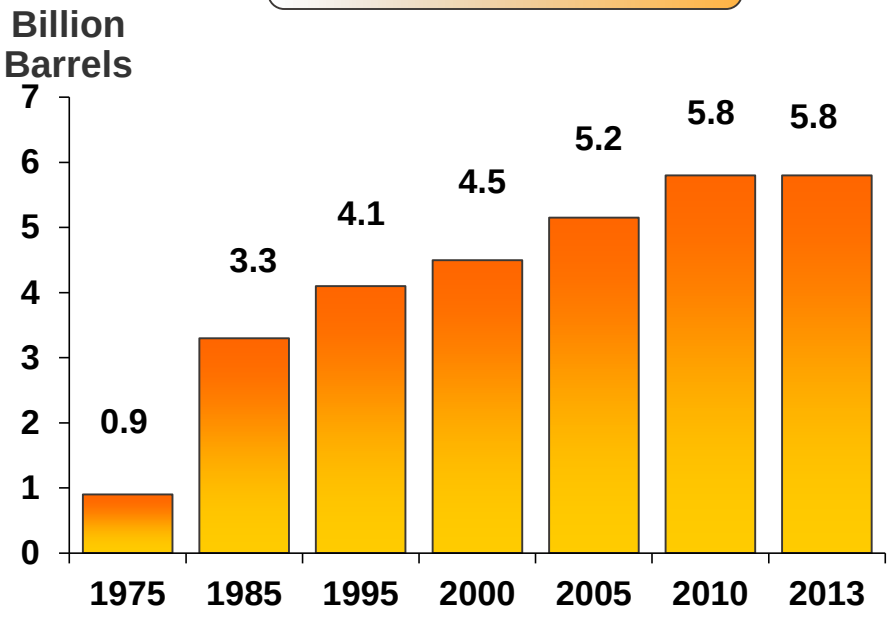
The Gas Era

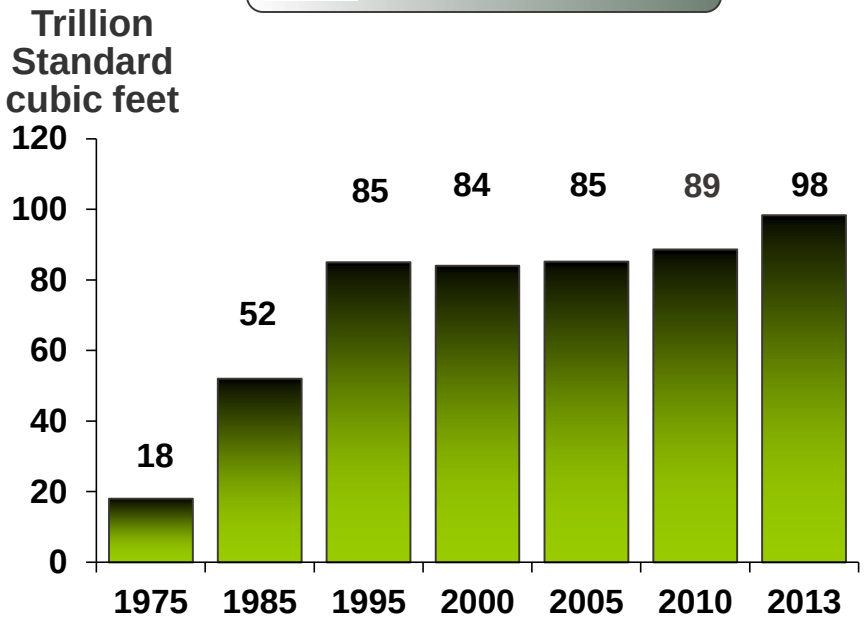
Malaysia's oil and gas reserves

Oil Reserves



*including condensate

Gas Reserves



***98.3** TCF*

***5.8 Billion** bbls*

	Reserve Life	World Ranking *
Gas	20	21
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

LNG Export

MLNG Plants in Bintulu

LPG Extraction

Gas Processing Plants in Kerteh

Methane

Ethane

Propane

Butane

Condensate

Power

Industries

GDC

Households

NGV

Export

Petrochemical Feedstock

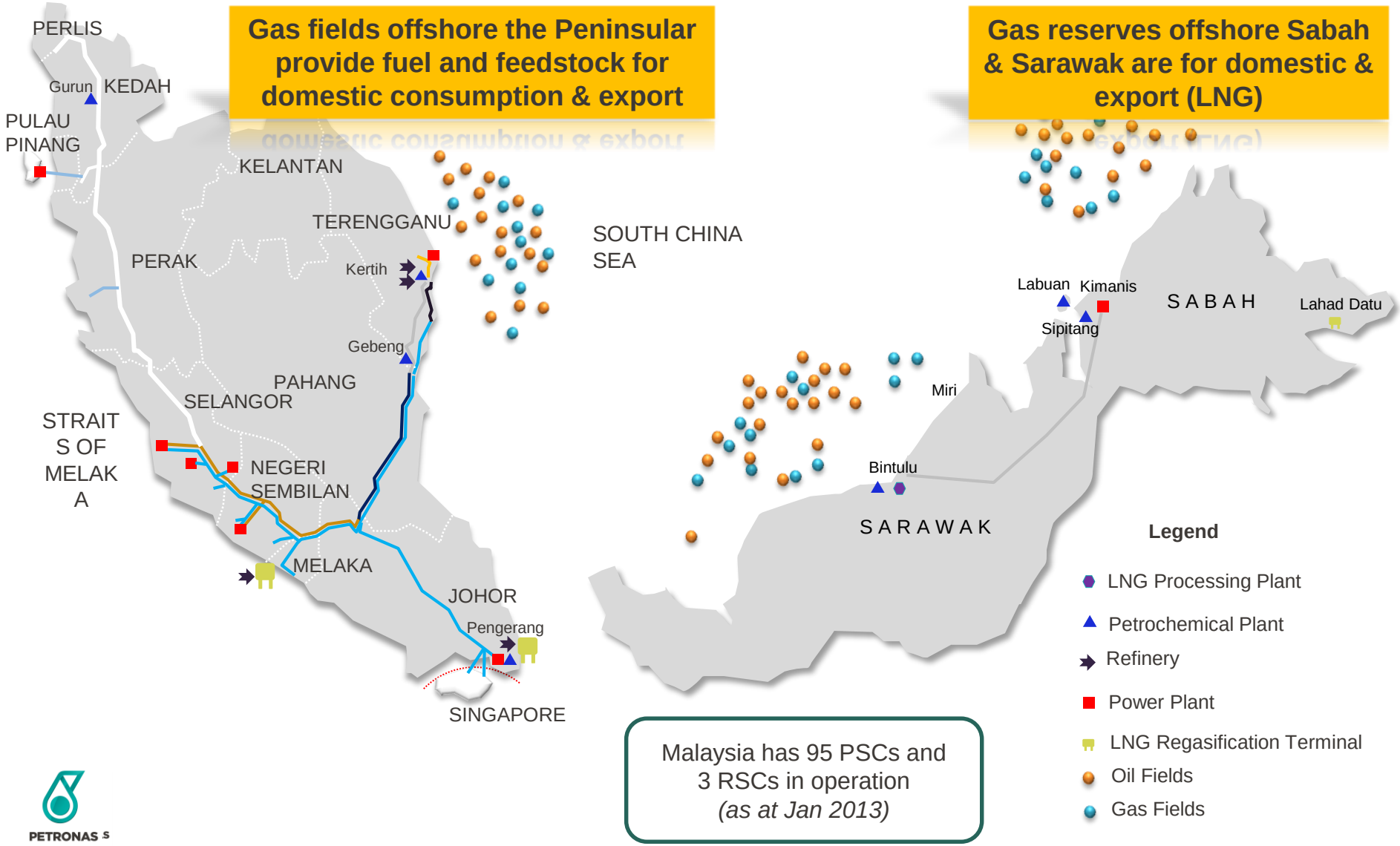
Refineries

Households

Industries

Export

PETRONAS promotes a sustainable and orderly petroleum industry for the nation



Malaysia has 95 PSCs and 3 RSCs in operation *(as at Jan 2013)*

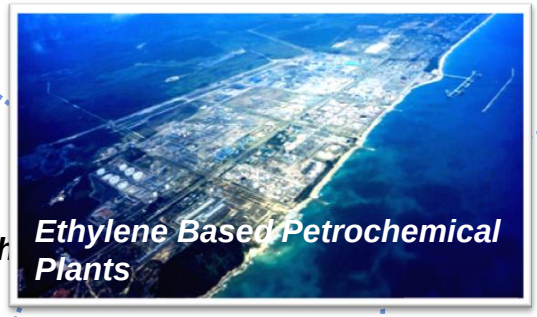
PETRONAS

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



Gurun

Kertih

PENINSULAR MALAYSIA

Kuantan

Propylene Based Petrochemical Plants

Pasir Gudang

Ethylbenzene / Styrene Monomer

Labuan

SABAH

BRUNEI

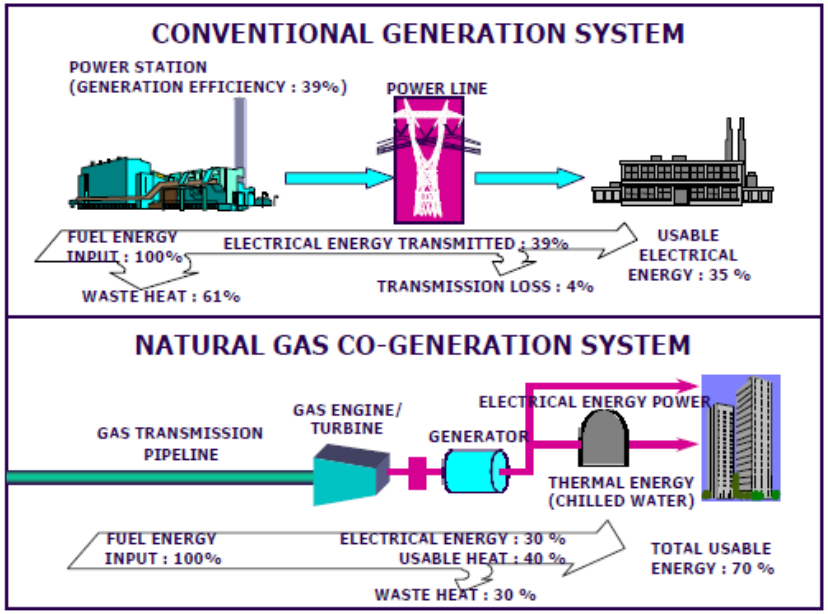
Bintulu

SARAWAK

Kalimantan (Indonesia)

PETRONAS

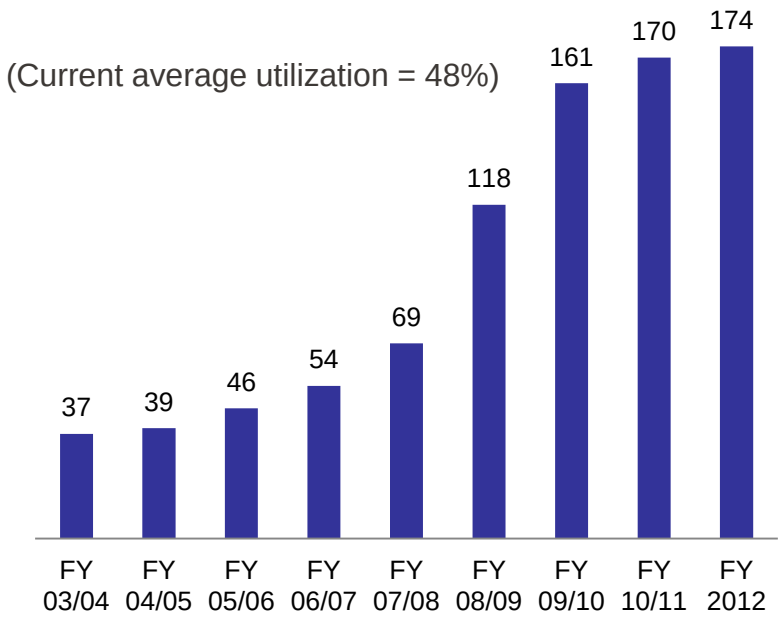
Gas is also supplied via PGU pipeline for Gas District Cooling and transportation



NGV was introduced in 1984 as an environmentally friendly alternative fuel

There are now 174 NGV stations ..

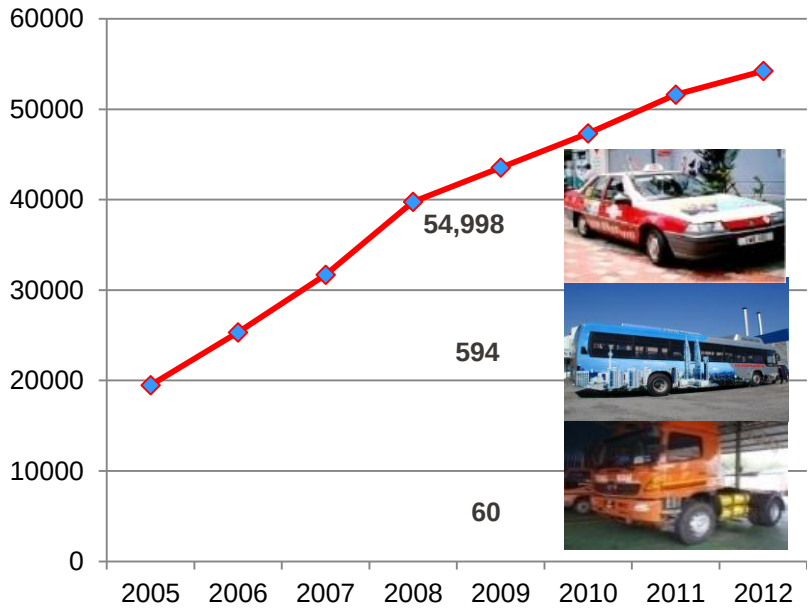
NGV Stations Development



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

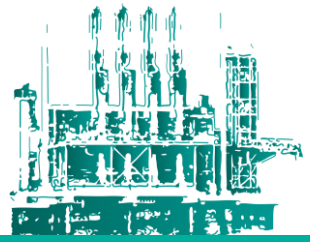
Train 9, PLC
Additional 3.6 mtpa LNG production

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

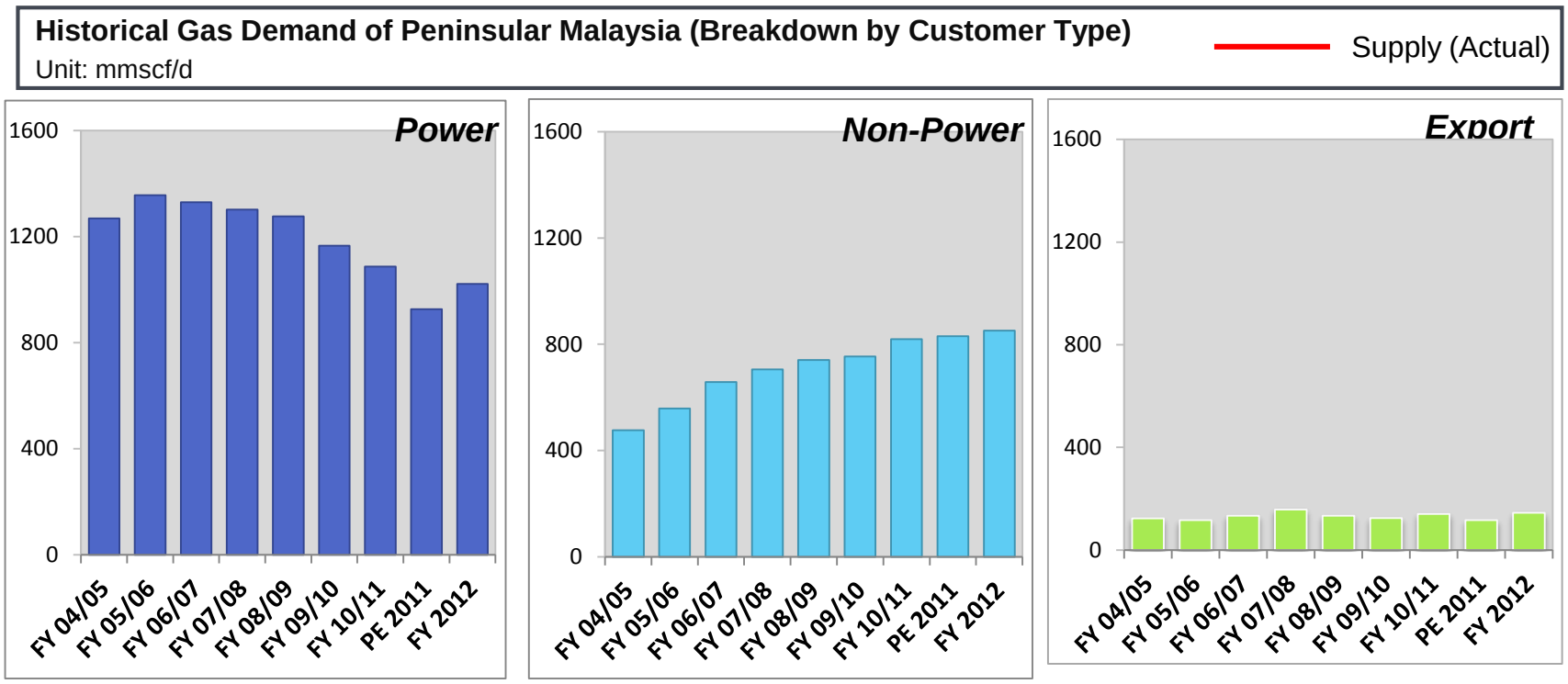
Japan, South Korea, Taiwan, China
Almost 30 years of on-time & on-schedule deliveries

Key Issues & Challenges

Regulated prices have 'artificially inflated' gas demand

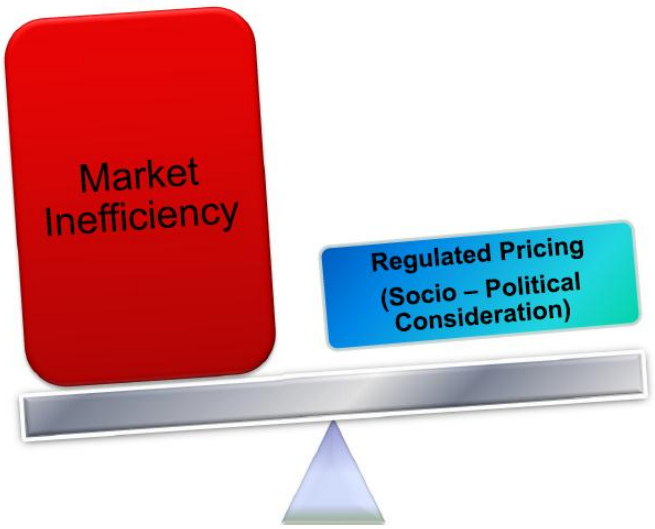
Historical Gas Demand of Peninsular Malaysia (Breakdown by Customer Type)

Unit: mmscf/d



- 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

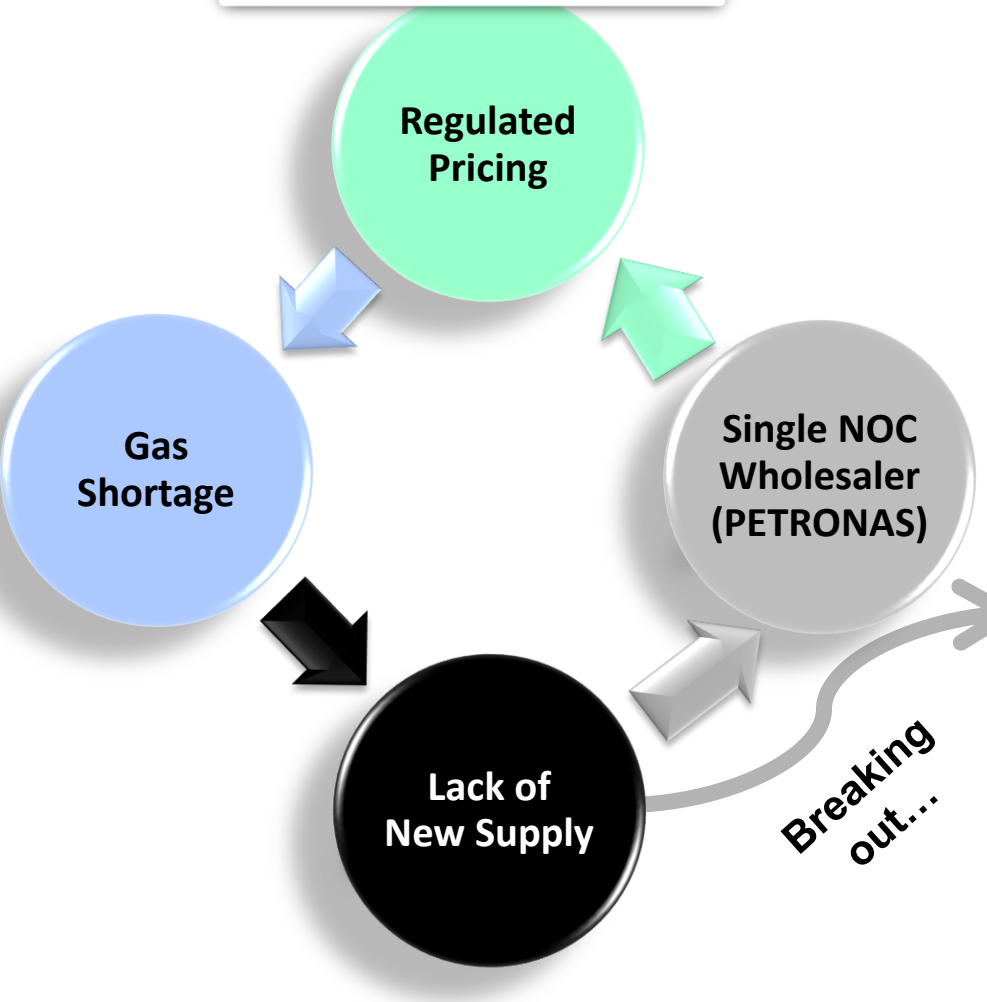
Subsidized gas prices have their drawbacks



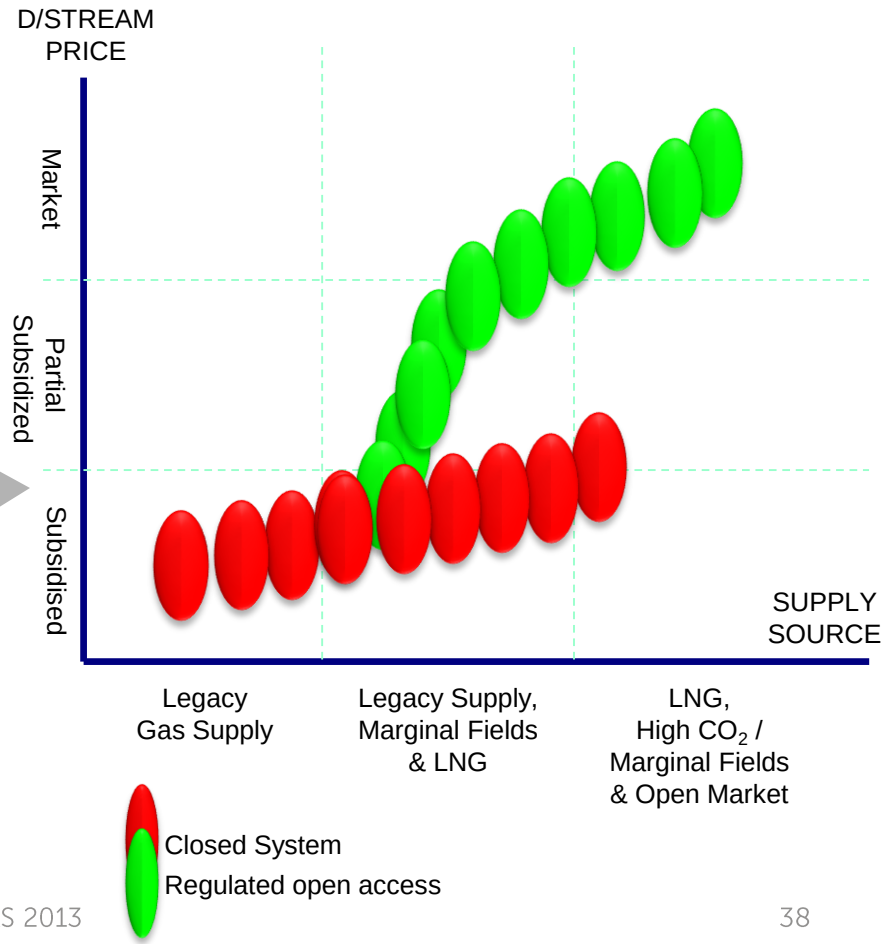
- Disincentive to supply fuel, potentially leading to shortages
- Hinders creation of fuel trading hub and associated high value added downstream activities
- Distorts allocative efficiency and encourages excessive energy consumption
- Artificially sustaining non-competitive industries, perpetuating 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…

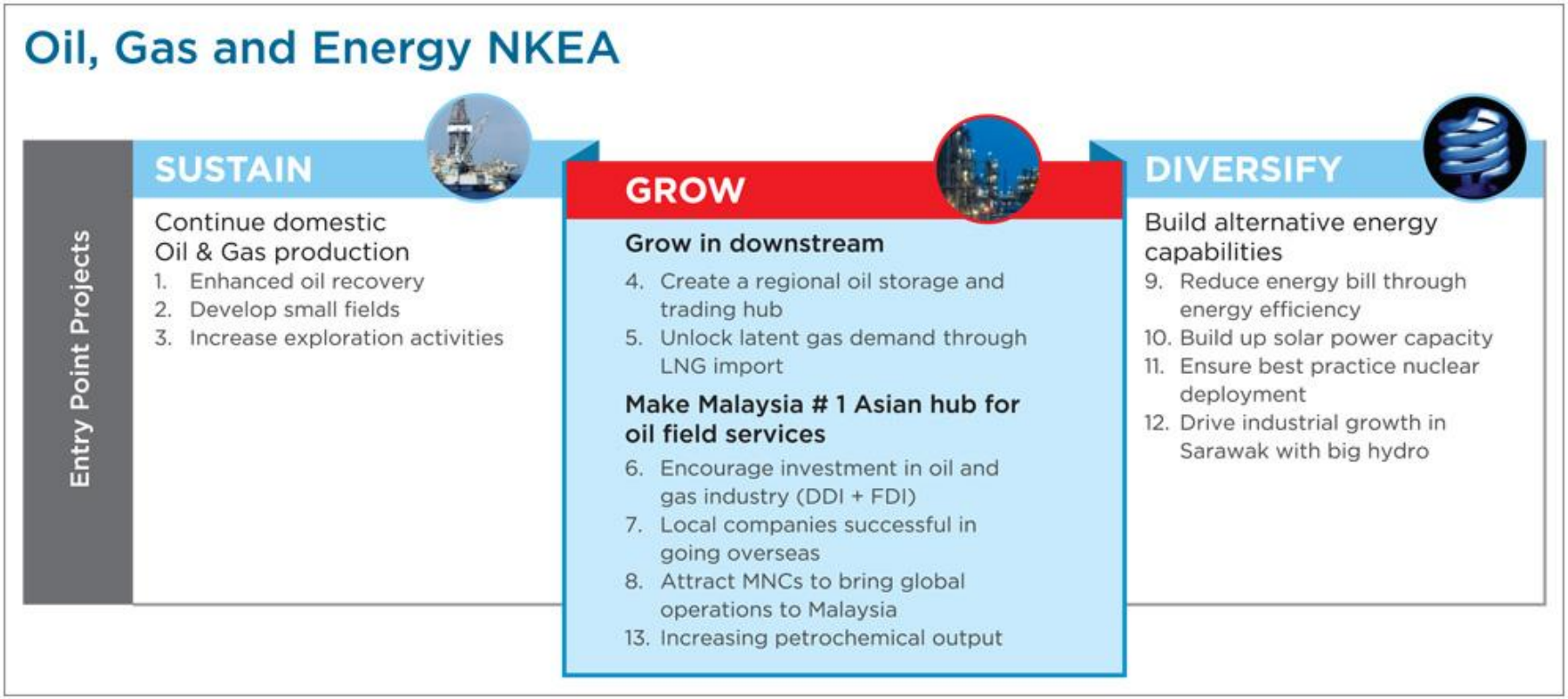


..to a sustainable & efficient market



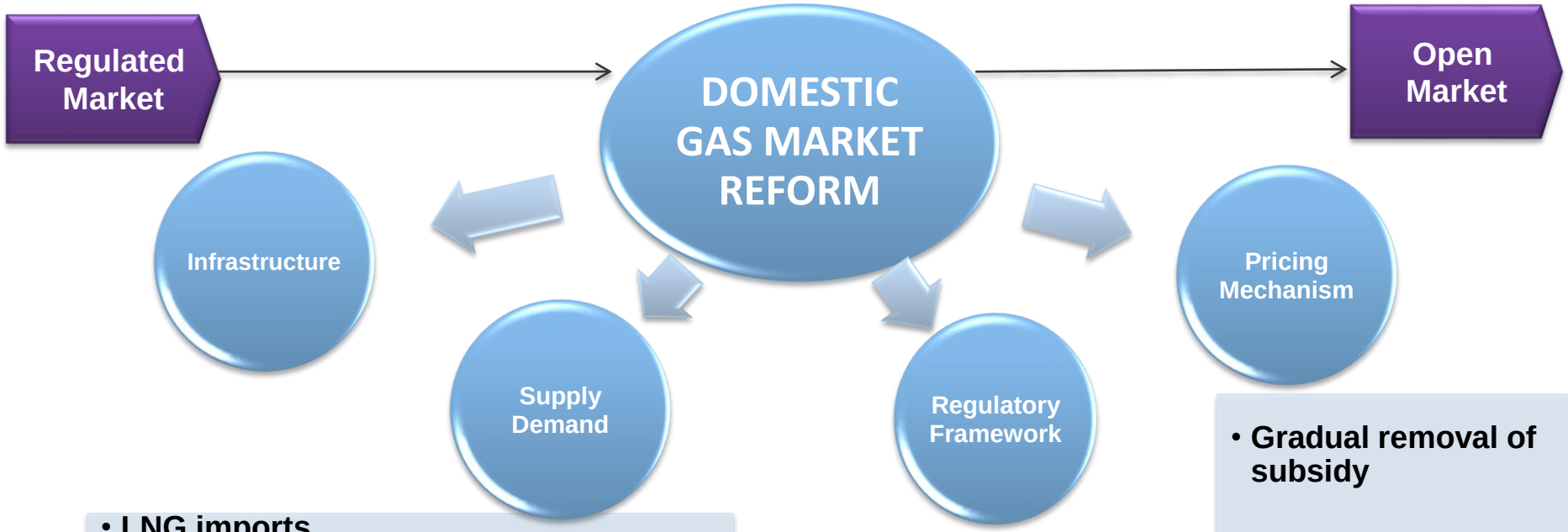
Way forward

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



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

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



- **LNG imports**
- **FLNG monetization**
- **Supply from surrounding regions**
  - JDA
  - Natuna
- **Domestic E&P**
  - Accelerating marginal fields monetisation
  - Intensifying exploration efforts

- **New Energy Policy 2010**
- **10th Malaysia Plan**
- **National Key Economic Area (NKEA)**
- **Malaysia's Competition Act 2010**

- **Gradual removal of subsidy**

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

PETRONAS

The End