



National Energy Transition Roadmap

Energising the Nation, Powering Our Future



National Energy Transition Roadmap (NETR)

Conference on Government Assistance for
Circular and Low-Carbon Economy

Organised by: Malaysian Plastics Manufacturers Association
Date: 26 June 2024

Outline of Briefing

- National Energy Policy, 2022-2040 (DTN)
- National Energy Transition Roadmap (NETR)

NATIONAL ENERGY POLICY, 2022-2040

NATIONAL ENERGY POLICY, 2022-2040 (DTN)



DASAR TENAGA NEGARA 2022-2040



- 1 **Streamline and harmonise** various existing energy-related policies, roadmaps, and targets for alignment and consistency.
- 2 Ensure a coherent and coordinated energy sector response **aligned to forward-looking national aspirations and agenda**.
- 3 Create a **shared long-term vision and a coordinated response** across energy-related stakeholders to meet challenges and capture opportunities from energy transition and other global megatrends.
- 4 Provide **enhanced clarity on Malaysia's forward-looking and future-proof energy sector ambitions and plans for various stakeholders** including the *rakyat*, businesses, and investors to inform long-term investment decisions required to attract FDI, spur GDP and job creation growth.
- 5 Strengthen **energy sector enablers and governance** to drive planning, development and implementation of **comprehensive and integrated energy policy**.

STAKEHOLDERS ENGAGEMENTS, FEBRUARY 2020 TO NOVEMBER 2021

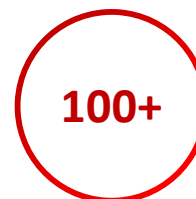
The DTN was the product of an extensive engagement over the course of **22 months** with extensive stakeholder engagement at federal and state level.

DTN Study Steering Committee members:

- EPU
- KeTSA
- KASA
- MOSTI
- MOF
- MITI
- KPDNHEP
- MPIC
- MOT
- KPLB
- KPKT
- UPEN (SB)
- UPEN (SK)
- ST
- PETRONAS
- BNM

Other Technical Committee members:

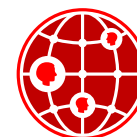
- MIDA
- MARii
- MPOB
- MPRC
- SEDA
- TNB
- Single Buyer
- MyPower



1:1 engagements and cluster workshops with public sector entities



Extensive engagement of private sector **industry players**¹



Extensive **global benchmarking** on best practices and trends²

1. Including local banks, energy industry players in supply chain, industry associations
2. Global benchmarks of country energy policies, technology curve outlook, etc.

BACKGROUND

CHALLENGES

Twelfth Malaysia Plan, 2021-2025 identified the need to effectively address the **energy trilemma of security, affordability and environmental sustainability**. At present, Malaysia's energy sector is still facing challenges such as **fragmented policies and governance, impediments in the domestic oil and gas market and non-competitive fuel procurement in the electricity subsector**.

GLOBAL MEGATRENDS

Major **energy transition** is on-going, i.e. a shift from fossil fuel-reliant systems of production and consumption to clean energy solutions. **COVID-19 and Russia-Ukraine conflicts have destabilised the global energy market and outlook**. Demand dwindled, prices skyrocketed and supply was tight.

MALAYSIA'S RESPONSE

- The National Energy Policy, 2022-2040 (DTN) was launched on 19 September 2022 by YAB Prime Minister.
- DTN will **spearhead Malaysia's energy transition journey** by providing a forward-looking direction of the energy sector, promoting efficient demand-side management, encouraging the R&D&C&I and adoption of green technologies and upskilling of energy workforce.

• KEY OUTPUT

Establishment of the **National Energy Council (MTN)** to be chaired by

YAB Prime Minister to align and coordinate the various energy-related policies and objectives.

DTN will be reviewed every 3 years to ensure targets and strategies are in line with the country's needs.

COUNTRY POLICY BENCHMARKING

(As at January 2022)



Germany



Norway



India



Thailand



Indonesia



Japan



United
Kingdom



Sweden



Malaysia

Energy
Policy Lead
Entity

Federal
Ministry
for Economic
Affairs and
Energy

Ministry of
Petroleum
and Energy

National
Institution
for
Transforming
India
(NITI Aayog)

Ministry of
Energy

National
Energy
Council

Ministry for
Economy,
Trade and
Industry

Department
for Business,
Energy and
Industrial
Strategy

Ministry of
Enterprise,
Energy and
Communication

Economic
Planning Unit,
Prime Minister's
Department
(EPU)

Energy
Policy Time
Horizon

40 years

15 years

23 years

16 years

33 years

29 years

33 years

28 years

18 years

Timeline

2010-2050

2015-2030

2017-2040

2015-2036

2017-2050

2021-2050

2017-2050

2017-2045

2022-2040

Aspiration

Net zero
emission by
2045

N/A

N/A

N/A

Carbon
neutral by
2060

N/A

N/A

N/A

Low Carbon
Nation 2040

ENERGY GOVERNANCE LANDSCAPE AS AT OCTOBER 2022

KEY ENERGY-RELATED MINISTRIES

Ministries with direct energy-related responsibilities

 Economic Planning Unit, Prime Minister's Department (EPU)	 Ministry of Energy and Natural Resources (KeTSA)	 Ministry of Primary Industry and Commodities (MPIC)	 Ministry of Domestic Trade and Consumer Affairs (KPDNHEP)
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Ministries related to key final energy demand sectors

 Ministry of Transport (MOT)	 Ministry of Housing and Local Government (KPKT)
 Ministry of International Trade and Industry (MITI)	 Ministry of Rural Development (KPLB)
 Ministry of Federal Territories (KWP)	 Ministry of Agriculture and Food Industry (MAFI)

Cross-cutting influence

 Ministry of Finance (MOF)
 Ministry of Water and Environment (KASA)
 Ministry of Science, Technology, and Innovation (MOSTI)

State-specific entities

 State Economic Planning Unit (UPEN) Sabah
 State Economic Planning Unit (UPEN) Sarawak
 Ministry of Utility and Telecommunication (Sarawak)

KEY ENERGY-RELATED ORGANISATIONS

Power-related

 Single Buyer (SB)
 Grid System Operator (GSO)
 MyPOWER

Oil and gas-related

 Malaysia Petroleum Resources Corporation (MPRC)
 Sustainable Energy Development Authority (SEDA)

Renewable energy-related

Cross-cutting influence

 Malaysian Green Technology and Climate Change Corporation (MGTC)
 Malaysian Investment Development Authority (MIDA)
 Malaysia Automotive, Robotics and IoT Institute (MARii)

REGULATORS

Electricity and piped gas

 Suruhanjaya Tenaga (ST)
 Petroleum Nasional Berhad (PETRONAS)

Upstream oil and gas

ENERGY-RELATED ACTS

1974

Petroleum Development Act (1974)

- Vests the **entire ownership in and the exclusive rights** for the exploration and exploitation of petroleum resources in PETRONAS
- PETRONAS shall be subject to the control and **direction of the Prime Minister**
- Sets up the **National Petroleum Advisory Council** to advise the Prime Minister on national policy, interests and matters pertaining to petroleum, petroleum industries, energy resources and their utilisation

1990 1993

Electricity Supply Act (1990)

- **Regulation of the electricity supply industry**
- Electricity supply at **reasonable prices, licensing of electrical installations** and promotion of safe and efficient systems for electricity-related operations

Gas Supply Act (1993)

- Mandates the **licensing of natural gas** supply to consumers at reasonable prices, with continuous supply and good quality
- Ensures the **safe and efficient operation** of natural gas pipelines, installations and appliances

2001

Energy Commission Act (2001)

- **Establishment of the Energy Commission**
- Authorises the Energy Commission to **regulate energy supply activities** including the enforcement of energy supply laws

2011

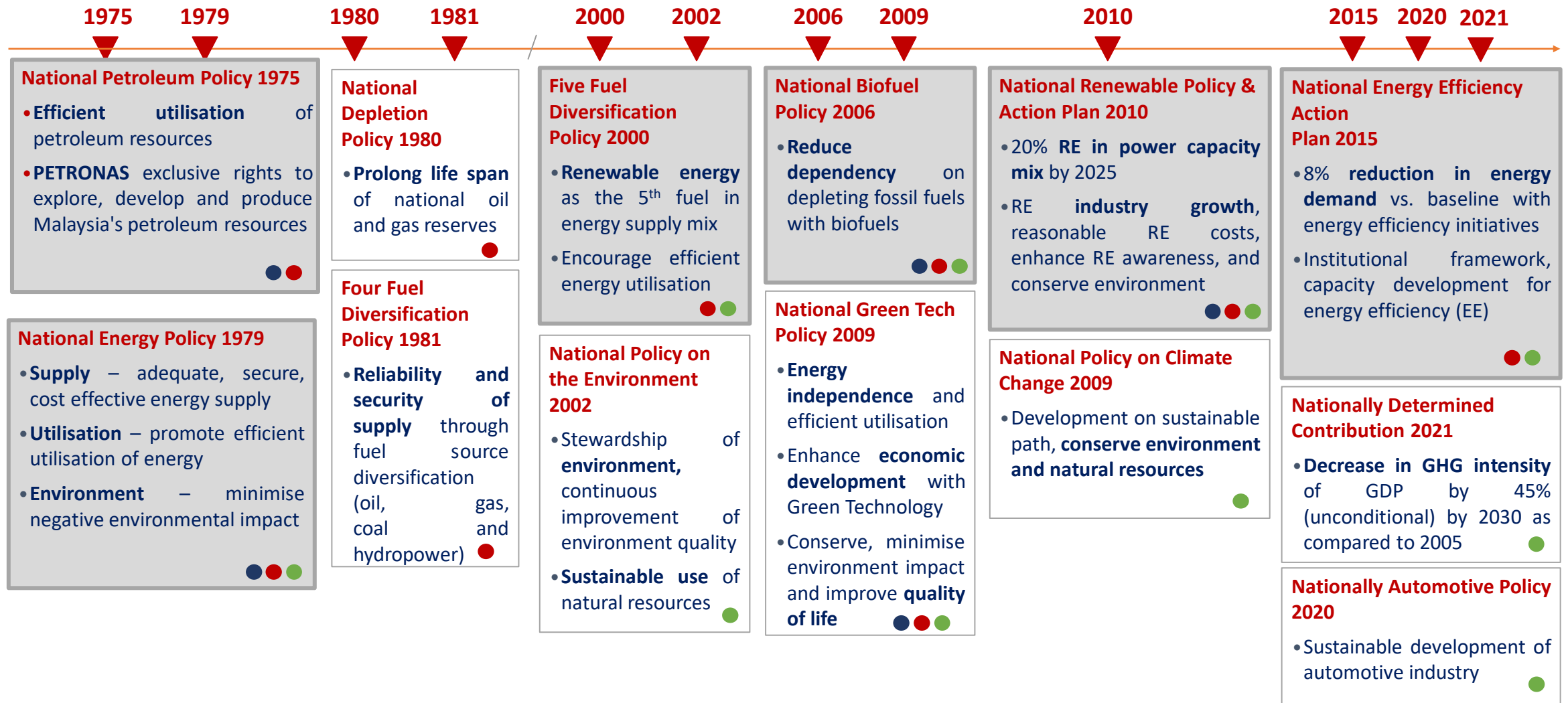
Renewable Energy Act (2011)

- Establishment and implementation of a **feed-in tariff (FiT) system** to catalyse the generation of electricity from renewable sources

Sustainable Energy Development Authority Act (2011)

- **Establishment of the Sustainable Energy Development Authority (SEDA)**
- SEDA is responsible for **sustainable energy laws and to promote the use of sustainable energy**

ENERGY-RELATED POLICIES

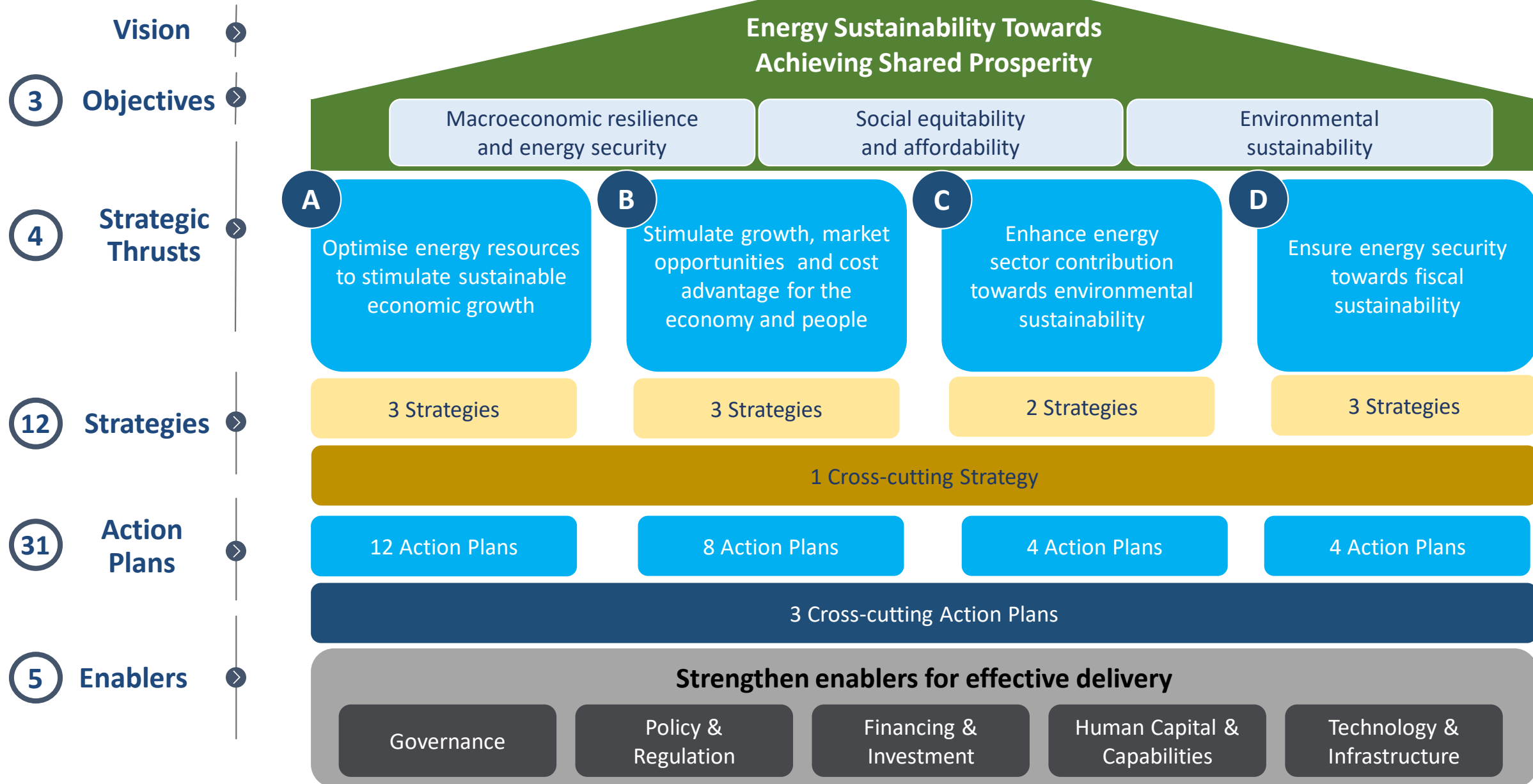


Note: List is non-exhaustive. Highlights of most relevant policies and objectives taken

Source: Government of Malaysia websites and publications

Legend: ● Energy equity ● Energy security ● Environmental sustainability

FRAMEWORK OF DTN



DTN PLAN OF ACTION

Strategic Thrust 1 Optimise energy resources to stimulate sustainable socioeconomic growth	Strategic Thrust 2 Capture growth, market opportunities and cost advantage for the economy and the people	Strategic Thrust 3 Enhance energy sector contribution towards environmental sustainability	Strategic Thrust 4 Ensure energy security towards fiscal sustainability
Strategy 1 Utilise the location of petrochemical hubs and gas infrastructure	Strategy 1 Seize opportunities in the environmentally friendly light and heavy vehicle market	Strategy 1 Promote the use of clean fuels in industries and determine GHG emissions reduction target in energy sector	Strategy 1 Rationalise energy subsidies
Strategy 2 Optimising value added from oil and gas, bio-based energy, solar, hydroelectric and new clean energy sources	Strategy 2 Seize market opportunities from the implementation of international regulations such as clean fuel for ships and aircrafts		Strategy 2 Ensure smart investments in energy infrastructure development
Strategy 3 Improving energy demand management with enablers in the industrial, residential and commercial sectors	Strategy 3 Optimising the mix of energy generation sources	Strategy 2 Encourage businesses to implement carbon footprint accounting, reporting and certification as well as access to RE	Strategy 3 Establish boundary conditions and implement safeguards to enhance national energy security

BENEFITS TO ECONOMY ACROSS THE ENERGY TRILEMMA

Economic Development



Increase contribution to GDP

1.0 – 1.5% added to GDP totaling ~RM260b



Jobs creation

207,000 added jobs, majority in green economy sectors



New FDIs

Prospects and growth sector opportunities related to low carbon economy

Energy Security



Lesser reliance on energy import

Increased penetration of indigenous energy sources



Fuel diversification

Enhanced energy source diversification and lower HHI of primary energy mix (HHI of 0.5 in 2020 and HHI of 0.30 in 2040)

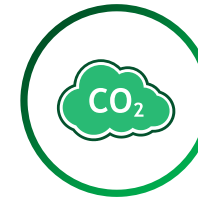
Energy Affordability



Wider energy access

Continuity of rural electrification programme

Environment Sustainability



Less CO₂ emission

CO₂ emission reduction, based on NDC and LT-LEDS, in support of climate change commitment



Greater RE penetration

17% of renewable penetration in primary energy mix from 7.2% in 2018

IMPACT OF LOW CARBON NATION ASPIRATION 2040

National Low Carbon Aspiration 2040

Emphasis on low carbon **policies and investments to increase adoption and pursue selective leadership in low carbon sectors**, such as:

- Endeavour to **no new coal power plant** and increasing renewables share
- Providing financing and incentives to drive **energy efficiency practices** to meet the targets
- Incentivise **adoption of EVs**, increasing public transport modal share, and fuel economy standards



Impact of implementation



Contribution to GDP
(RM/year)

13 billion



Total job creation

207,000



Energy self-sufficiency

48% to 72%



Fiscal outlay
(RM/year)

4.3 billion



Total Investments
(RM/year)

9.2 billion



CO₂ emissions reduction

*

* To be finalised by the Ministry of Environment and Water by end-2022 in the Long-Term Low Emissions Development Strategies (LT-LEDs)
Note: At COP26 (2021), Malaysia committed to a 45% of carbon intensity reduction by 2030, relative to 2005 level.

SELECTED TARGETS OF LOW CARBON NATION ASPIRATION 2040

Selected Targets		2018	2040
	1. Percentage of urban public transport modal share	 	20% 50%
	2. Percentage of electric vehicle (EV) share		<1% 38%
	3. Alternative fuel standard for heavy transport		B5 B30
	4. Percentage of Liquefied Natural Gas (LNG) as alternative fuel for marine transport		0% 25%
	5. Percentage of industrial and commercial energy efficiency savings	  	<1% 11%
	6. Percentage of residential energy efficiency savings	  	<1% 10%
	7. Total installed capacity of RE	  	7,597 MW 18,431 MW
	8. Percentage of coal in installed capacity	  	31.4% 18.6%
	9. Percentage of RE in TPES	  	7.2% 17%

Legend:  Energy security  Energy affordability  Environmental sustainability

GENERAL TIMELINE OF LOW CARBON NATION ASPIRATION 2040

Twelfth Plan (2021 – 2025)



Improve rural electricity supply to achieve 99% coverage



Implement step change in industry EE through enforcement of EECA, energy audits and MEPS



Increase usage of smart meter and smart grid as well as upgrade grid



Improve Sabah power supply reliability



Improve fuel economy standard for vehicle

Thirteenth Plan (2026 – 2030)



Growth of gas-based petrochemical hubs



Thrive TPA gas market, investments in RGT for energy security



Increase upstream investments to develop deepwater, marginal, sour gas fields⁴



Enhance OGSE players capacity through consolidation and international participation



Phase down of broad-based energy subsidies, move to market-based pricing



Capture growth with LNG uptake in marine bunkering

Fourteenth & Fifteenth Plans (2031 – 2040)



Thrive domestic EV ecosystem, with at scale EV penetration



Adopt large scale energy storage for RE



Implement pilot and market entry programmes of hydrogen as well as next generation bioenergy

H₂

Establish globally competitive hydrogen export hub in Sarawak



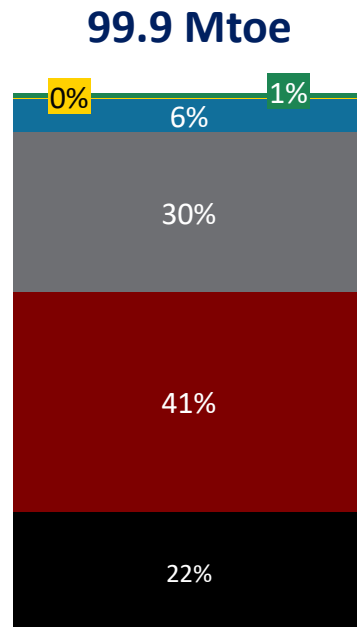
Enhance energy efficiency with digital technology adoption



Capture growth opportunities of biofuels in marine and aviation sectors

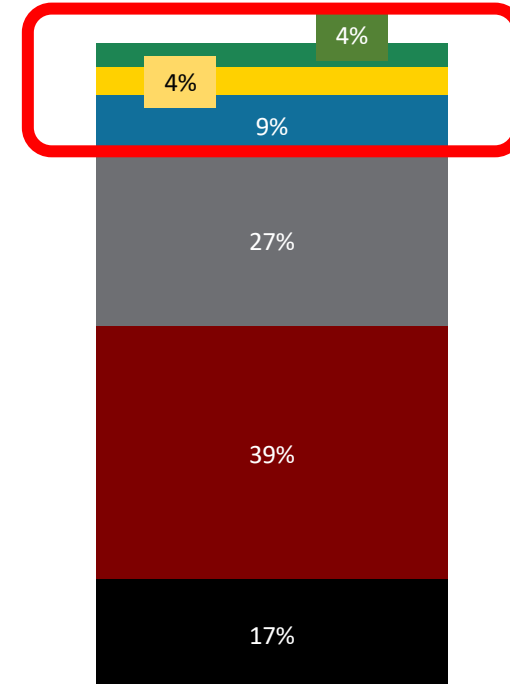
PRIMARY ENERGY MIX TARGET

Current Position¹



Low Carbon Nation
Aspiration 2040²

117.1 Mtoe



 Bioenergy  Solar  Hydropower  Oil / Petroleum Products  Natural Gas  Coal

NATIONAL ENERGY TRANSITION ROADMAP

ENERGY GOVERNANCE LANDSCAPE AS AT FEBRUARY 2024

KEY ENERGY-RELATED MINISTRIES

Ministries with direct energy-related responsibilities

 Ministry of Economy	 Ministry of Energy Transition and Water Transformation	 Ministry of Plantation and Commodities	 Ministry of Domestic Trade and Cost of Living
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Ministries related to key final energy demand sectors

 Ministry of Transport	 Ministry of Housing and Local Government
 Ministry of Investment, Trade and Industry	 Ministry of Rural and Regional Development
 Ministry of Agriculture and Food Security	

Cross-cutting influence

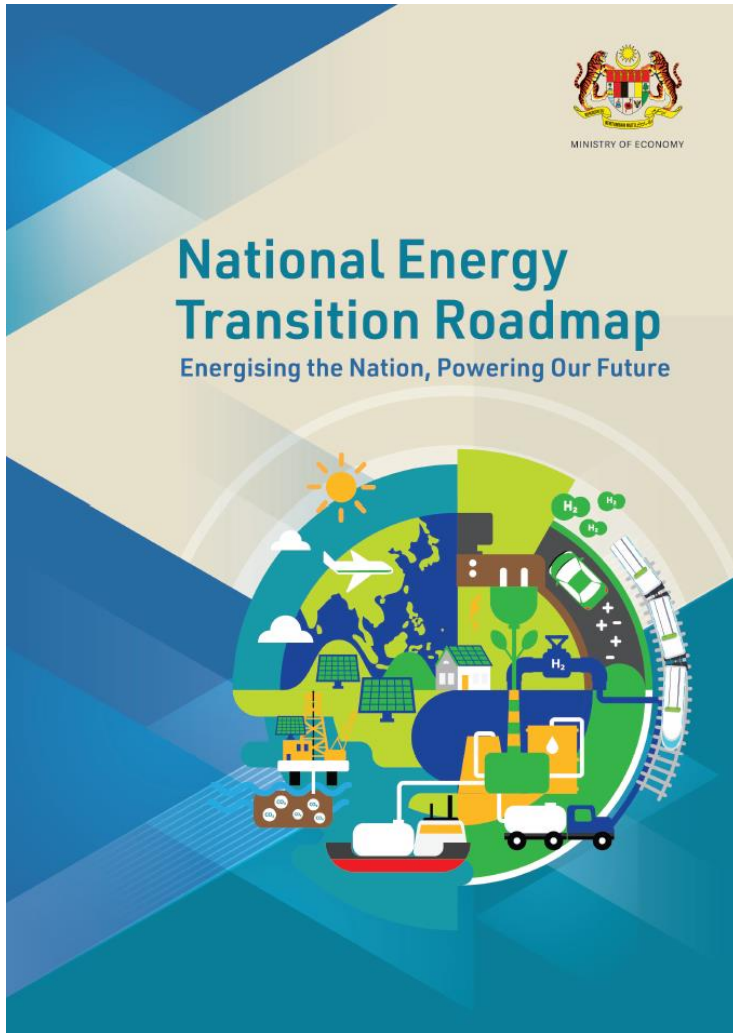
 Ministry of Finance
 Ministry of Natural Resources and Sustainability
 Ministry of Science, Technology and Innovation

Sabah / Sarawak

 Chief Minister's Department, Sabah	 Economic Planning Unit, Sabah
 Ministry of Energy and Sustainability, Sarawak	
 Min. of Utility and Telecommunications, Sarawak	 Economic Planning Unit, Sarawak

KEY ENERGY-RELATED ORGANISATIONS





10

Flagship Catalyst Projects and Initiatives

Investments of more than RM25 billion, potential creation of 23,000 jobs, and reduce at least 10,000 GgCO₂ eq. annually

50

Key Initiatives and Enablers

Spurring Malaysia's green growth for climate resilience. To uplift GDP value from RM25 billion in 2023 to RM220 billion and generate 310,000 jobs by 2050

0

Net-Zero GHG Emissions as Early as 2050

NETR's Responsible Transition 2050 outlines the energy sector's low carbon pathway to reduce 32% GHG emissions from 259 MtCO₂eq. (2019) to 175 MtCO₂eq (2050)

Across 6 Energy Transition Levers



Energy Efficiency



Renewable Energy



Hydrogen



Bioenergy

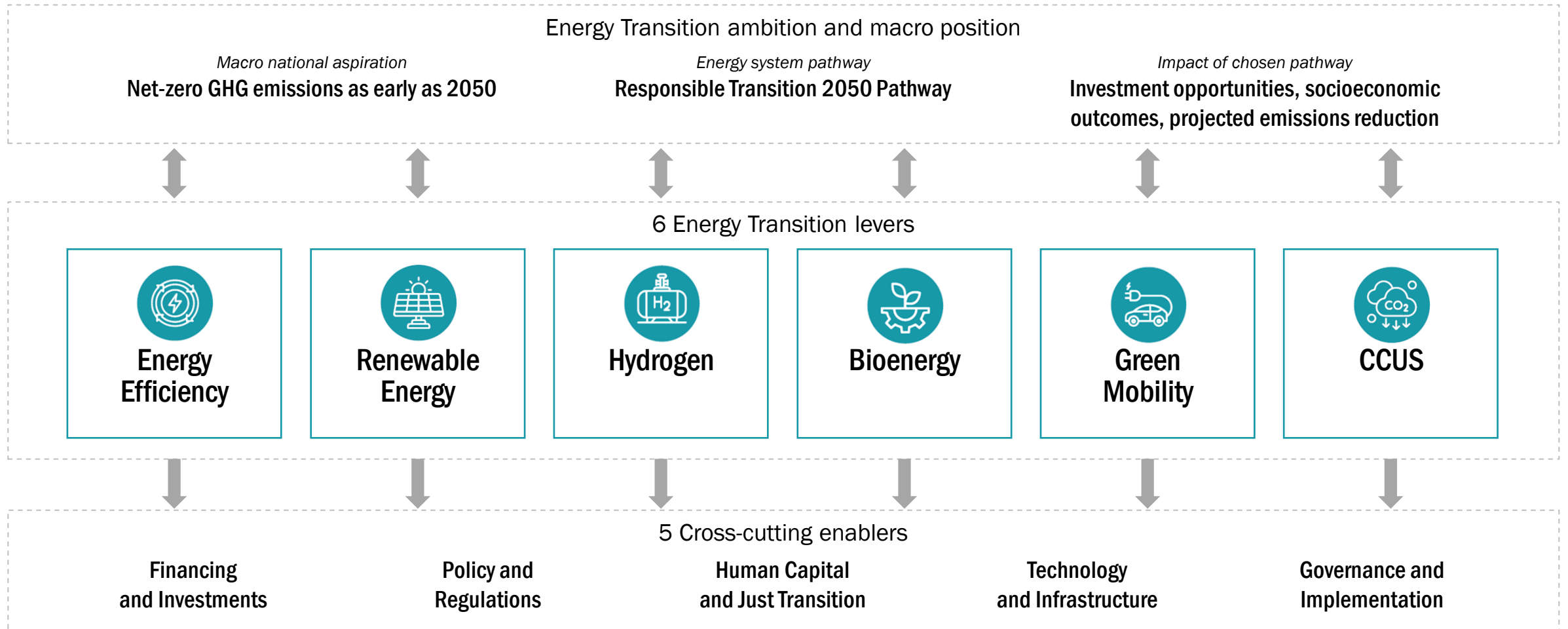


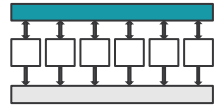
Green Mobility



CCUS

NETR Building Blocks





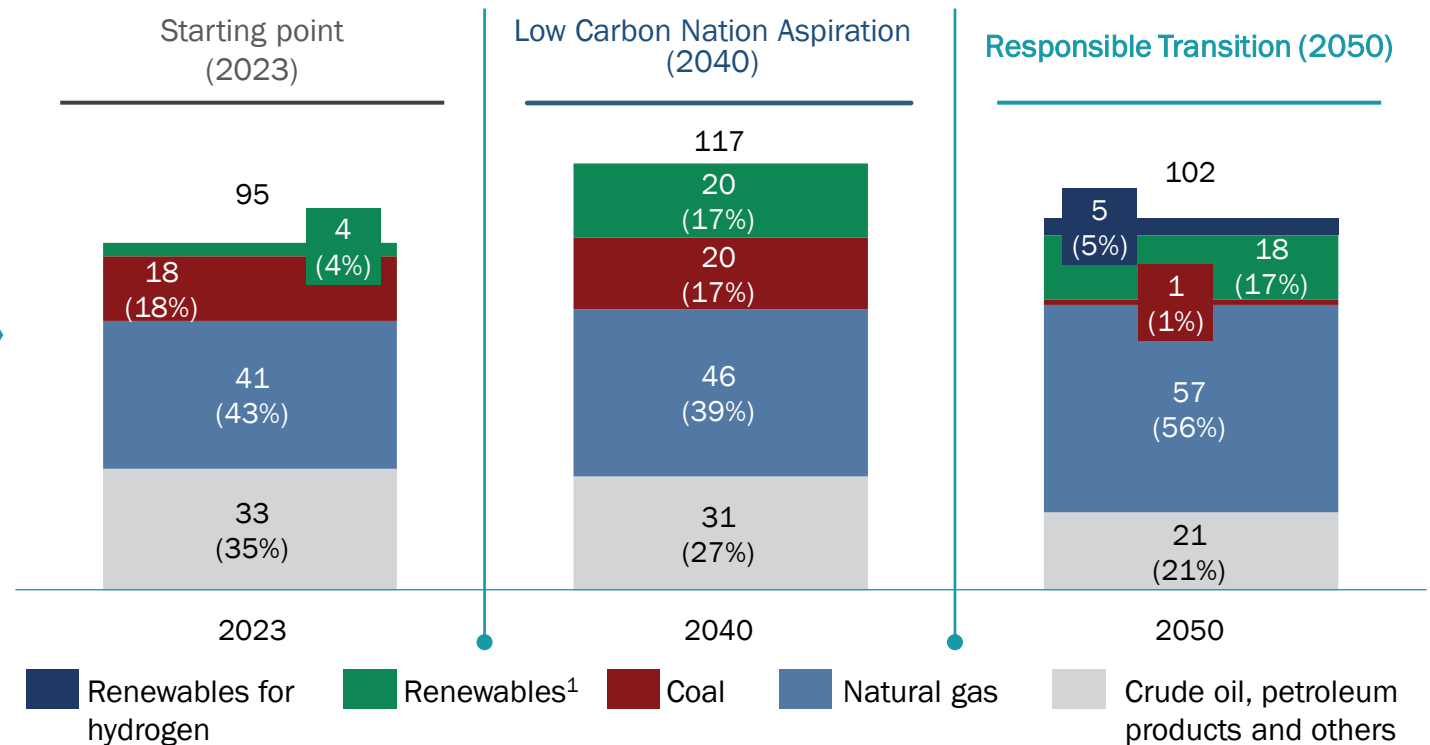
Responsible Transition (RT) Pathway 2050

RT Pathway 2050 is the best-fit scenario developed in consideration of current technology developments, global trends and national circumstances

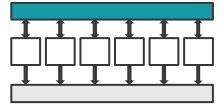
The RT pathway aims to:

- + increase RE**
Increased use of RE in the power generation mix
- + phase out coal**
Close to fully phased-out coal from the power generation mix
- + pursue EE**
Broad based energy efficiency initiatives pursued
- + expedite green mobility**
Shift to electrification and biofuels expedited in the transport sector

Total Primary Energy Supply (Mtoe), by energy source



¹ includes bioenergy, solar, hydropower and hydrogen

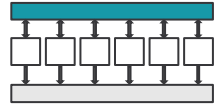


RT Pathway 2050 Targets

The targets will guide the nation towards the RT pathway ambition, striking the right balance between environmental mitigation and the need to bolster net socioeconomic values

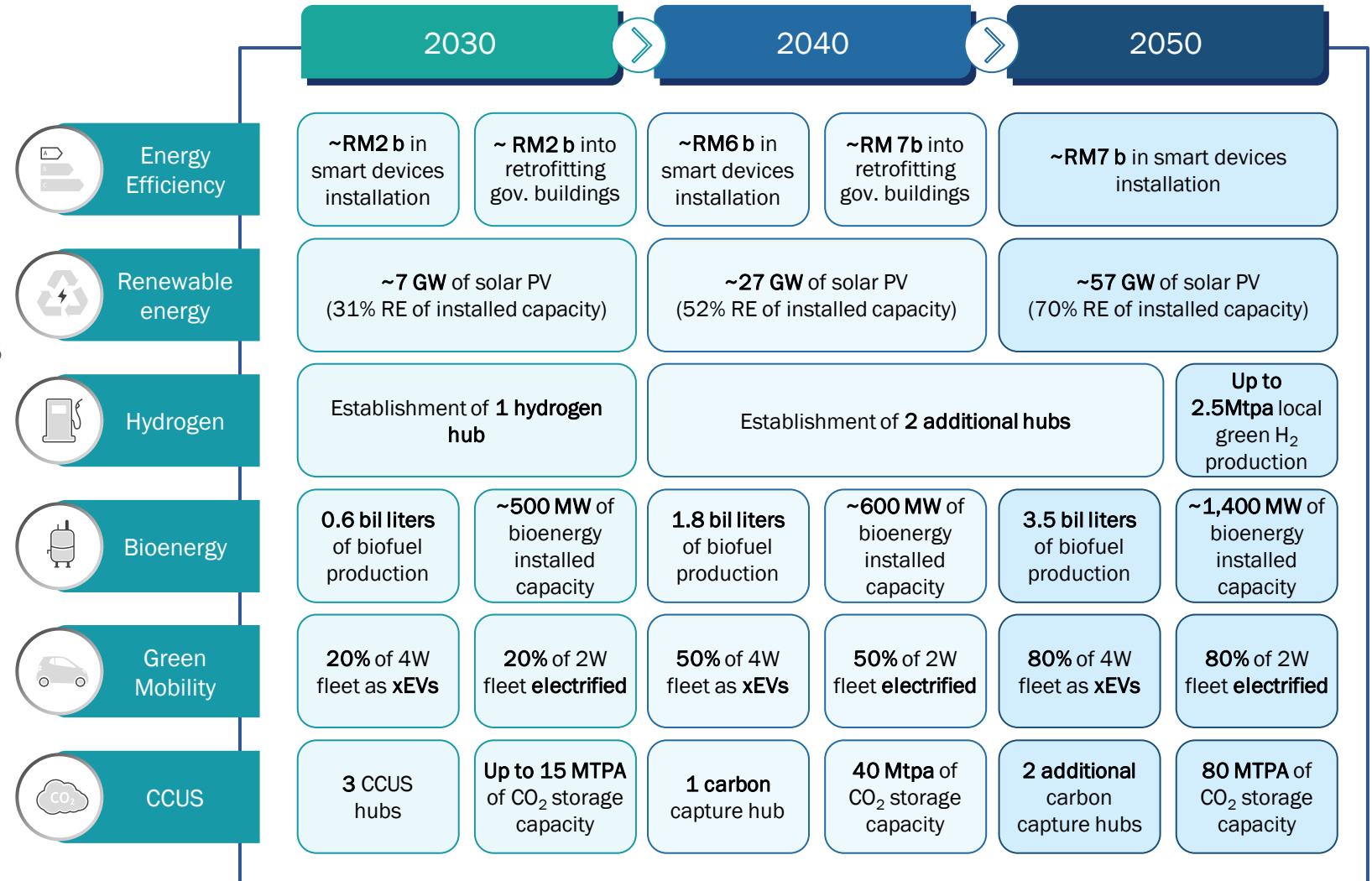
Sector and Key Driver		2050 NETR Responsible Transition
Energy Efficiency	Industry and Commercial energy efficiency savings (%)	23%
	Residential energy efficiency savings (%)	20%
Renewable Energy	Coal share of installed capacity (%)	0%
	RE share of installed capacity (%)	70%
Hydrogen	Green hydrogen production (MTPA)	Up to 2.5 MTPA
	Grey hydrogen feedstock phase off (%)	100%
	Hydrogen hubs (#)	3
Bioenergy	Biofuel capacity (billion litres)	3.5
	Bioenergy power generation (GW)	1.4

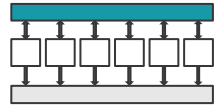
Sector and Key Driver		2050 NETR Responsible Transition
Green Mobility	Urban public transport modal share (%)	60%
	xEV (4W) share of fleet (%)	80%
	E2W share of fleet (%)	80%
	Light vehicle fuel economy	~30%
	Heavy transport fuel economy	~24%
	Biofuel blending for heavy transport (%)	B30
Av.	Hydrogen penetration for heavy transport (%)	5%
	Green fuel penetration in marine transport (%)	40%
	SAF blending mandate by 2050 (%)	47%
CCUS	Number of CCUS clusters (#)	3-6
	CO ₂ storage capacity (Mtpa)	40-80



Investment Opportunities

The realisation of these investments through **blended financing and public-private partnership** will spur Malaysia's low carbon economy while ensuring climate resilience

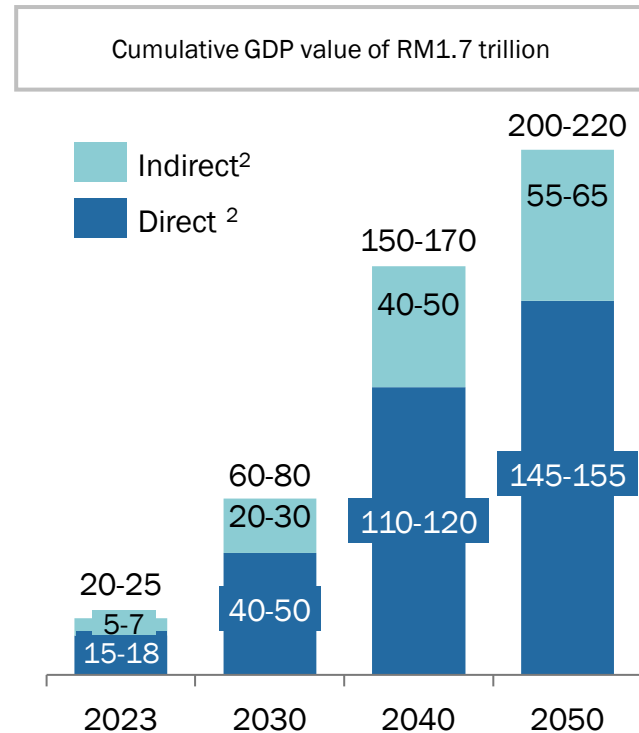




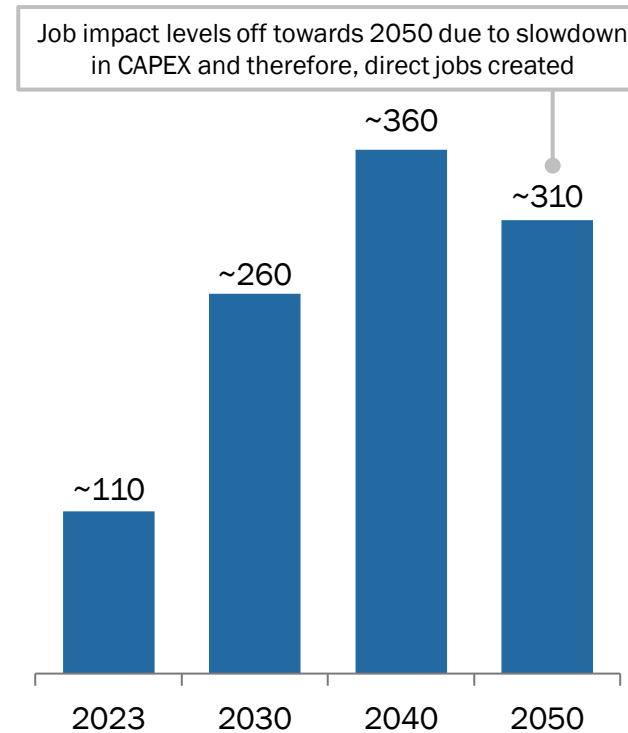
Expected Socioeconomic Outcomes

Additional RM220 billion in GDP and the creation of 310,000 green jobs, and **income gains** for the **medium- and low-income households**

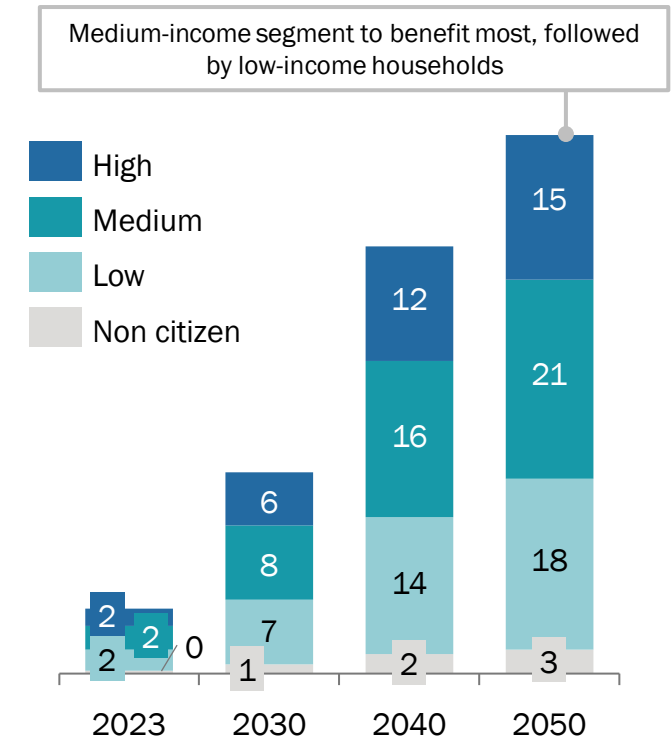
Annual GDP impact vs. 2022 baseline¹
(RM b)



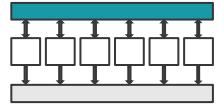
Direct jobs created vs. 2022 baseline
(FTE '000)



Income impact by household segment vs. 2022 baseline (RM b)

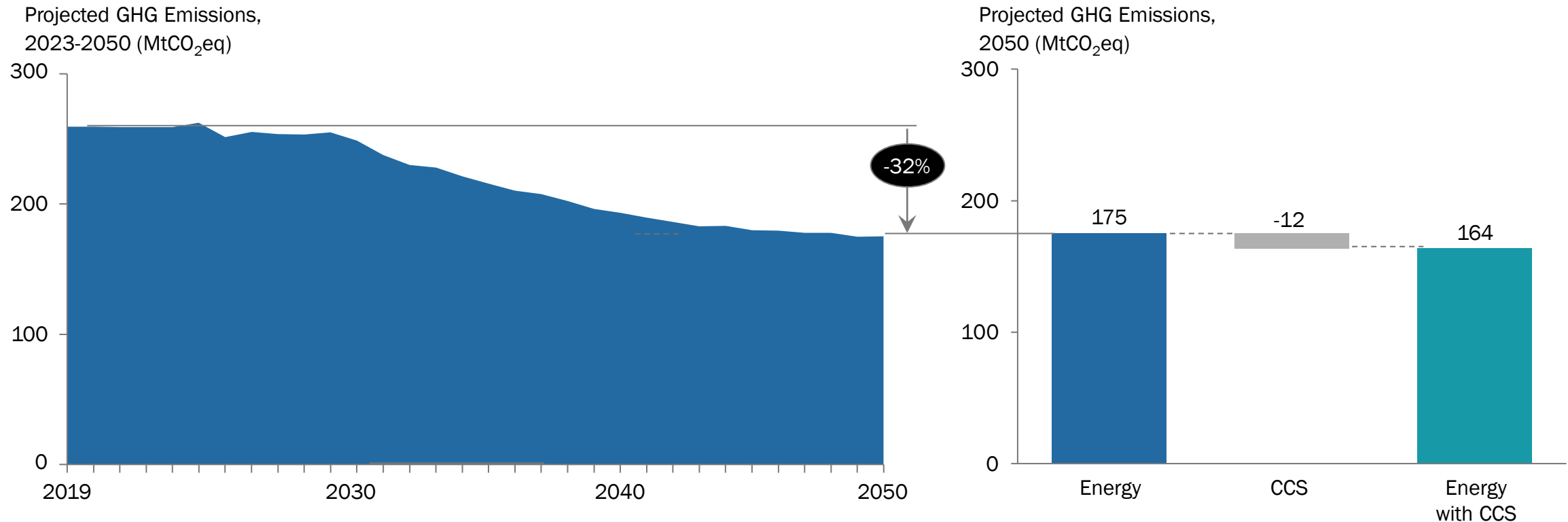


1. Cumulative GDP for 2023-2029, 2030-2039 and 2040-2050 are ~RM115 b, ~RM520 b and ~RM1,030 b totaling up to ~RM1,700 b by 2050; 2. Indirect impact includes induced (resulting increase in incomes to households due to the increased labor and capital demand from the direct and indirect effects) and indirect effects (subsequent ripple effects in the interlinked sectors of the economy resulting from changes in demand and production induced by the initial direct shock on the primary sector)

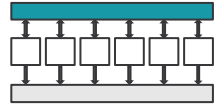


Projected GHG Emissions Reduction

Projected **32% reduction of GHG emissions** for the energy sector from 259 MtCO₂eq. (2019) to 175 MtCO₂eq (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.



Overview of Benefits



Rakyat

- Addition of **310,000 jobs** in future-proof sectors across the country
- Balanced economic outcomes with **70% of income** gains to benefit **medium- and low-income households**
- **Better quality of life** and **health outcomes** with lower emissions
- **Greater empowerment** to reduce carbon footprint
- **Up-skilling support** for just transition



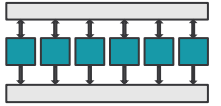
Business

- **RM120-180 billion investment opportunities** in co-funded government facility for energy transition
- **Investment opportunities** for green growth across energy transition value chain, up to **RM1.2-1.3 trillion**
- Lower carbon footprint with cleaner **energy mix** and **energy efficiency** to future-proof trade and investment position
- **Enhanced talents** with up-skilling of the workforce



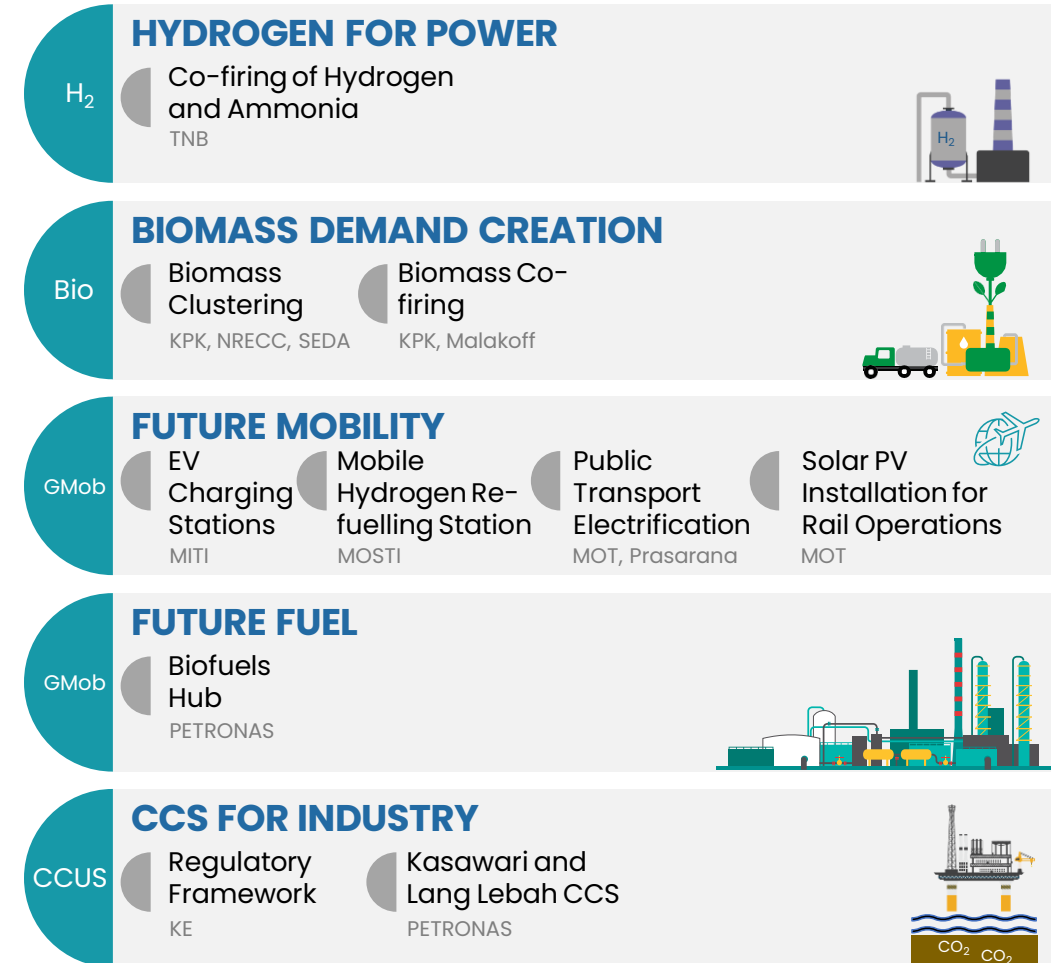
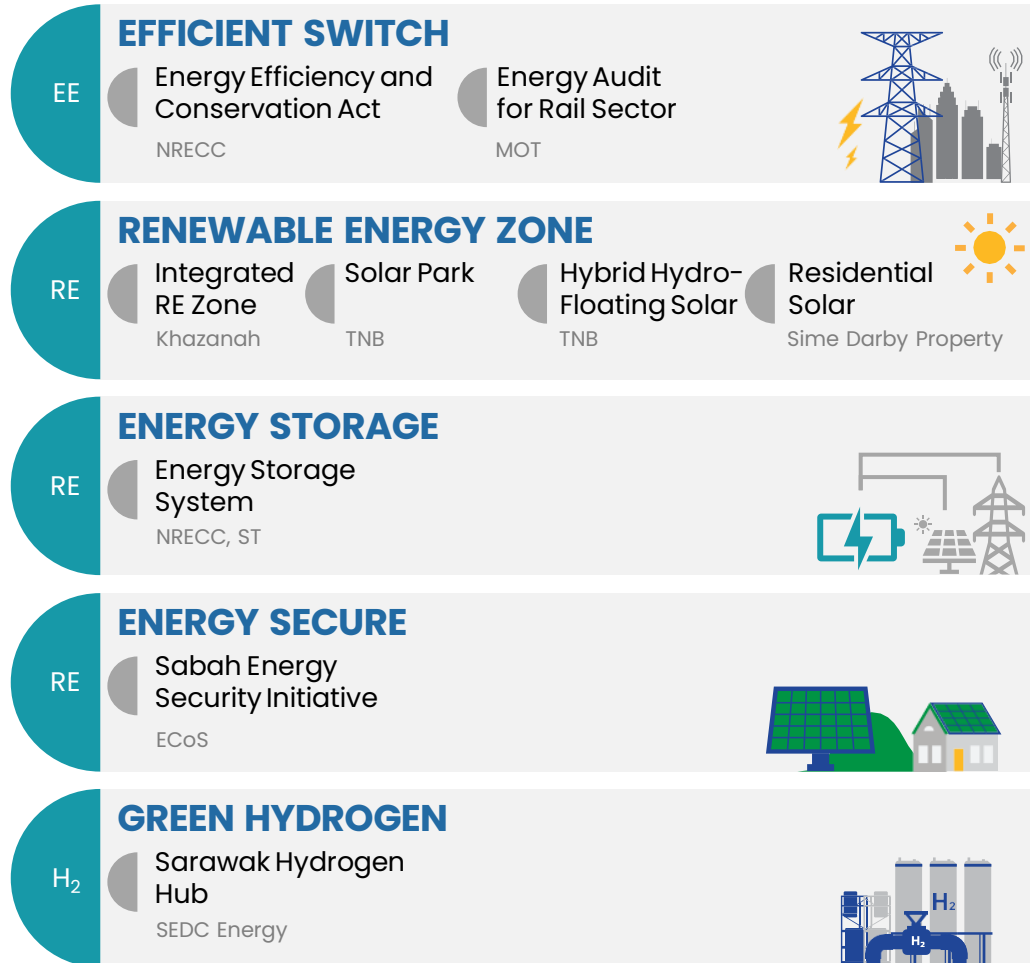
Government

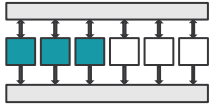
- **10-15% uplift** in GDP value with spurring of new growth areas
- **32% reduction in energy sector emissions**, supporting climate change commitments
- Enhanced **energy self-sufficiency**
- Enhanced **diversification of fiscal income** with new growth
- Carbon footprint reduction to **future-proof industries** and generate **Green FDI**



Flagship Catalyst Projects and Initiatives

The catalyst projects and initiatives **champions** will showcase varying **modalities** in accelerating Malaysia's energy transition journey





Key Initiatives and Enablers



Energy Efficiency

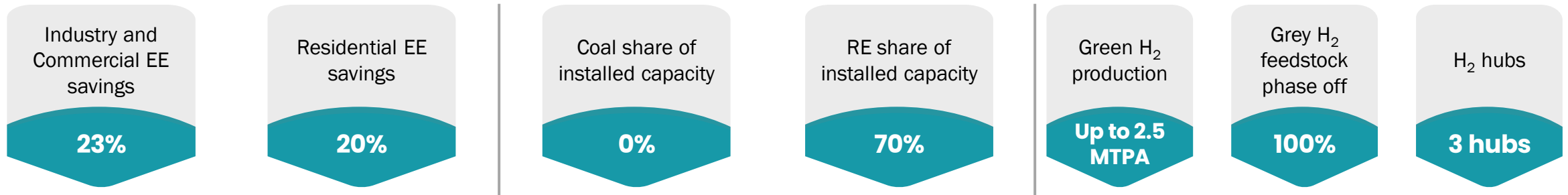


Renewable Energy



Hydrogen

RT Pathway 2050 Targets

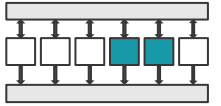


Key Initiatives

- EE1 Improve EE awareness
- EE2 Improve existing MEPS and 5-star rating bands
- EE3 Enhance mandatory audits for large commercial and industrial buildings
- EE4 Establish green building codes for energy-intensive residential and commercial buildings
- EE5 Establish an ESCO platform
- EE6 Launch a major EE retrofit initiative amongst government buildings

- RE1 Establish solar parks for accelerated deployment of utility-scale solar
- RE2 Promote floating solar and agrivoltaic technology
- RE3 Expand virtual aggregation model for rooftop solar
- RE4 Develop plan for accelerated investments of transmission and distribution
- RE5 Develop TPA framework for sourcing of RE
- RE6 Set up RE exchange hub to enable cross-border RE trading

- HY1 Establish low-carbon hydrogen standards and regulations
- HY2 Develop domestic green electrolyser manufacturing capabilities
- HY3 Reduce Levelised Cost of Hydrogen (LCOH) for low-carbon hydrogen
- HY4 Stimulate demand for low-carbon hydrogen



Key Initiatives and Enablers



Bioenergy

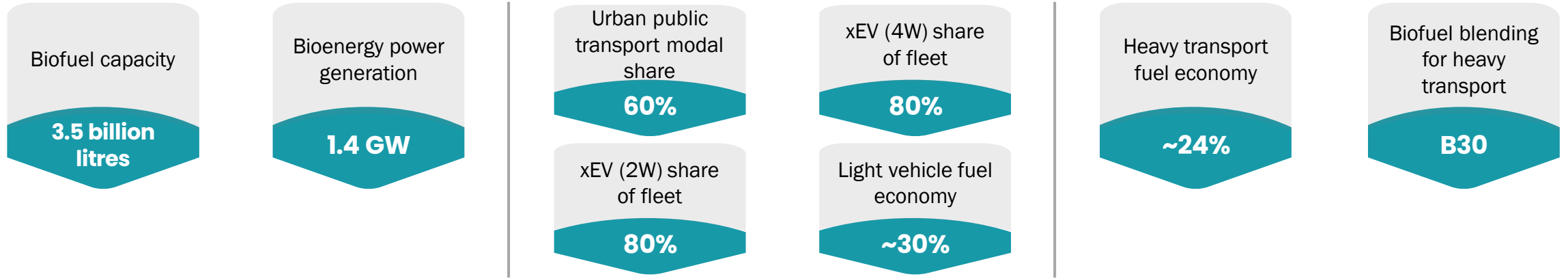


Green Mobility (Light Vehicle)



Green Mobility (Heavy Vehicle)

RT Pathway 2050 Targets

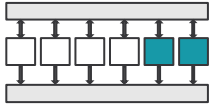


Key Initiatives

- BI-1 Explore alternative bioenergy feedstock
- BI-2 Enhance attractiveness of palm oil biomass
- BI-3 Address challenge of supply security
- BI-4 Catalyse local demand for bioenergy
- BI-5 Improve solid waste management policies

- GM-LV1 Drive public transport modal share shift to 40% by 2040 and 60% by 2050
- GM-LV2 Improve light vehicle fuel economy
- GM-LV3 Accelerate electrification of light vehicles segment (E4W)
- GM-LV4 Accelerate electrification of light vehicles segment (E2W)

- GM-HV1 Enhance demand-side management with fuel economy
- GM-HV2 Implement B30 biodiesel blending mandate
- GM-HV3 Introduce future powertrains for heavy vehicles



Key Initiatives and Enablers



Green Mobility (Aviation)



Green Mobility (Marine)



CCUS

RT Pathway 2050 Targets

SAF blending
mandate

47%

Green fuel
penetration in
marine transport

40%

CCUS clusters

**3 to 6
clusters**

CO₂ storage
capacity

**40 – 80
MTPA**

Key Initiatives

GM-AV1 Establish overarching aviation
decarbonization roadmap

GM-AV2 Implement SAF blending mandate

GM-AV3 Undertake palm oil-feedstock emissions study

GM-MA1 Unlock market opportunities of biofuel in
marine bunkering

GM-MA2 Unlock market opportunities of future fuels
in marine bunkering

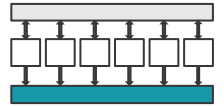
CC1 Develop CCUS-specific policies and regulations

CC2 Strengthen CCUS adoption through provision of
incentives across all relevant sectors and
facilitate hub development

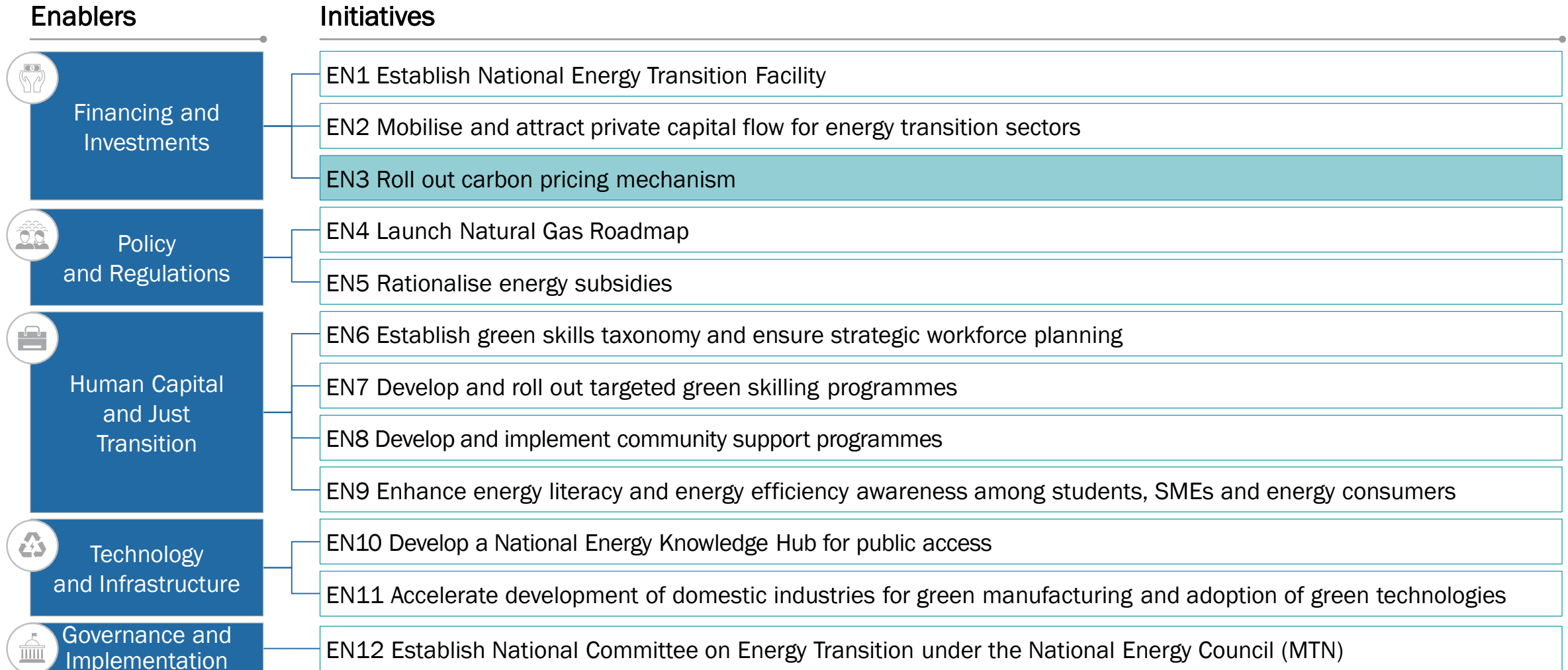
CC3 Facilitate CCUS hub infrastructure development

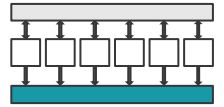
CC4 Establish transboundary CO₂ agreement

CC5 Promote local utilisation of CO₂ in industry



Key Enablers

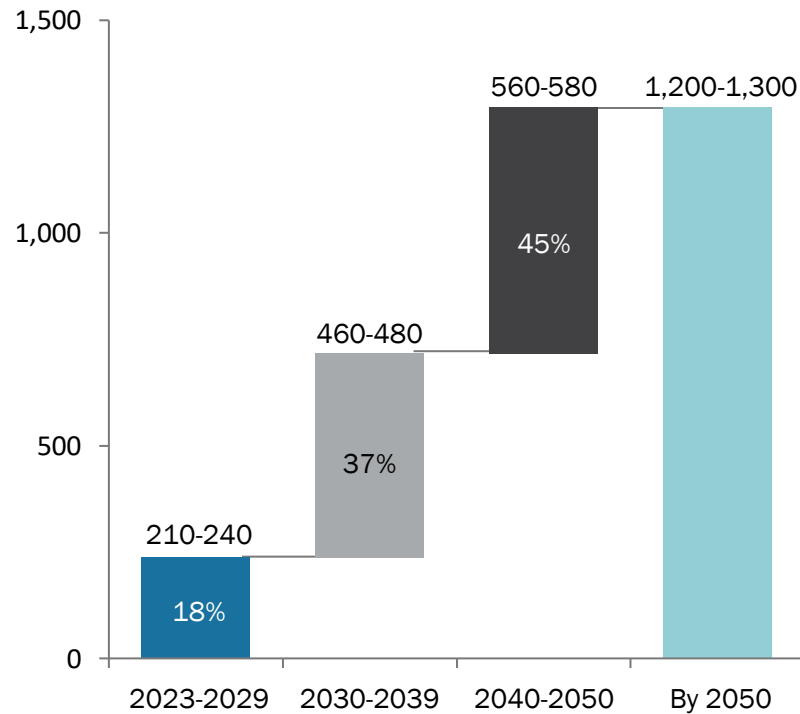




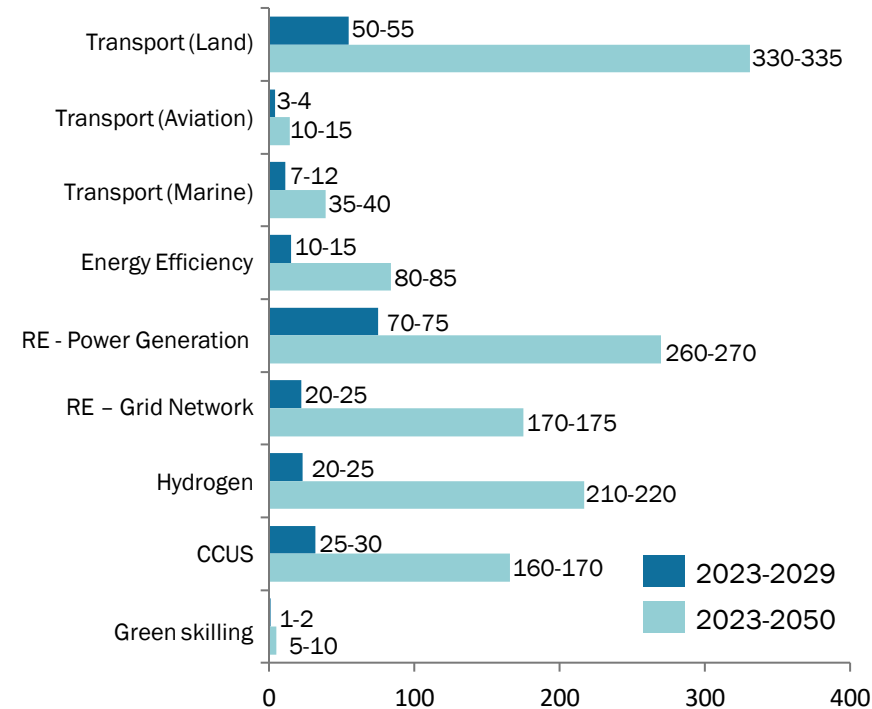
Energy Transition Financing Needs

Required investment between **RM1.2 trillion to RM1.3 trillion by 2050**. A National Energy Transition Facility (NETF) will be launched to expedite mobilisation of capital

By decade, RM billion



By categories, RM billion

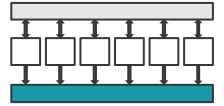


Key Initiative EN1

Launch a National Energy Transition Facility (NETF)

- Launch initial seed fund amounting to RM2 billion
- Explore the catalytic blended finance platform

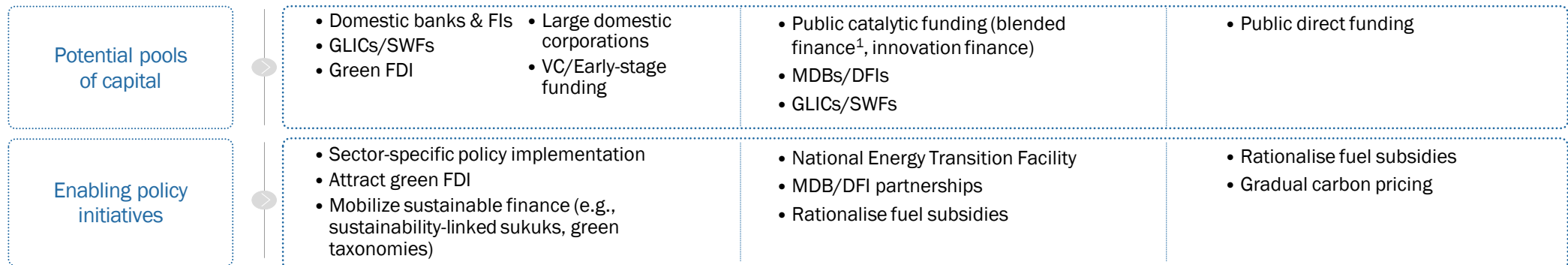
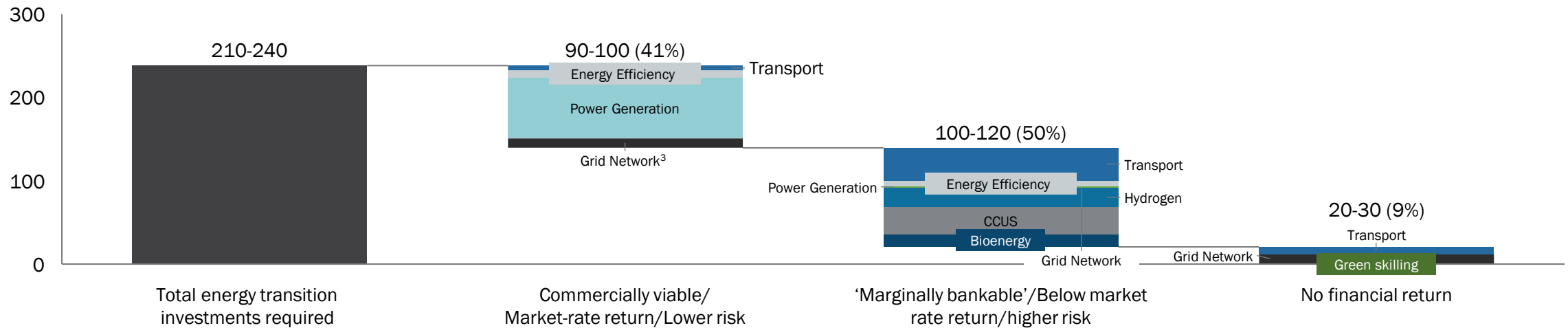
Note: NETR financing needs are additive and do not include business-as-usual investment required or projects already being financed (e.g. transmission and distribution, ongoing public transport projects) Source: PLEXOS, NETR team analysis

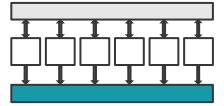


Energy Transition Financing Needs

Diverse capital pools will be used to support energy transition projects based on their financial returns and funding type

Est. investments required (2023 – 2029), RM billion

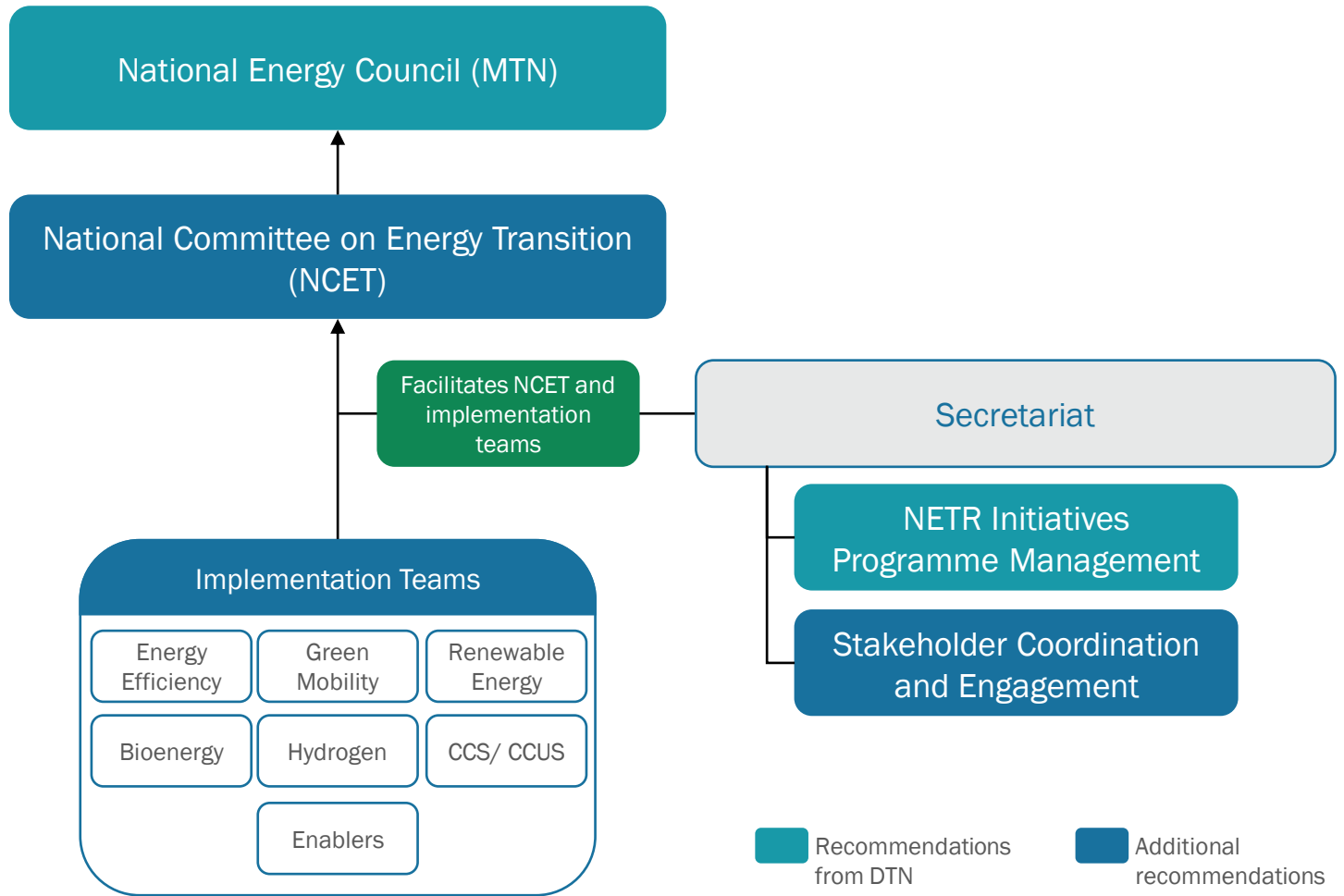




Governance and Implementation

YAB Prime Minister chairs the **National Energy Council (MTN)** to oversee Malaysia's energy sector planning and development.

The National Committee on Energy Transition (NCET) monitors the implementation of NETR and reports to MTN.



TERIMA KASIH