrastructure
- 3.4.1 Accelerate transformation of industrial estates into eco-industrial parks

4 Strategies, 10 Action Plans

Mission-based Projects:
- MBP 3.1 Create decarbonisation pathway role models
- MBP 3.2 Launch locally-manufactured EV
- MBP 3.3 Deploy large-scale CCUS solutions

MISSION 4
Safeguard economic security and inclusivity

4.1 Develop resilient supply chain
- 4.1.1 Identify specific supply chain resilience strategies for critical sectors
- 4.1.2 Establish supply chain cooperation and collaboration through G2G and G2B programme
- 4.1.3 Introduce National Mineral Policy for downstream processing of critical minerals

4.2 Foster climate resilient development
- 4.2.1 Develop sectoral adaptation pathways
- 4.2.2 Foster an adaptation industry to provide adaptation products and services (including exports)
- 4.2.3 Instil climate resilience measures for critical economic infrastructure

4.3 Strengthen industrial clusters for regional development
- 4.3.1 Expand clusters for spillover regional impact
- 4.3.2 Align industrial development plan between Federal and States

4.4 Empower *Bumiputera* participation and create inclusive workforce
- 4.4.1 Uplift capabilities of *Bumiputera* companies in manufacturing via *Tindakan Pembangunan Bumiputera 2030*
- 4.4.2 Develop programme to increase women participation in high-skilled manufacturing employment

4 Strategies, 10 Action Plans

ENABLERS

E.1 Mobilise financing ecosystem
- E.1.1 Introduce NIMP Industrial Development Fund and NIMP Strategic Co-Investment Fund
- E.1.2 Boost financing for digitalisation and decarbonisation transition
- E.1.3 Establish green *sukuk* to facilitate transition
- E.1.4 Establish supply chain financing for SMEs
- E.1.5 Increase utilisation of the capital market
- E.1.6 Expand the imSME platform to show all available funding options including government funding and capital market
- E.1.7 Review government funding for consolidation

E.2 Foster talent development and attraction
- E.2.1 Leverage mynext and MYFutureJobs for strategic workforce planning to address long-term demand-supply requirement
- E.2.2 Introduce progressive wage system policy
- E.2.3 Improve policy to enable fast and hassle-free access to high-skilled foreign talents
- E.2.4 Expand TVET programmes for high-skilled jobs in critical sectors
- E.2.5 Raise profile of high-tech manufacturing career to attract interest in STEM subjects

E.3 Establish best-in-class investor journey for ease of doing business
- E.3.1 Establish a unified investment strategy and align investment evaluation to new parameters under NIA
- E.3.2 Harmonise and streamline functions and KPIs across IPA landscape
- E.3.3 Review and design competitive, agile and relevant incentives
- E.3.4 Improve One-Stop Portal for seamless investor experience

E.4 Introduce whole-of-nation governance framework
- E.4.1 Establish public-private collaborative councils
- E.4.2 Set up NIMP 2030 Delivery Management Unit
- E.4.3 Develop NIMP 2030 dashboard system

4 Strategies, 19 Action Plans

Current industrial policies provide support in developing mitigation tech, less so on adaptation

Priority Sectors under the NIMP

- **Aerospace**
- **Chemical**
- **E&E**
- **Pharmaceuticals**
- **Medical Devices**

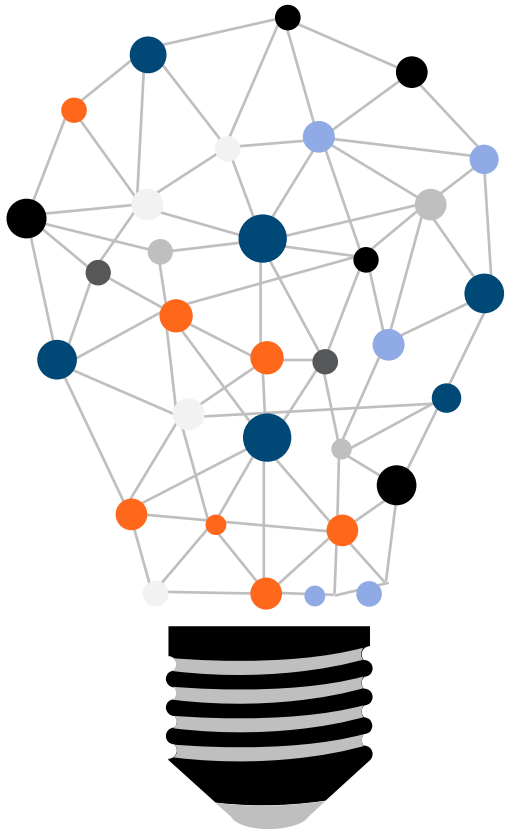
Targeted sectors are those where basic capabilities have been developed

- Green-related industries targeted are **EV, RE, palm-oil products, E&E, Digital and ICT, Machinery.**
- Although on a total basis sectors may contribute to mitigation, some targeted sectors may not be the most conducive for catching-up (e.g. larger chips).

Climate adaptation also requires industrial capabilities and safeguard measures, which NIMP recognises

- Measures to safeguard Port Klang, Malaysia's principal international **trading hub, against sea-level rise**, are called for under the NIMP
- Adaptation measures often **fuse existing infrastructural capabilities with climate science**. Some state-owned enterprises are expanding into adaptation services.

Green Industrial Policy in Action: Recent Policies



Malaysia's **sovereign wealth funds** (Khazanah and Permodalan Nasional Berhad) have committed to some **financing of climate transition** as well as exploring potential adaptation responses for the private sector. Khazanah has set up an **impact fund** which includes a mandate for catalytic climate and energy investments.

State-owned energy companies have **acquired stakes in overseas renewable energy firms** in more mature markets as part of a strategy of **industry learning and technology transfer.**

The Joint Committee for Climate Change (JC3, comprising Malaysia's financial regulators and industry) launched **Greening Industrial Parks*** (an NIMP initiative), **Greening Malaysian Companies Supply Chain** and the **SME ESG Jumpstart** portal. The Credit Guarantee Corporation Malaysia Berhad together with 18 banks is offering an RM1 billion (US$210 million) portfolio guarantee scheme for **SME ESG financing**.

* integrated waste management, use of renewable energy, measurement, monitoring and reporting of greenhouse gas (GHG) emissions as well as verification systems.

Conclusion

Conclusions

1

Malaysia has gone through several regimes of industrial policies

Policy shifts result from the need to address weaknesses of the previous regime, the outlook of key policy actors, as well as to take advantage of external opportunities. IS and EO individually could not tackle the needs of growth with redistribution that the context of post-1969 Malaysian politics demanded and so both were conducted simultaneously.

2

Resource-based industries, and to a certain extent, semiconductors, have emerged successfully from these policies

While upgrading in resource-based policies were done successfully through a market-defying approach, upgrading in semiconductors were market-following. Furthermore, Bumiputera policy requirements did not stand in the way of upgrading for resource-based industries as it did in the automotive industry. This could be due to the greater technological barriers that need to be overcome in the latter.

3

Key barriers for green structural change include premature deindustrialization and insufficient industrialisation, R&D issues, and skill attrition

Deindustrialisation and insufficient industrialization limits the stock of capabilities the country possesses to move into green frontier technology for catch-up opportunities. The low amount of R&D spent, the lack of frontier R&D institutions, and declining skill levels also proves to be a stumbling block.

4

Industrial capabilities need to be built for both climate mitigation and adaptation

Malaysia's exposure to climate risk depends on both global and domestic actions. Tackling the risk requires a considerable amount of finance, which needs to be raised through new and existing measures. In terms of local capabilities building, recent industrial policies addresses the development of mitigation technology, but less so for adaptation.

Thank you

www.krinstitute.org