



PETRONAS

Monetising Gas Resources for National Development: Malaysia's Experience

Gas Training Seminar

'Access to Sustainable Energy for All With Gas'

Abidjan, Cote d'Ivoire : 4-5 November 2013

By :

Abd Rahim Mahmood

PETRONAS

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- **Malaysia at a glance**
- **The birth of petroleum industry**
- **PETRONAS' roles in national development**
- **The Gas Era**
- **Key Issues & Challenges**
- **Way Forward**



PETRONAS

Malaysia at a glance

Malaysia at a glance

Politics

Chief of State: King Tuanku Abdul Halim Mu'adzam Shah

Head of government: Prime Minister Mohamed NAJIB Abdul Razak

Political system: Parliamentary democracy with constitutional monarch

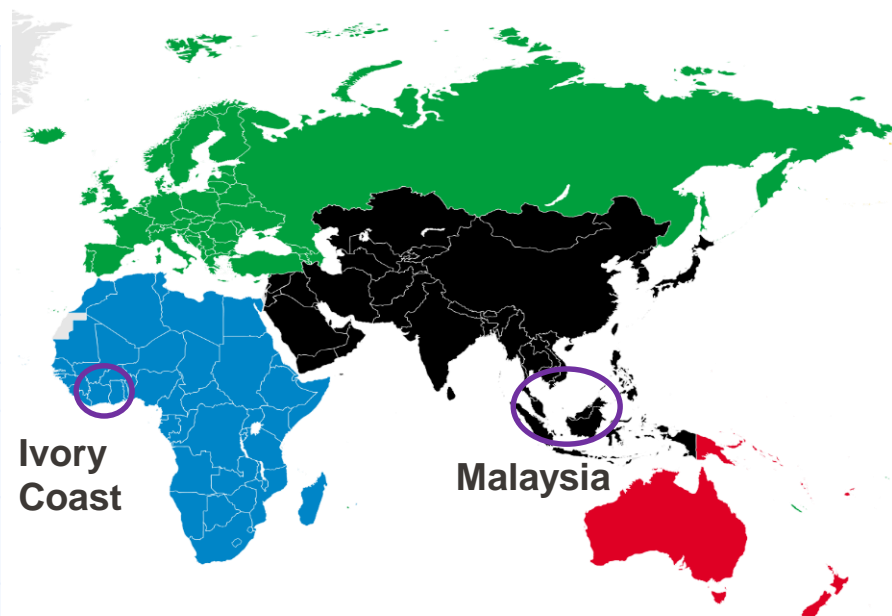
Long-Term Economic & Social Development

	1980	1990	2000	2010	2012
GDP Billion (US\$)	25	43	94	247	303
GDP per capita (US\$)	1,800	2,500	4,000	8,700	10,400
Inflation (%)	6.7	2.6	1.5	1.7	1.7
Population (mn)	13.5	17.9	23.2	28.3	29.6
Urban Population (% of total)	42	50	62	72	73

Structure of GDP by Output (%)

2012

Services	53
Industry	36
Agriculture	11



Major Trading Partners (2011)

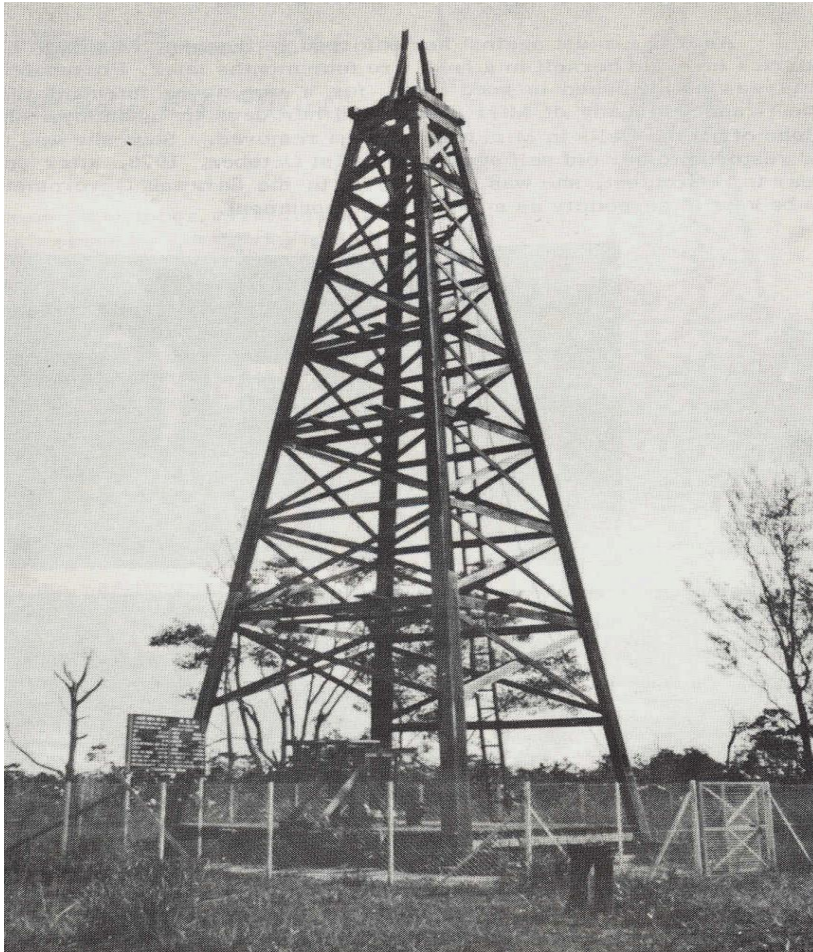
Exports		Imports	
Singapore	13.6%	China	15.1%
China	12.6%	Singapore	13.3%
Japan	11.8%	Japan	10.3%
US	8.7%	US	8.1%
Thailand	5.4%	Thailand	6%



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The birth of petroleum industry

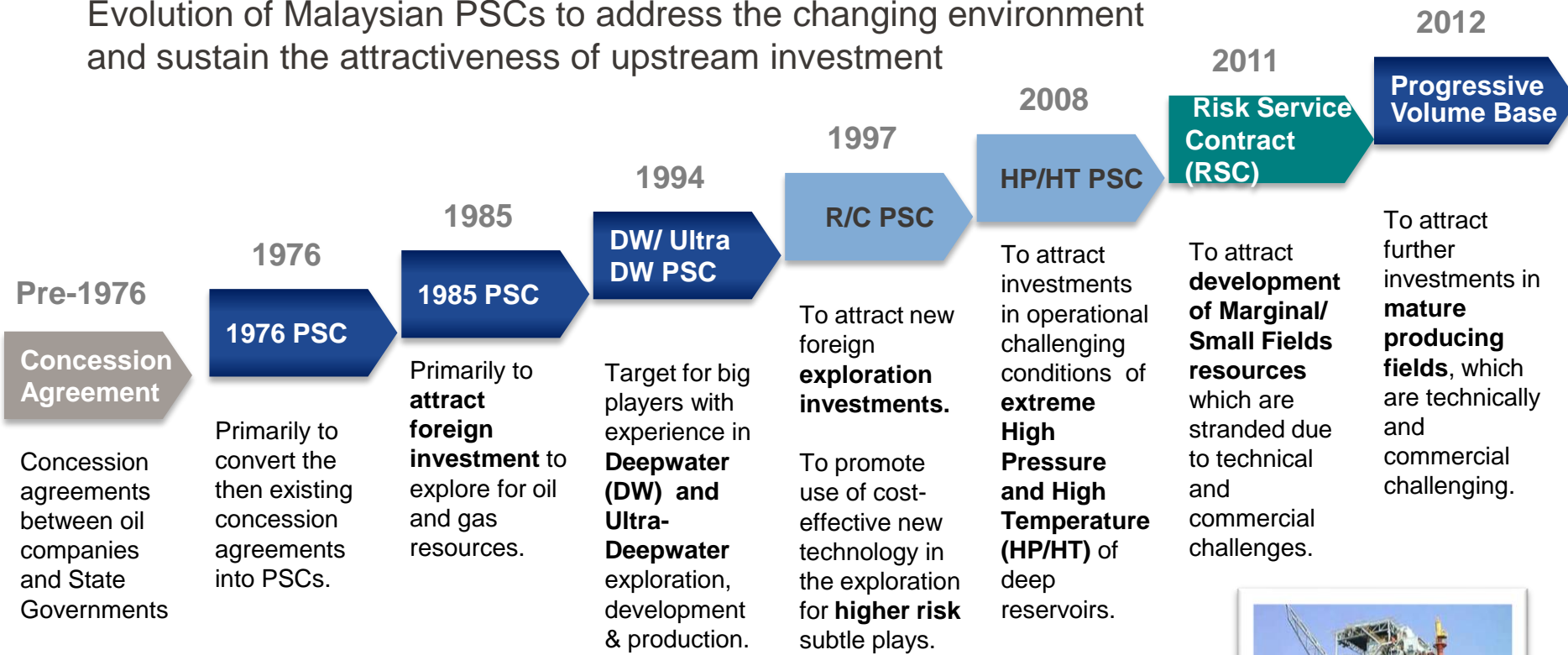
Oil was first discovered onshore in Sarawak in 1900, however, modern day drilling started in 1960s






- Oil first discovered in Miri in 1902 by Shell
- Miri was the first and only onshore production platform
 - Initial Production in 1910 -83 bbl/d
 - Peaked at 29,000 bpd in 1929
 - The well was decommissioned in 1972
- In the earlier days, IOCs were given concessions rights to develop domestic oil and gas fields.
- In Peninsular offshore, the contract areas were mainly between Conoco, Esso and Mobil.

Developing Malaysia's Upstream

Evolution of Malaysian PSCs to address the changing environment and sustain the attractiveness of upstream investment



-  Production Rate/Volume Based
-  Profitability Based
-  Performance Based

Legend:

DW: Deep water
R/C: Revenue over cost
HP: High pressure
HT: High temperature
RSC: Risk service contract

Note:

In 2011, improvement to DW PSC was made to encourage development of deepwater gas.

Source: Petroleum Management Unit (PMU), PETRONAS

Relationship and demarcation of roles between key stakeholders



PDA



PSC



Features

- Ownership of petroleum resources is vested upon PETRONAS.
- PETRONAS has exclusive rights to explore and develop petroleum resources.
- Converted Concession System to Production Sharing Contracts (PSC).
- PS Contractors provide all risk capital & financing
- Stipulates contractual period, management of operations, recovery of costs, division of profits, obligations of parties.

PETRONAS' Roles

- As a custodian to manage the petroleum resources of the nation.
- Formulates relevant policy and guidelines.
- Provides incentives and conducive investment environment for upstream
- Adds value to the petroleum resources.
- Plans and secures long term development of nation's petroleum resource base.
- Promotes sustainable and orderly exploration, development and production of resources to maximize benefit for the nation.
- Monitor performance of PSC partners vis-à-vis :
 - Petroleum operations
 - Finance and cost competitiveness
 - Technology Transfer

PETRONAS is the policy instrument of the Government and serves as a conduit for nation building

PETRONAS - custodian and manager of Malaysia's petroleum resources



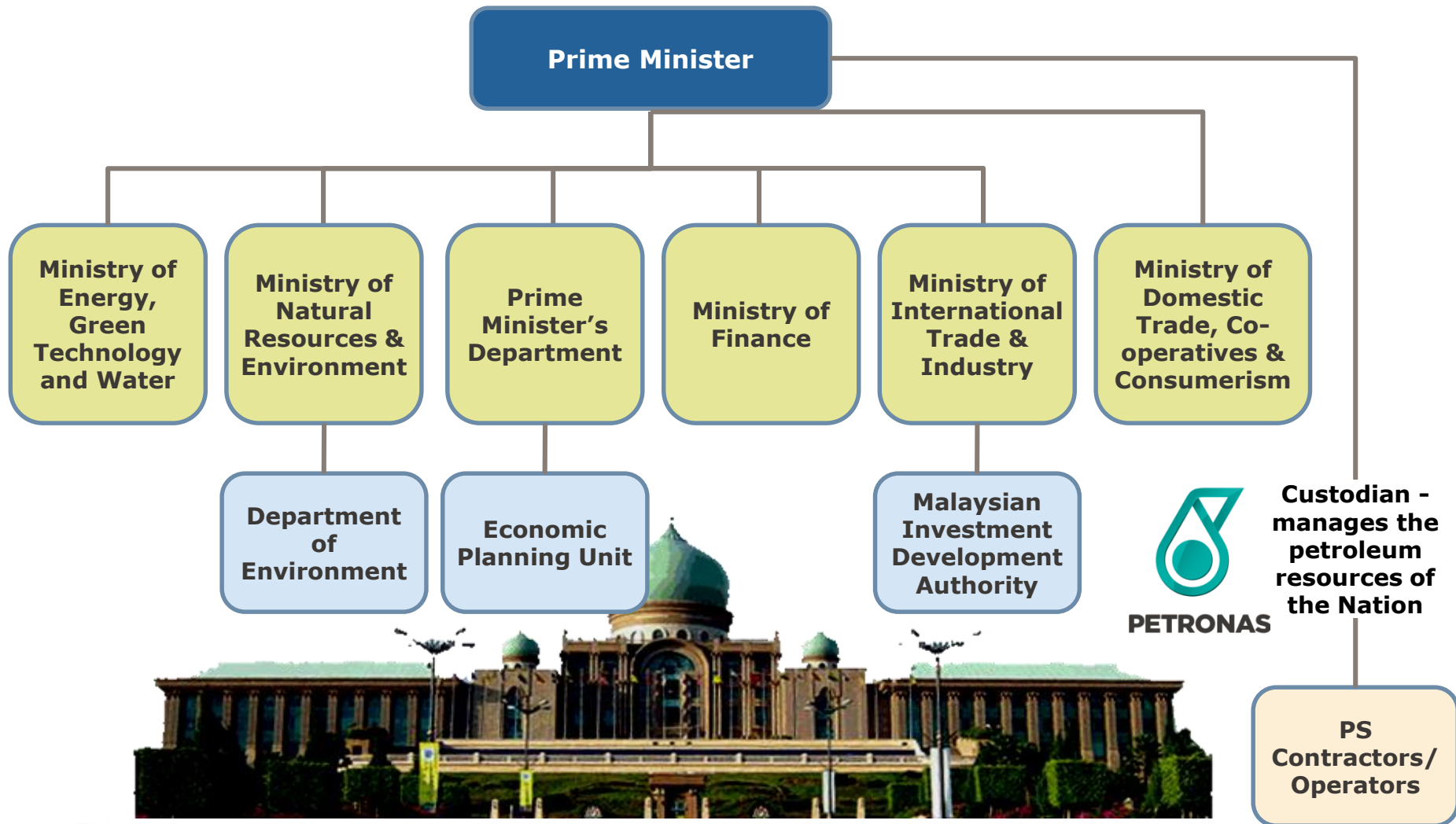
1st Office in Jalan Dato' Onn (1974)



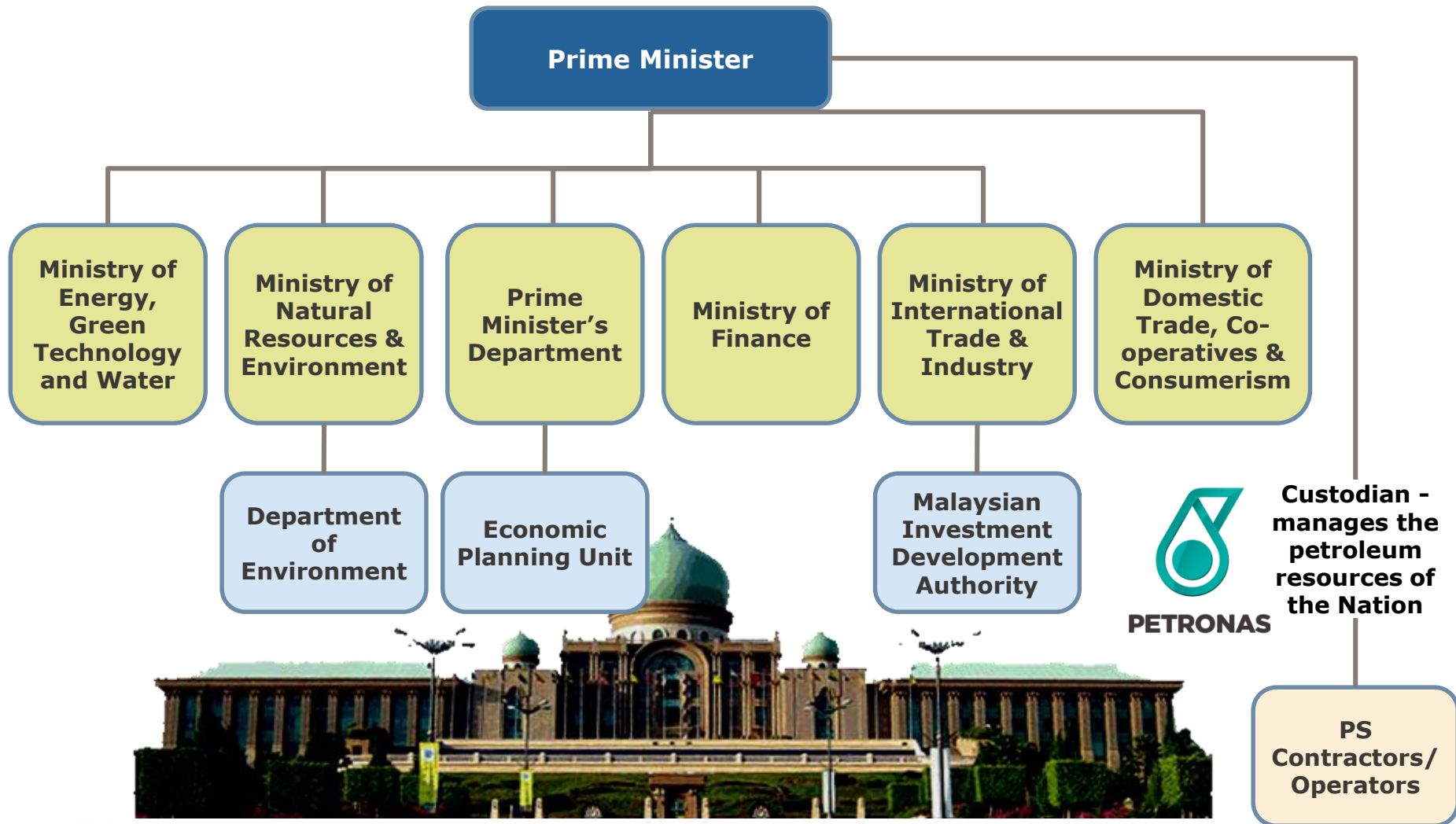
Total workforce in 1974: 15

- PETRONAS was incorporated on 17 August 1974 as a company under the Malaysian Companies Act 1965.
- The Malaysian Petroleum Development Act 1974 vested upon PETRONAS the exclusive rights to explore and produce petroleum resources within Malaysia.
- 100% owned by the Government of Malaysia, PETRONAS reports directly to the Prime Minister.

Institutional & organisational structure of the petroleum Industry in Malaysia



Institutional & organisational structure of the petroleum Industry in Malaysia



Start on the right footing with the right principles



- Our country's leaders had the foresight to establish PETRONAS on the right footing
- PETRONAS was set up as a commercial entity
 - Commercial mindset
 - Clear governance structure
 - Managing business in professional manner
 - Flexibility to expand and grow
- A highly supportive Government

Petronas vision, mission and values driving strong performance

Vision: A Leading Oil and Gas Multinational of Choice

Mission

We are a business entity

Petroleum is our core business

Our primary responsibility is to develop and add value to this national resource

Our objective is to contribute to the well-being of the people and the nation

Shared Values

Loyalty

Integrity

Professionalism

Cohesiveness

Who We Are Today

Fully integrated multinational oil and gas corporation with operations along the hydrocarbon value chain spanning over 50 countries

Global Fortune 500

75

by Revenue

19

by Profits

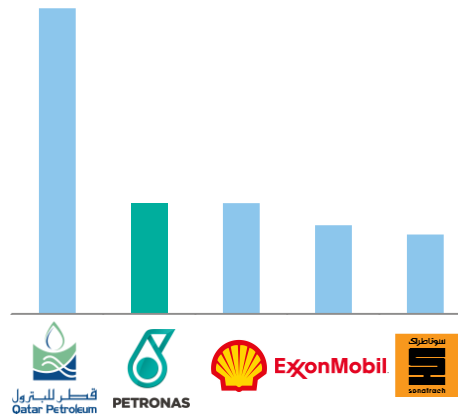
6

Most Profitable
among Oil and Gas
Companies

LNG production capacity

2

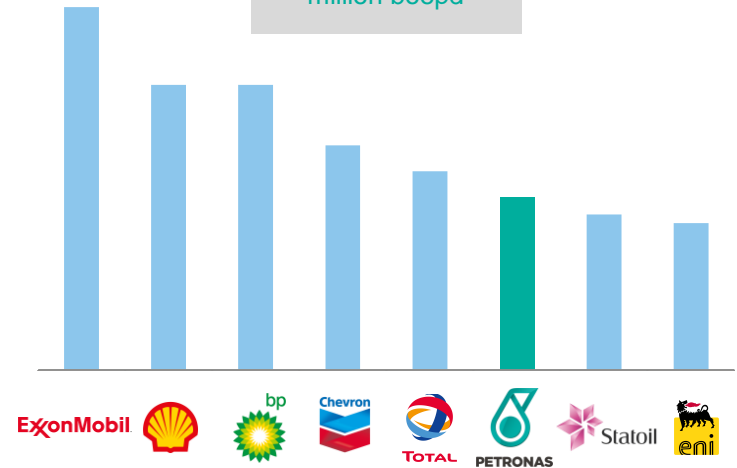
in the world*



Oil and gas production

2

million boepd



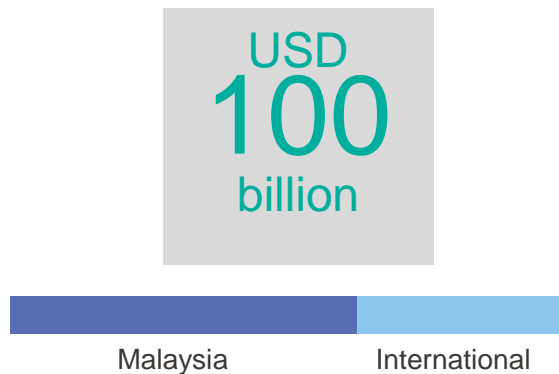
* tied with Shell
(Source: Wood Mackenzie)

...with robust financial standing

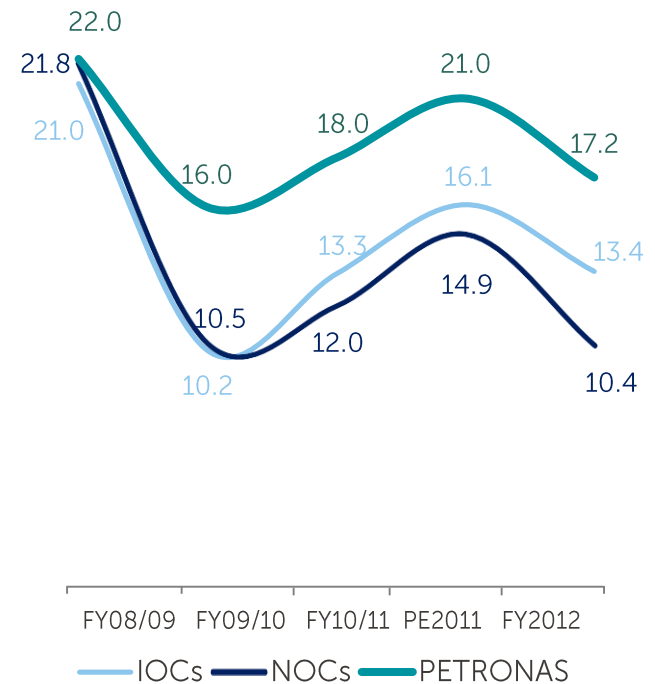
Strong balance sheet with robust cash holdings to capitalise on opportunities for growth



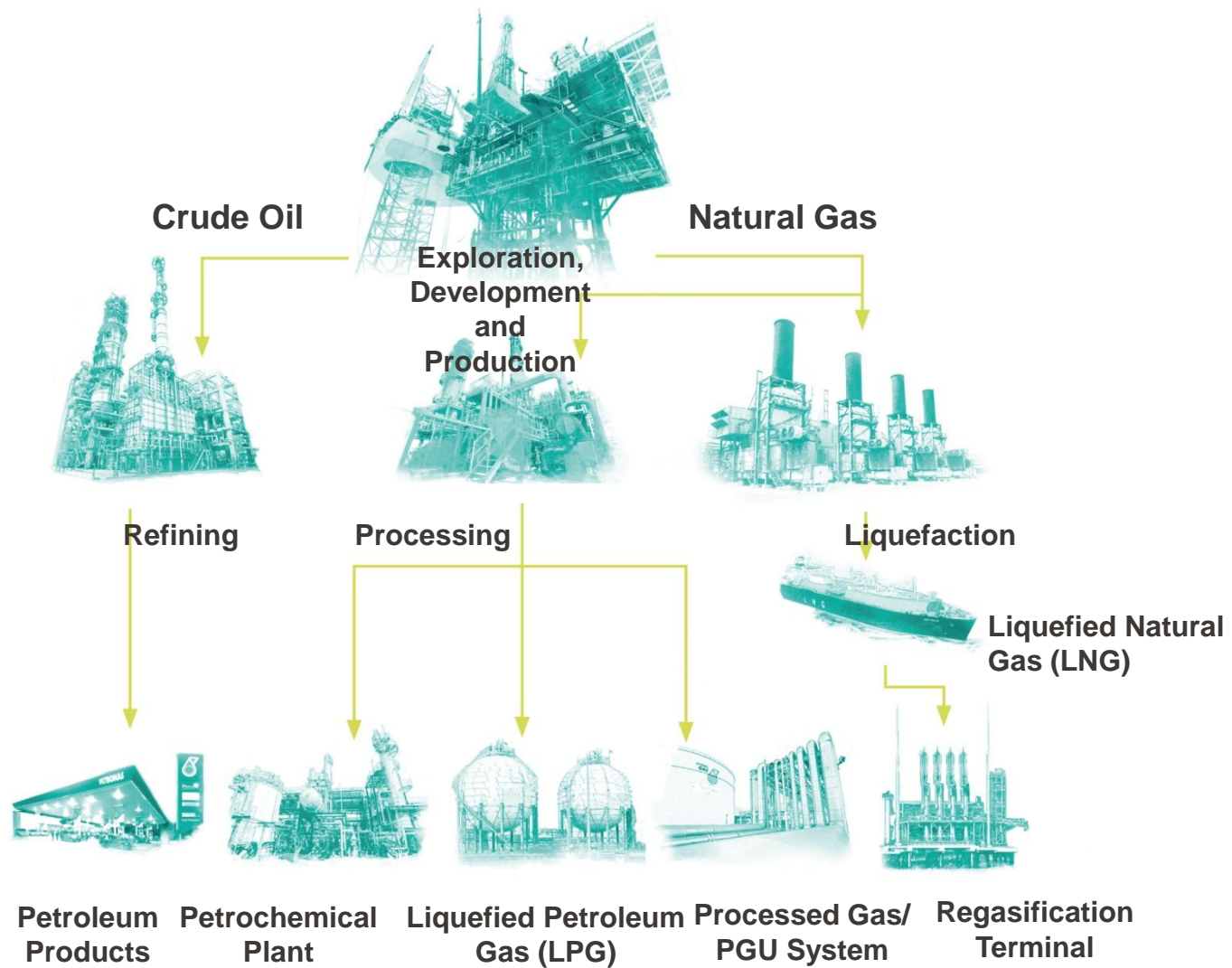
5-year Capital Expenditure programme



Return on Average Capital Employed (ROACE) in percentage (%)



...and a Fully Integrated Business

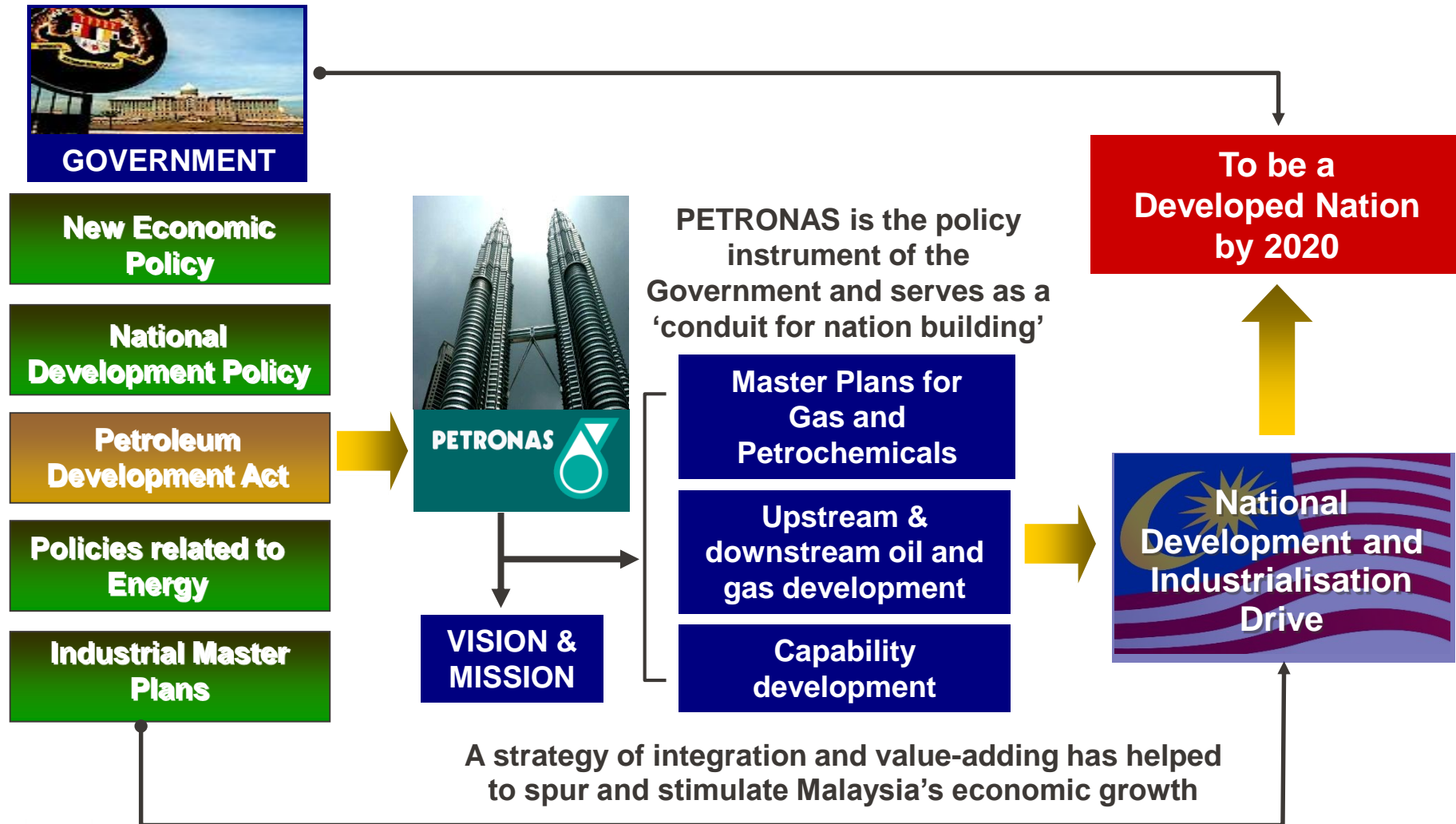




PETRONAS

PETRONAS' roles in national development

Being a business entity, PETRONAS is focused on its role to support the Federal Government on national development



Malaysia has crafted a coherent and cohesive direction in energy policy to ensure orderly development of the energy industry in Malaysia



Industrial masterplans provide the framework for gas utilization in key economic sectors



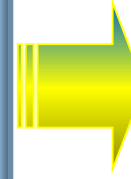
First IMP (1996-1995)

- ❑ Lay foundation for manufacturing to become leading growth sector
 - Continuation of export-led strategy
 - Renewed emphasis on promotion of resource-based industries



Second IMP (1996-2005)

- ❑ Strengthen linkages, increase value-added activities & enhance productivity
 - Development of clusters
 - Shift towards higher technology & capital-intensive activities
 - Target growth in productivity
 - Gear development towards equitable distribution



Third IMP (2006-2020)

- ❑ Achieve long-term global competitiveness through transformation and innovation of the manufacturing and services sectors
 - Enhancing Malaysia's position as major trading nation
 - Integrating Malaysian companies into regional and global networks
 - Strengthening role of private sector institutions

Petronas helps to spur development of nation's economy...

Entry Point Projects (EPPs) for
Oil, Gas & Energy industry

GNI contribution of USD41 billion

EPP 1

Rejuvenating Existing Fields
Through EOR

EPP 2

Developing Small Fields through
Innovative Solutions

EPP 3

Intensifying Exploration Activities

EPP 5

Unlocking Premium Gas
Demand in Peninsular Malaysia

EPP 13

Increase Petrochemical Outputs

5 year intensified
CAPEX programme

More than USD93 billion for
:-

- Aggressive E&P activities
- Unconventional Resources
- Regasification Terminals
- LNG expansion
- Power plant projects
- Refinery & Petrochemical complexes
- Asset integrity, maintenance & HSE programmes

... at the same time, PETRONAS has also been involved in education, knowledge and capability building



**Universiti
Teknologi
PETRONAS
(UTP)**



**Institut
Teknologi
Petroleum
PETRONAS
(INSTEP)**



**Akademi Laut
Malaysia (ALAM)**



**PETRONAS
Leadership
Centre (PLC)**



**Science
Discovery
Centre**



**Program Sentuhan
Ilmu PETRONAS**



**Early Childhood Care
and Development
Programme, Yetagun,
Myanmar**



**Vocational Training
(Global Training
Programme)**



**Leadership
Programmes**

In conclusion, the successful development of the petroleum industry has benefited the nation and PETRONAS



The Nation



- Attracting foreign direct investment (FDIs)
- Creation of jobs
- Creation of small and medium industries (SMEs)
- Development of skilled manpower
- Broaden and diversify the industrial and manufacturing based industries
- Contribute to the continuous development of Malaysian economy

- Value creation for oil and gas resources
- Downstream integration
- Development of skilled manpower and expertise in the oil and gas industry
- Opportunity to pursue strategic alliance, collaboration and partnerships with major global players and NOCs
- Ability to leverage on domestic strength to go global



PETRONAS

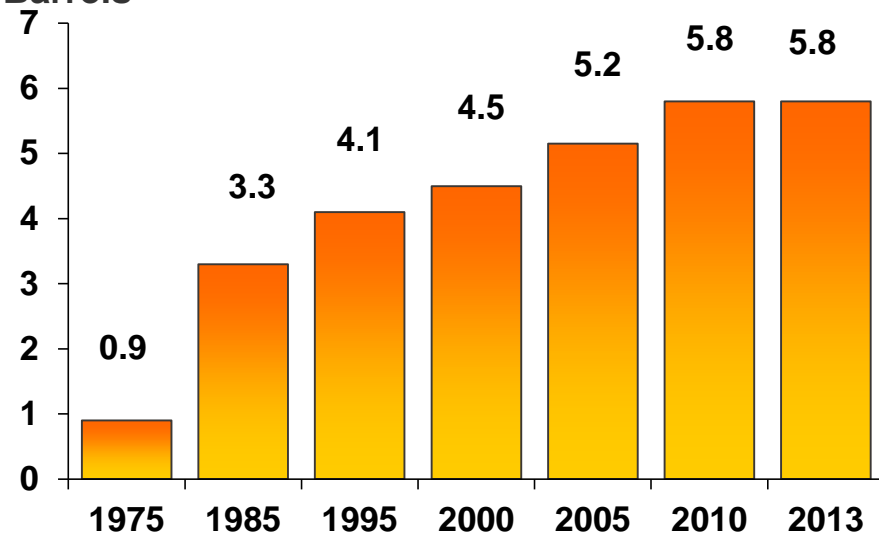
The Gas Era

Malaysia's oil and gas reserves



Oil Reserves

Billion
Barrels

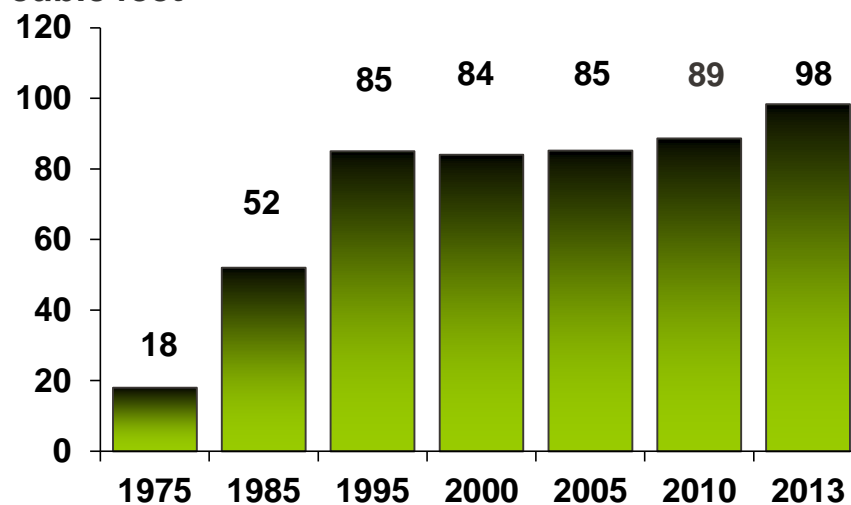


**including condensate*



Gas Reserves

Trillion
Standard
cubic feet



Reserve Life

*World Ranking **

98.3 TCF

Gas

20

21

**5.8
Billion bbls**

Oil

16

27

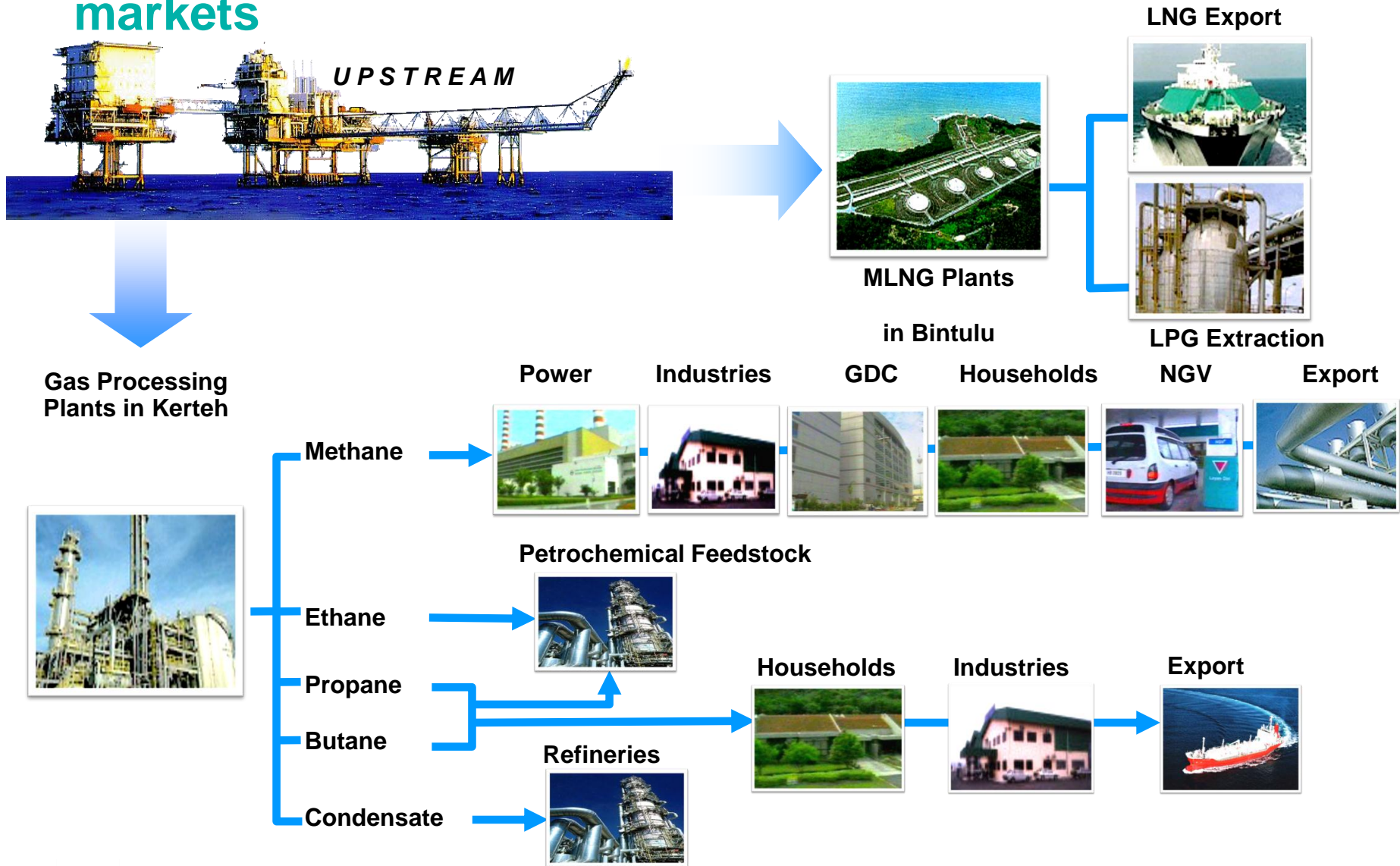
Gas development requires long term strategy and integrated planning

- **Gas Masterplan Study was undertaken in 1981.**
- **Market demand is an important factor in gas planning and development.**
- **64% of our gas reserves is in offshore Sabah and Sarawak.**
- **Peninsular Malaysia has a higher population density. Potential to develop gas reserves for domestic consumption and to spur economic growth.**
- **Peninsular Gas Utilisation Project was implemented arising from the Gas Masterplan Study**

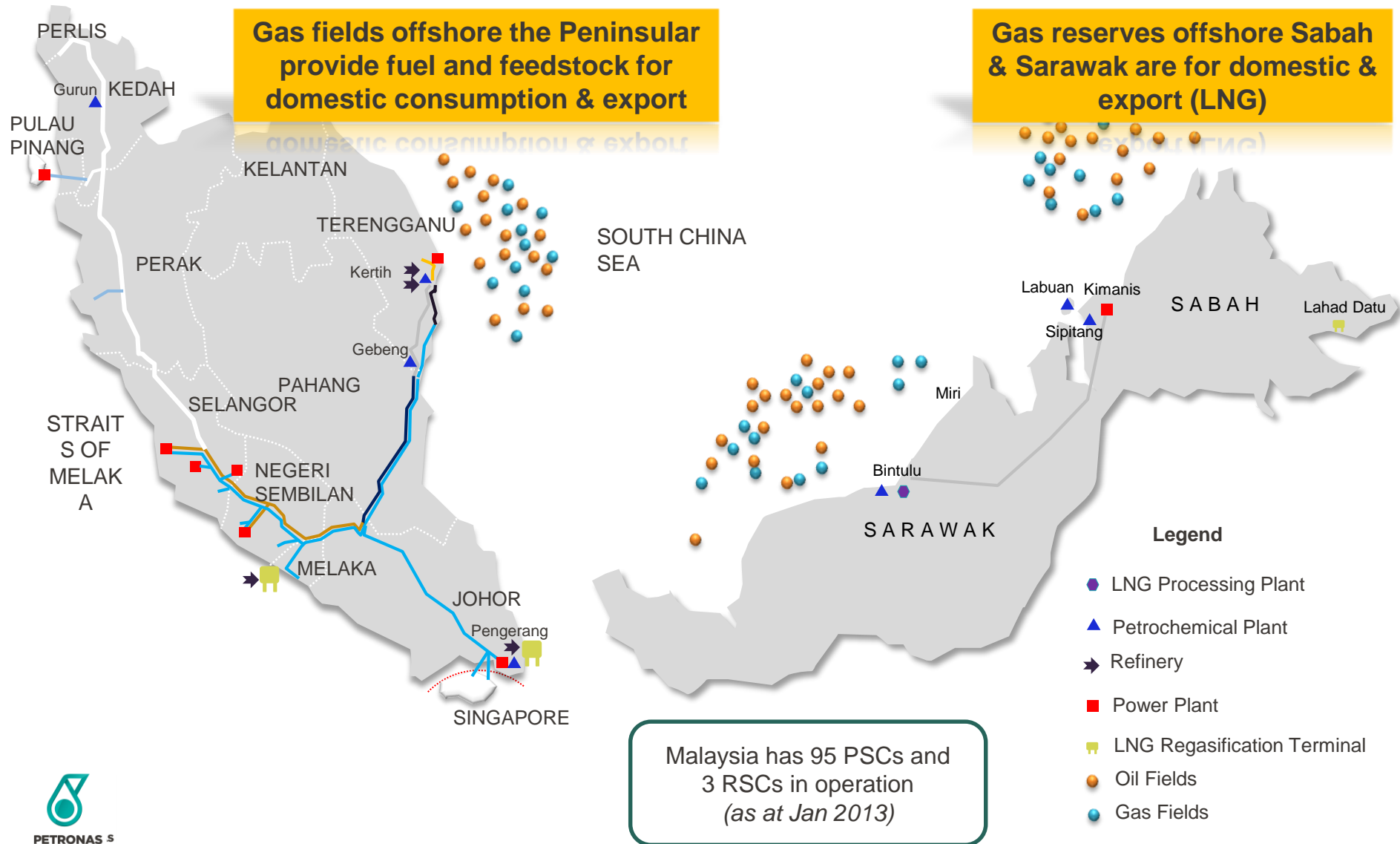
The gas industry is one of the major contributors to the Malaysian economy ...

- **Diversify Malaysia's sources of revenue**
- **Promote foreign investment**
- **Expand the nation's industrial & manufacturing base**
- **Trigger spin-off benefits in gas-based industry**
- **Create employment in various industrial zones**
- **Build knowledge, capability and competency**
- **Progressive liberalization of domestic gas market**

Demand for natural gas comes from domestic & export markets



PETRONAS promotes a sustainable and orderly petroleum industry for the nation



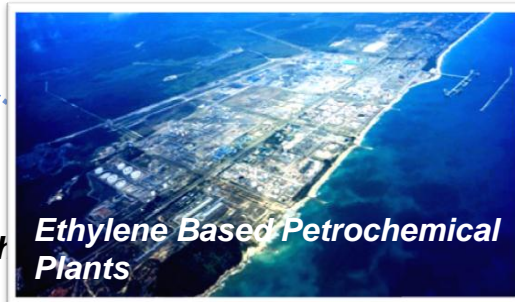
In Peninsular Malaysia, the power sector remains the key market for gas



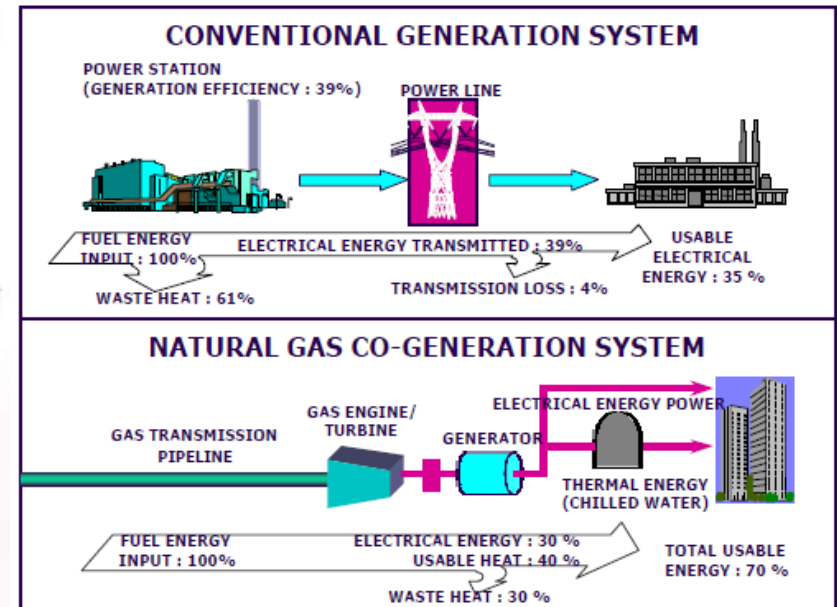
Downstream Facilities:

• Pipelines (excluding Sarawak)	2,505 km
• No. of City Gates	27
• No. of Slugcatchers	3
• Kertih GPPs	6 (2,060 mmscfd)
• TTM GSP	1 (316 mmscfd)
• Compressor stations	3
• Supply capacity:	
- From Offshore Terengganu	1,635 mmscfd
- Imports	511 mmscfd

Gas also served as feedstock to develop the development of petrochemical industry in Malaysia



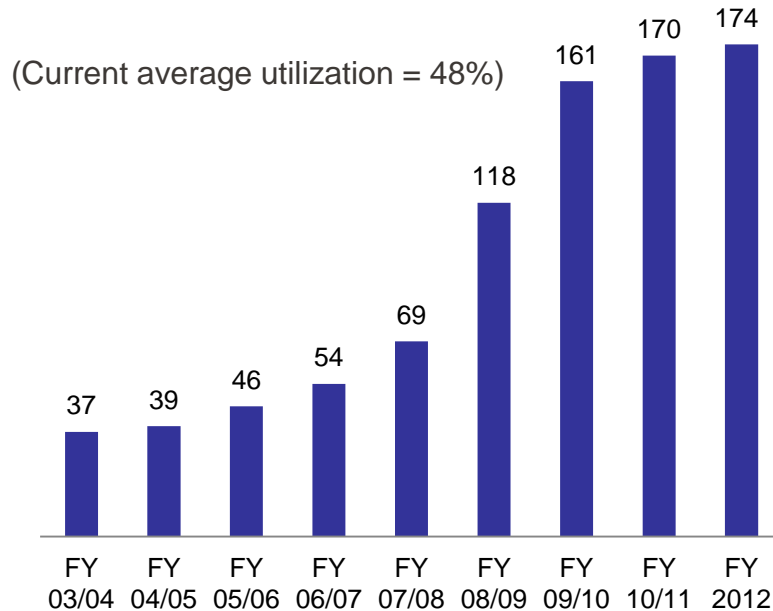
Gas is also supplied via PGU pipeline for Gas District Cooling and transportation



NGV was introduced in 1984 as an environmentally friendly alternative fuel

There are now 174 NGV stations ..

NGV Stations Development

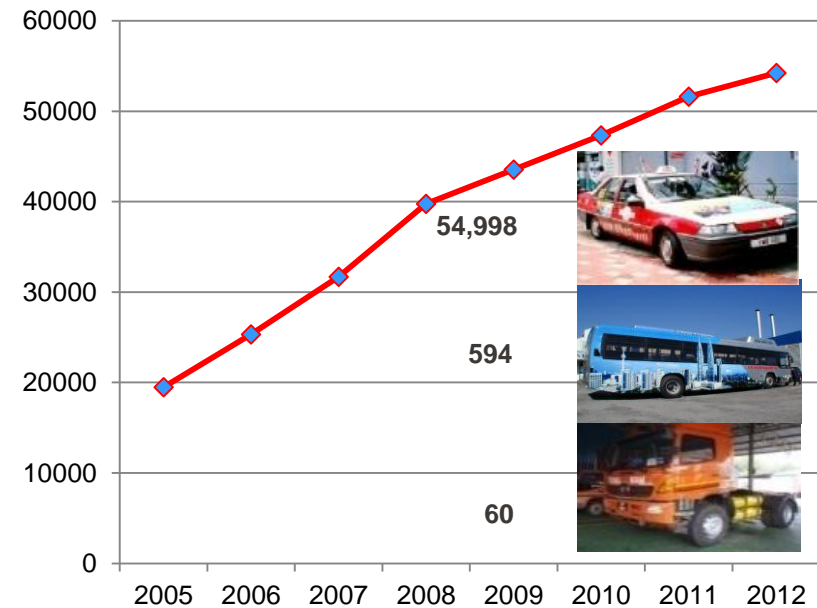


Notes:

- 1) Volume supplied by PNGV in 2012 amounts to ~ 320 million le
- 2) Historical year-on-year (2010 – 2012) growth of NGV volume is around 4 to 5%. This trend is expected to continue should NGV and RON 95 prices remain.

.. servicing over 50,000 vehicles with further growth expected in the future

NGV Vehicles In Malaysia



Notes:

- 1) Currently, around 200-300 vehicles are converting to NGV each month (mostly taxis)

In addition to meeting domestic demand for gas, Malaysia is also a major LNG exporter



Pacific NorthWest LNG,
British Columbia
Target FID – 2014 for 2
trains of 6 mtpa each

PETRONAS Floating
LNG 1 & 2
1st in the world
Target 2015 for PFLNG 1
of 1.2 mtpa

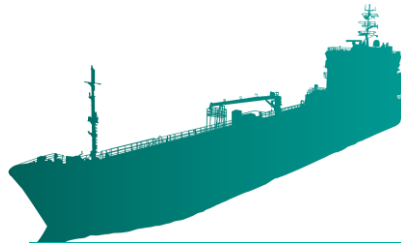
Gladstone LNG
7.8 mtpa
Target first export – 2014

Train 9, PLC
Additional 3.6 mtpa LNG
production

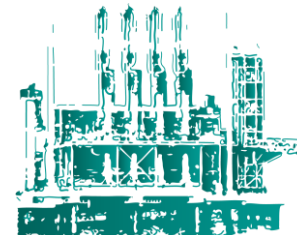
PETRONAS LNG
Complex (PLC) Bintulu
25.7 mtpa LNG
production

Egyptian LNG, Idku
4.5 mtpa LNG production

Sustaining LNG Leadership Position



MISC Fleet of 27 LNG
Carriers
Worlds' leading owner-
operator of LNG carriers



Dragon LNG, Wales
5.4 mtpa regas terminal

Regas Terminal 1 – 3,
Malaysia
Melaka – 3.8 mtpa
Pengerang – 3.8 mtpa (2016)
Lahad Datu – 0.8 mtpa



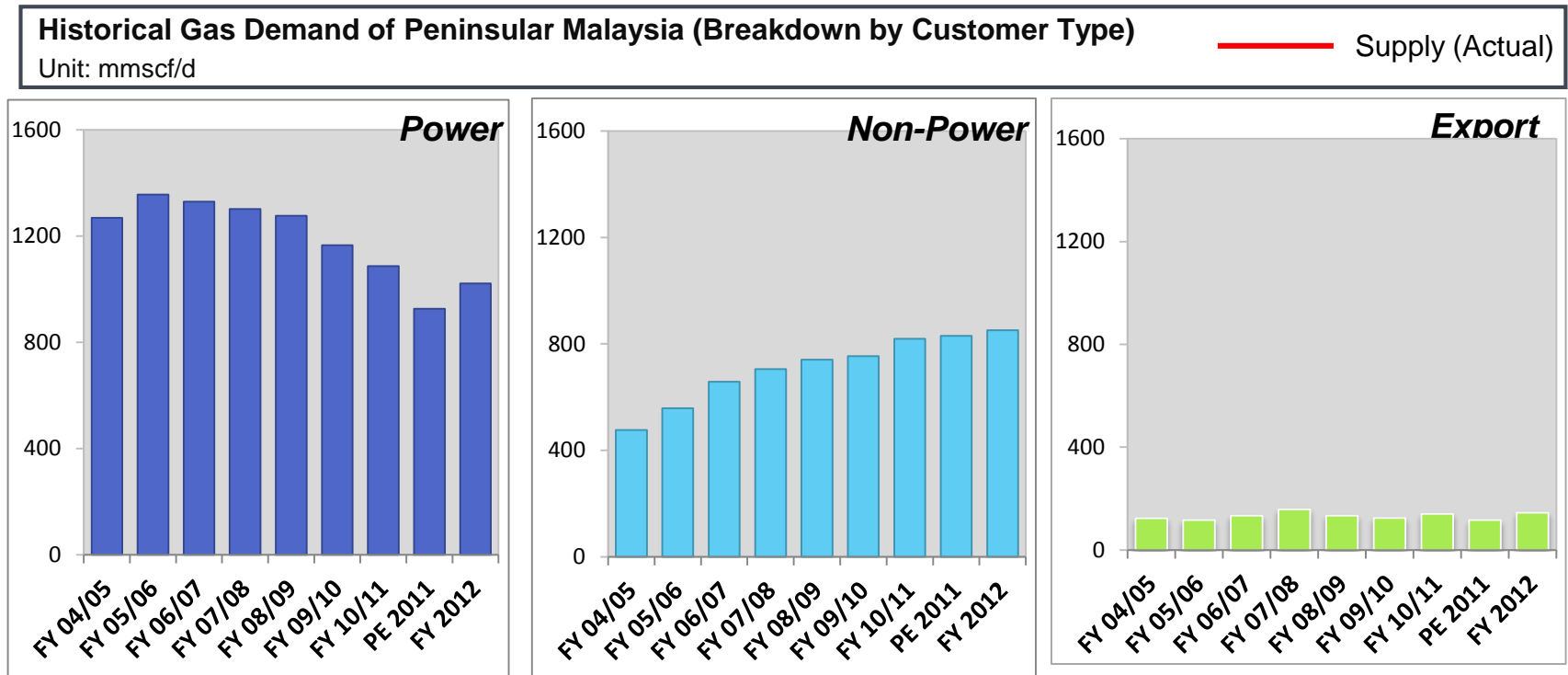
Japan, South Korea, Taiwan,
China
Almost 30 years of on-time &
on-schedule deliveries



PETRONAS

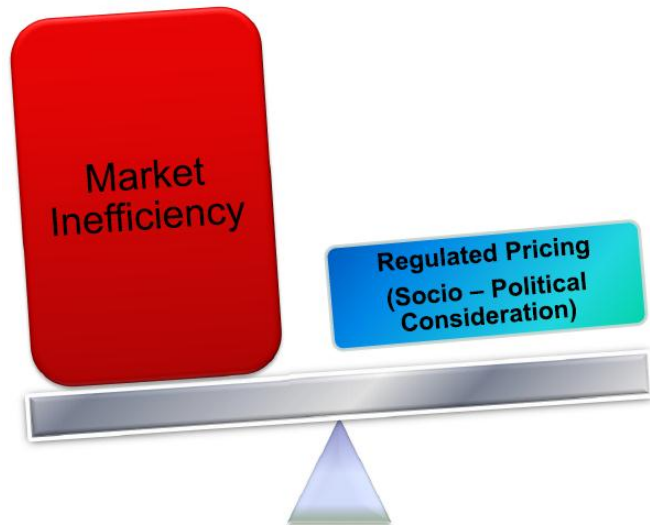
Key Issues & Challenges

Regulated prices have 'artificially inflated' gas demand



- Regulated and below market gas prices have created unsustainably high demand for gas
- End users preference to gas have increased compared to other higher cost alternative fuels such as diesel, LPG or fuel oil
 - Power generation highly dependant on gas
 - Conversion of fuel by industrial customers

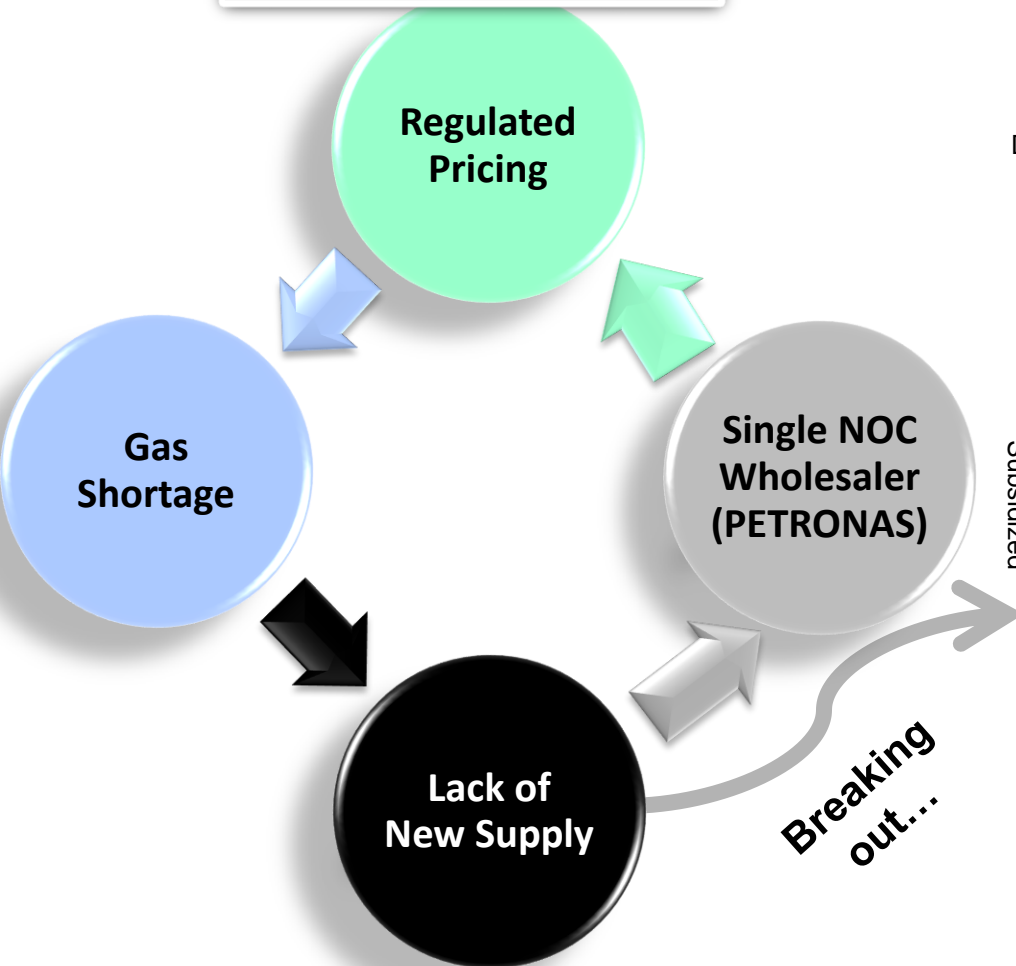
Subsidized gas prices have their drawbacks



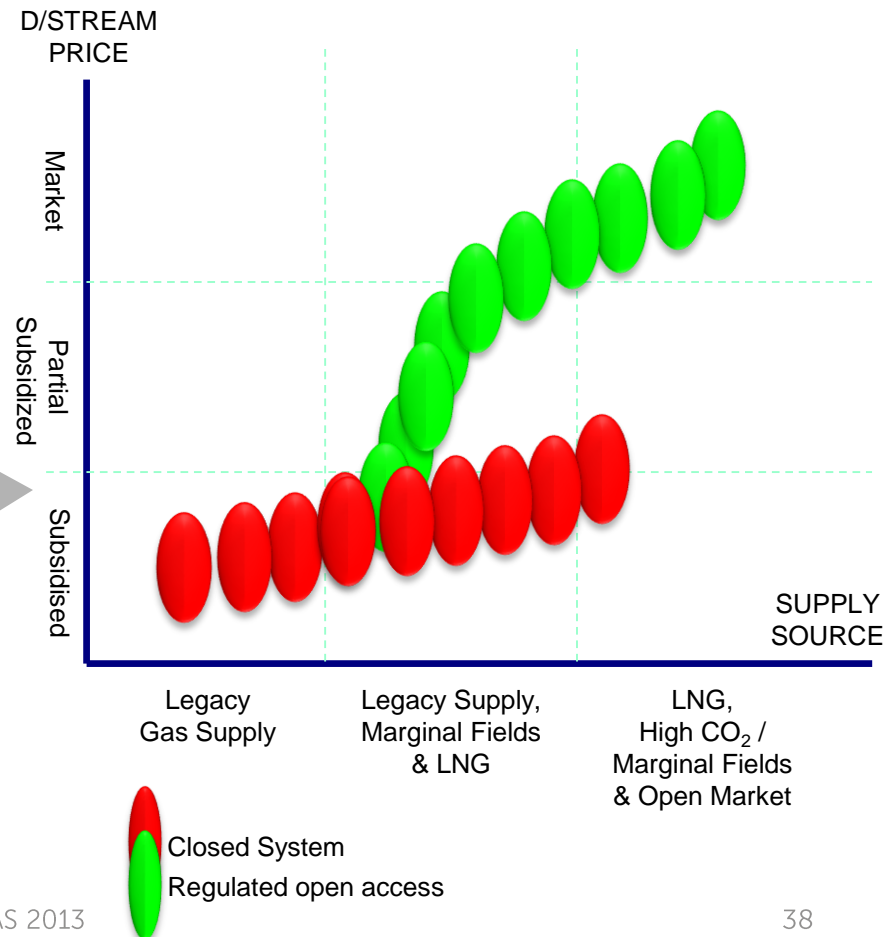
- **Disincentive to supply fuel, potentially leading to shortages**
- **Hinders creation of fuel trading hub and associated high value added downstream activities**
- **Distorts allocative efficiency and encourages excessive energy consumption**
- **Artificially sustaining non-competitive industries, perpetuating the middle income trap**
- **Reduces attractiveness of sustainable RE**
- **Accelerates depletion of domestic fuel reserves**
- **Benefitting even those who can afford to pay market prices**

Prolonged regulated pricing causes market imbalance & inefficiencies therefore market reform is necessary...

From inefficiencies...



..to a sustainable & efficient market





PETRONAS

Way forward

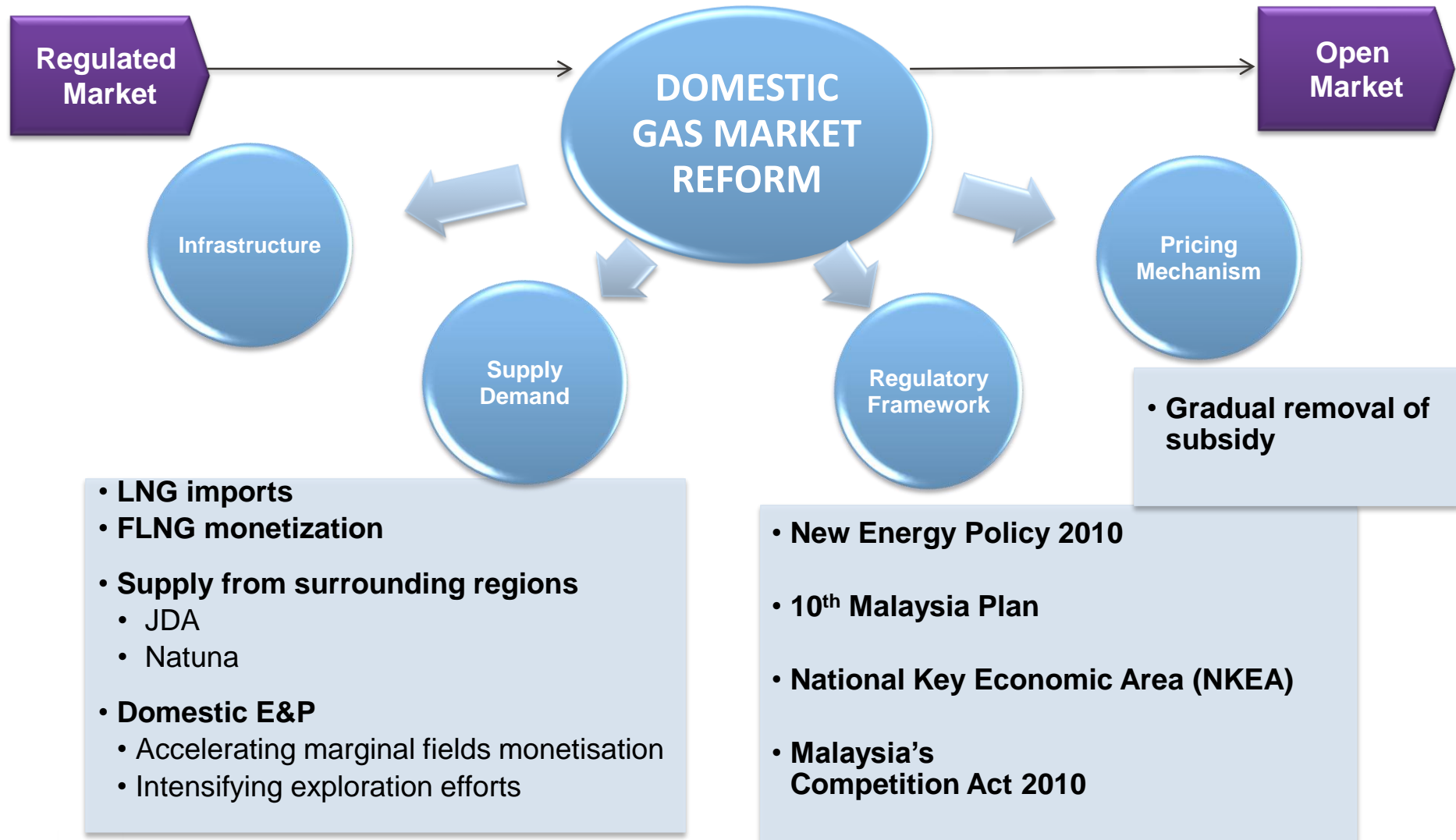
In summary, OGE NKEA* makes up bulk of Economic Transformation Program investments

Oil, Gas and Energy NKEA



*NKEA- National Key Economic Areas
OGE – Oil, Gas & Energy

Government and PETRONAS are undertaking transformation efforts to ensure efficient and sustainable domestic gas market



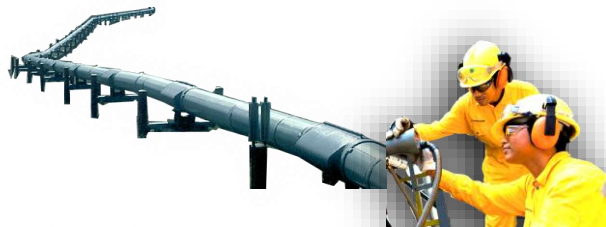
PETRONAS has put in extensive efforts which required considerable capital investment to enhance the country's gas security

IMMEDIATE SOLUTIONS

- Intensify demand-side management to dampen substitution effect
- Enhance production from existing producing fields through debottlenecking, gas recovery improvement and production acceleration programs
- Supply sourcing from neighbouring countries

LONGER TERM SOLUTIONS

- Securing additional gas supplies from imported sources, e.g., LNG importation via regasification terminals, and supply from MTJDA and Indonesia
- Intensifying exploration efforts and embarking on new fields development particularly marginal fields
- Monetisation of stranded gas via Floating LNG production unit (FLNG)
- Actively advocating gas market transformation



A decorative graphic on the left side of the slide, composed of several overlapping, semi-transparent teal triangles of various shades, creating a dynamic, abstract shape that tapers towards the bottom.

The End