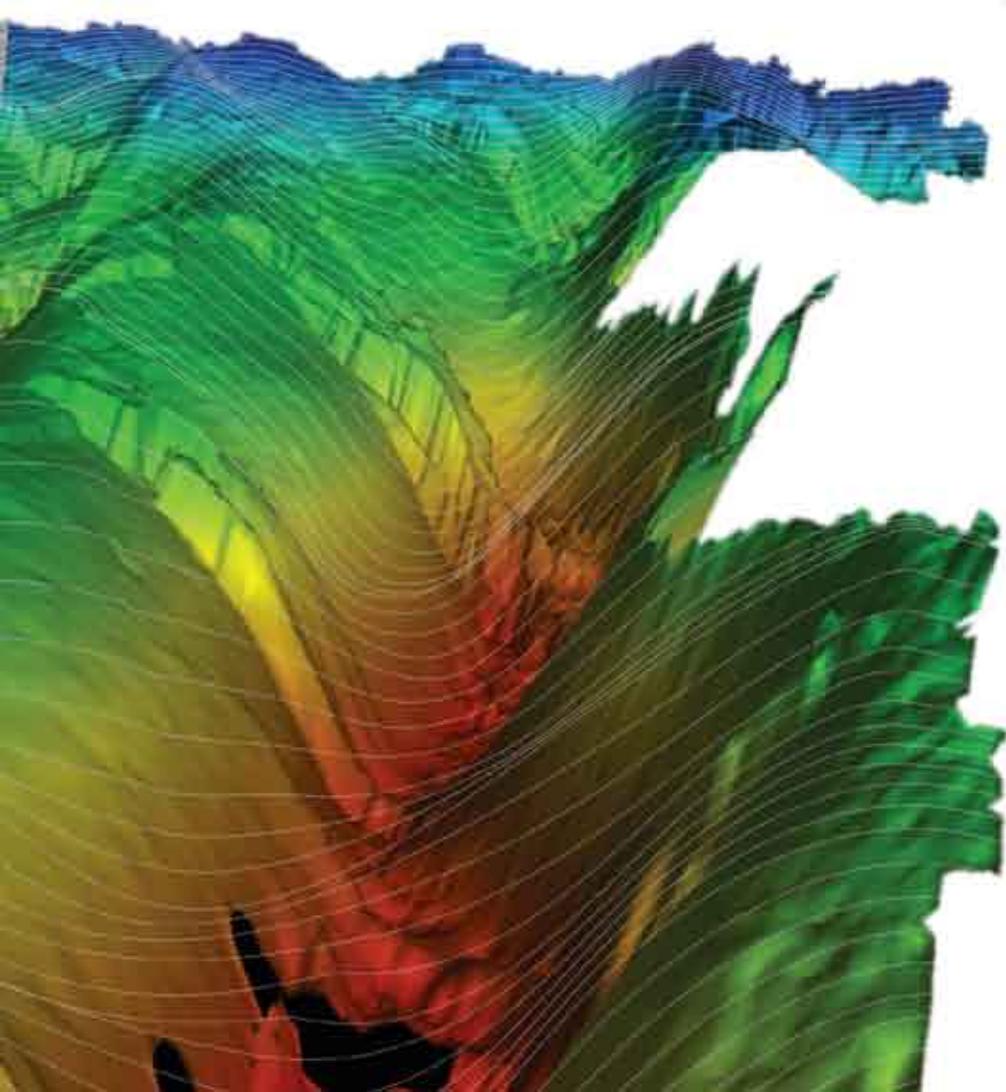
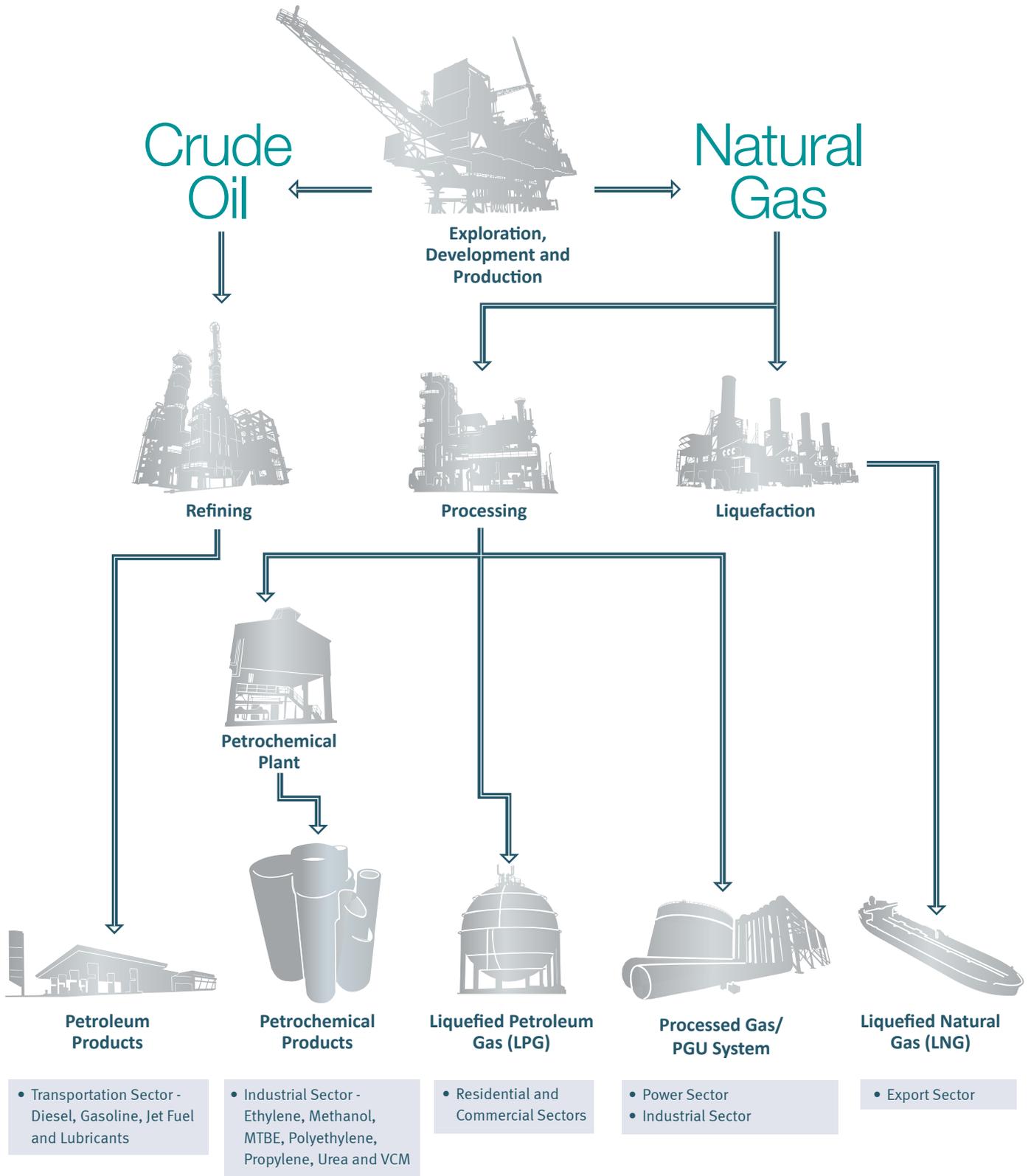


# 2011

## Sustainability Report

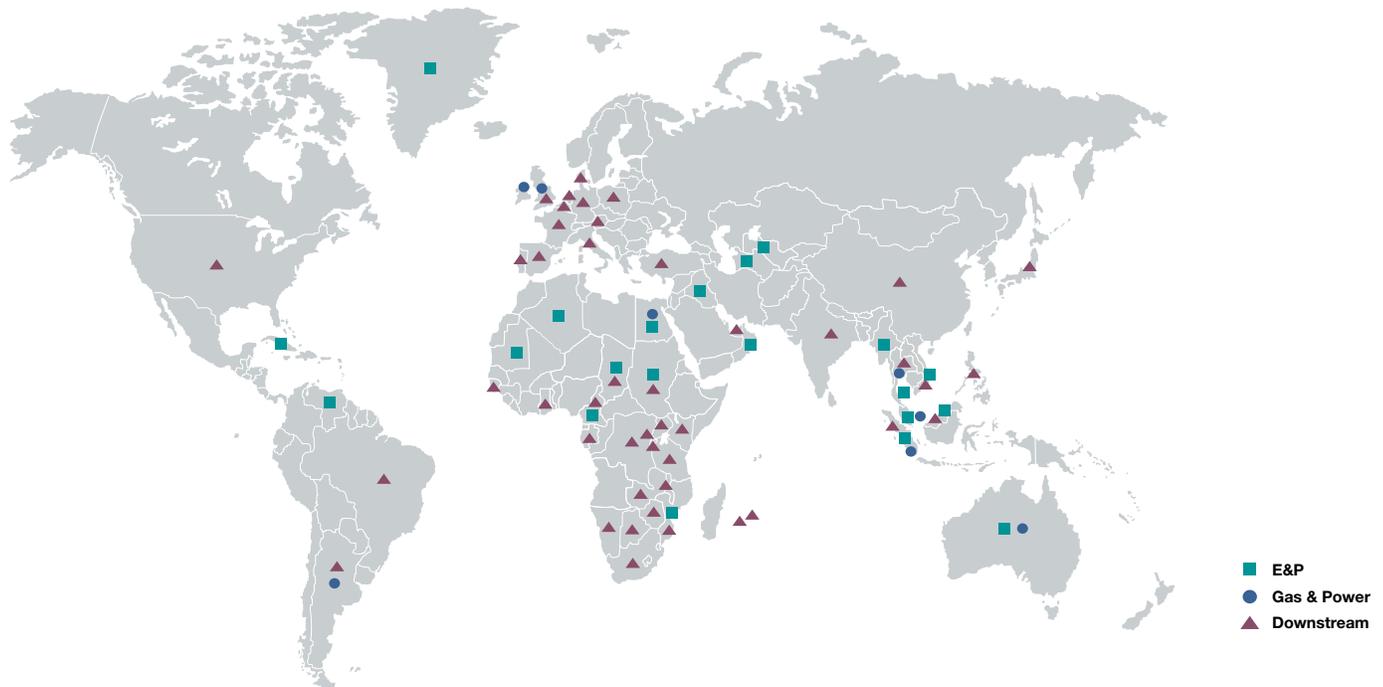


# Our Business



■ Non-exhaustive

# Our Presence



## Exploration & Production (E&P)

- Africa**
  - **Algeria** – Development
  - **Chad** – Development & Production
  - **Cameroon** – Exploration & Development
  - **Egypt** – Exploration, Development & Production
  - **Mauritania** – Exploration & Production
- Asia Pacific**
  - **Mozambique** – Exploration
  - **Sudan** – Exploration, Development & Production
- Central Asia**
  - **Australia** – Exploration
  - **Brunei** – Exploration
  - **Indonesia** – Exploration, Development & Production
- Latin America**
  - **Malaysia** – Exploration, Development & Production
  - **Malaysia-Thailand Joint Development Area** – Exploration, Development & Production
- Middle East**
  - **Myanmar** – Exploration, Development & Production
  - **Vietnam** – Exploration, Development & Production
- North America**
  - **Turkmenistan** – Exploration, Development & Production
  - **Uzbekistan** – Exploration, Development & Production
  - **Cuba** – Exploration
  - **Venezuela** – Development
  - **Iraq** – Development
  - **Oman** – Exploration
  - **Greenland** – Exploration

## Gas & Power

- Africa**
  - **Egypt** – LNG
- Asia Pacific**
  - **Australia** – LNG & Infrastructure
  - **Indonesia** – Infrastructure
  - **Malaysia** – LNG, Infrastructure, Utilities & Power
  - **Thailand** – Infrastructure
- Europe**
  - **Ireland** – Infrastructure
  - **United Kingdom** – Infrastructure, Utilities & Trading
- Latin America**
  - **Argentina** – Infrastructure

## Downstream\*

- Africa**
  - **Botswana** – Oil Business
  - **Burundi** – Oil Business
  - **Cameroon** – Oil Business
  - **Chad** – Oil Business
  - **Democratic Republic of the Congo** – Oil Business
  - **Gabon** – Oil Business
  - **Ghana** – Oil Business
  - **Guinea Bissau** – Oil Business
  - **Kenya** – Oil Business
  - **Malawi** – Oil Business
  - **Mauritius** – Oil Business
  - **Mozambique** – Oil Business
  - **Namibia** – Oil Business
  - **Réunion** – Oil Business
  - **Rwanda** – Oil Business
  - **Sudan** – Oil Business
  - **South Africa** – Oil Business
  - **Tanzania** – Oil Business
  - **Uganda** – Oil Business
  - **Zambia** – Oil Business
  - **Zimbabwe** – Oil Business
- Asia Pacific**
  - **China** – Oil & Petrochemical Businesses
  - **India** – Oil & Petrochemical Businesses
  - **Indonesia** – Oil & Petrochemical Businesses
  - **Japan** – Oil & Petrochemical Businesses
  - **Malaysia** – Oil & Petrochemical Businesses
  - **Philippines** – Oil & Petrochemical Businesses
  - **Thailand** – Oil & Petrochemical Businesses
  - **Vietnam** – Oil & Petrochemical Businesses
- Europe**
  - **Austria** – Oil Business
  - **Belgium** – Oil Business
  - **Denmark** – Oil Business
  - **France** – Oil Business
  - **Germany** – Oil Business
  - **Italy** – Oil Business
  - **Netherlands** – Oil Business
  - **Poland** – Oil Business
  - **Portugal** – Oil Business
  - **Spain** – Oil Business
  - **Turkey** – Oil Business
  - **United Kingdom** – Oil Business
- Latin America**
  - **Argentina** – Oil Business
  - **Brazil** – Oil Business
- Middle East**
  - **United Arab Emirates** – Oil & Petrochemical Businesses
- North America**
  - **United States of America** – Oil Business

\*Includes Engen subsidiaries and marketing and trading offices.

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# Corporate Statements

## **VISION**

To be 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**

Loyal to nation and corporation

### **Integrity**

Honest and upright

### **Professionalism**

Committed, innovative and proactive and always striving for excellence

### **Cohesiveness**

United in purpose and fellowship

# Corporate Profile



## PETRONAS at a Glance

PETRONAS, the acronym for PetroliaM Nasional Berhad, was incorporated on 17 August 1974 under the Companies Act, 1965. It is wholly-owned by the Malaysian Government and is vested with the entire ownership and control of the petroleum resources in Malaysia through the Petroleum Development Act, 1974. Over the years, PETRONAS has grown to become a fully integrated oil and gas corporation and is ranked among the FORTUNE Global 500® largest corporations in the world.

## Exploration & Production Business



As custodian of Malaysia's oil and gas resources, PETRONAS is entrusted with the responsibility to develop and add value to the nation's hydrocarbon resources. In the early years, PETRONAS focused its efforts on managing the production sharing contractors who were exploring Malaysian acreages, but PETRONAS soon saw the need to take on a bigger and more proactive role in augmenting the nation's oil and gas reserves. PETRONAS has also reintensified efforts to strengthen Malaysia's upstream industry development, enhancement of fiscal terms and petroleum solutions through the Government's new tax incentives.

Through its Exploration & Production (E&P) subsidiary, PETRONAS Carigali Sdn Bhd (PETRONAS Carigali), PETRONAS has developed capability as a hands-on operator with a track record of successful oil and gas developments. PETRONAS Carigali works alongside a number of petroleum multinational corporations through Production Sharing Contracts (PSCs) to explore, develop and produce oil and gas in Malaysia. Abroad, PETRONAS continues to strengthen its position by securing new acreages while undertaking various development projects.

The Petroleum Management Unit of PETRONAS acts as resource owner and manager of Malaysia's domestic oil and gas assets. It manages the optimal exploitation of hydrocarbon resources and enhances the prospectivity of domestic acreages to attract investment and protect the national interest. One of the key drivers of its business growth is deepwater E&P, with many positive prospects emerging in Malaysian acreages.

PETRONAS continues to harness and develop new technologies to maximise opportunities and further strengthen its capabilities as part of its ongoing efforts to become a leading global E&P player.

## Gas & Power Business

PETRONAS' Gas & Power Business aspires to be a leading integrated gas, liquefied natural gas (LNG) and power player. To create greater focus in these core areas of growth, the business has been restructured and streamlined into two major portfolios; Global LNG business and Infrastructure, Utilities & Power business.

### Global LNG



PETRONAS' Global LNG business comprises the production and sales of LNG through its domestic operations in Bintulu, Sarawak (PETRONAS LNG Complex) and overseas operations in Egypt (Egyptian LNG). PETRONAS operates one of the world's largest LNG facilities in Bintulu, Sarawak, which consists of three plants, MLNG, MLNG Dua and MLNG Tiga, with a combined capacity of 24 million tonnes per annum.

PETRONAS is also involved in LNG and energy trading activities through its marketing arm in Malaysia and Europe (PETRONAS LNG Ltd and PETRONAS Energy Trading Ltd).

At present, PETRONAS commands a sizeable LNG market share in the Far East. Over the years, PETRONAS has maintained its market

position and preserved its reputation as a reliable supplier of LNG, having sold more than 7,000 cargoes since the establishment of its first LNG plant in 1983.

As a global LNG player, PETRONAS is determined to defend its significant traditional Far East market and seize opportunities on the growing spot market, while continuing to grow its LNG presence in the Atlantic basin.

PETRONAS is also establishing its foothold in European energy trading, which includes electricity and carbon trading.

### Infrastructure, Utilities & Power



PETRONAS' Infrastructure, Utilities & Power business focuses its efforts towards ensuring long term security of supply and sustainability of the gas market in Malaysia and expanding its portfolio of infrastructure and power positions in high growth markets. The business is leveraging on its widely respected operational excellence and sustainable energy developments.

PETRONAS, through its majority-owned subsidiary, PETRONAS Gas Berhad (PGB), operates the Peninsular Gas Utilisation (PGU) system, involving six processing plants and approximately 2,505 km of pipelines to process and transmit gas to end-users in the power,

industrial and commercial sectors in Peninsular Malaysia. PETRONAS also delivers gas for power generation to Singapore.

The PGU system is the principal catalyst for the development of Peninsular Malaysia's offshore gas fields, the use of natural gas products for power generation and utilities, and the expansion of Malaysia's petrochemical industry through the use of gas derivative products, such as ethane, propane, butane and condensates.

PGB is also developing Malaysia's first LNG regasification facility in Melaka, which is due for completion in July 2012. This will facilitate the importation of LNG by PETRONAS and third parties towards ensuring security of gas supply for the nation in the future.

Globally, PETRONAS has investments in pipeline operations in Argentina, Australia, Indonesia and Thailand, as well as gas storage and LNG regasification facilities in Europe.

PETRONAS is also committed to further grow in the power and renewable energy business, leveraging on existing capabilities and venturing into opportunities in key focus markets in Asia and the Middle East. Entry into the power business will enhance PETRONAS' position as an integrated energy company.

# Downstream Business

PETRONAS' Downstream Business plays a strategic role in adding more value to petroleum resources through its integrated operations in refining & trading, marketing, and petrochemicals.

## Refining & Trading



PETRONAS owns and operates three refineries in Malaysia, two in Melaka (collectively known as the Melaka Refinery Complex) and another in Kertih (the Kertih Refinery). The first refinery in Melaka is 100% owned by PETRONAS while the second refinery is 53% owned by the Group. PETRONAS also operates a Group III base oil refining (MG3) plant in the Melaka Refinery Complex.

PETRONAS also has an oil refining presence in Africa through its 80% owned subsidiary, Engen Petroleum Limited (Engen), a leading South African refining and marketing company that owns and operates a refinery in Durban, South Africa.

To carry out trading activities in crude oil and petroleum products in the Malaysian and international markets (including Asia, Africa and the Indian subcontinent), PETRONAS formed a wholly-owned subsidiary, PETRONAS Trading Corporation Sdn Bhd (PETCO). PETCO also trades in crude oil and petroleum products

produced by affiliates and third parties, and has trading operations in Dubai and London via its wholly-owned subsidiaries PETCO Trading UK Limited and PETCO Trading DMCC, respectively.

## Downstream Marketing



PETRONAS is engaged in domestic marketing and retailing activities through PETRONAS Dagangan Berhad (PDB), a majority-owned subsidiary, which markets a wide range of petroleum products, including gasoline, Liquefied Petroleum Gas (LPG), jet fuel, kerosene, diesel, fuel oil, asphalt and lubricants. Natural Gas for Vehicles (NGV) is marketed through PDB's wholly-owned subsidiary PETRONAS NGV Sdn Bhd. PDB also has interest in Malaysia's Multi-Product Pipeline and the Klang Valley Distribution Terminal that transports gasoline, jet fuel and diesel oil from the refineries to major demand centres in the Klang Valley. Besides marketing activities, PDB also jointly operates a jet fuel storage facility and hydrant line system at the Kuala Lumpur International Airport.

PETRONAS has also established its downstream marketing presence in key Asian markets. PT PETRONAS Niaga Indonesia, a wholly-owned subsidiary, operates retail stations as well as markets petroleum products to industrial and commercial customers, and manages a network of local lubricant distributors in Indonesia. In Thailand, similar activities are undertaken by PETRONAS Retail (Thailand) Co Ltd that also supplies jet fuel to the Don Muang

International Airport and the Suvarnabhumi International Airport, Bangkok. In China and India, the Group's lubricant products are sold through PETRONAS' wholly-owned subsidiary, PETRONAS Marketing China Company Ltd and PETRONAS Marketing India Private Ltd (PMIPL), respectively. PMIPL also has exclusive supply arrangements and collaborations with major Original Equipment Manufacturer (OEM) partners and car manufacturers.

In the African region, PETRONAS' subsidiary Engen has the largest retail network of service stations in South Africa as well as a strong retail presence in the Sub-Saharan region in countries including Botswana, Burundi, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Réunion, Swaziland, Tanzania, Zambia and Zimbabwe. Further north, PETRONAS' wholly-owned subsidiary, PETRONAS Marketing Sudan Limited (PMSL) is engaged in the marketing and retailing of petroleum products and lubricants, as well as owns and operates retail stations. PMSL also provides into-plane service at the Khartoum International Airport and El-Obeid International Airport, which is the main base for the United Nations (UN) World Food Programme's operations in the Sudan. PMSL also supplies fuel to the UN-African Union Mission peacekeeping force in Darfur and operates refueling stations and depots.

With a presence in more than 20 countries worldwide, PETRONAS Lubricants International Sdn Bhd (PLISB) is the lubricants arm of PETRONAS. PLISB has established a manufacturing base and distribution channel to sell its products in the European market by virtue of acquiring the FL Selenia Group, (re-named PL Italy Group) and offers lubricants, transmission, anti-freeze and functional fluids for automobiles, trucks, agricultural tractors and earth moving machinery as well as for other industrial equipment to the market. Leveraging on PL Italy Group's strong OEM relationships and world-class research and development

capabilities, PLISB currently has a long-term supply, technical, collaborative and commercial agreement for the exclusive right to supply lubricants to Fiat Italy via PL Italy Group.

Also in the lubricants marketing sector, PETRONAS Base Oil (M) Sdn Bhd, a wholly-owned subsidiary of PETRONAS, undertakes the marketing of MG3 base oil in Malaysia and the Asia Pacific region whereas marketing in Europe is handled by PETRONAS Marketing Netherlands BV. PETRONAS markets its base oil products under the brand ETRO.

Apart from eight LPG bottling plants in Malaysia, PETRONAS also has LPG facilities in selected Asian countries namely in India, the Philippines and Vietnam, either through a joint venture or wholly-owned subsidiary.

PETRONAS Aviation Sdn Bhd, a wholly-owned subsidiary of PETRONAS, markets PETRONAS' aviation fuel in the global market, including to Malaysia Airlines, as well as to Shell, Ceylon Petroleum Corporation and Repsol YPF for locations in Buenos Aires, Colombo and Hong Kong.

## Petrochemicals



PETRONAS first ventured into the production of certain basic petrochemical products in the mid-1980s and later embarked on several large scale petrochemical projects with multinational joint venture partners. PETRONAS' joint venture partners have included The Dow Chemical Company, BASF Netherlands BV,

BP Chemicals, Idemitsu Petrochemical Co Ltd, Mitsubishi Corporation, and Sasol Polymers International Investments (Pty) Ltd.

With a view to strengthening integration and improving economies of scale, PETRONAS recently consolidated its petrochemicals business under the PETRONAS Chemicals Group Berhad (PCG). The leading integrated petrochemicals producer in Malaysia and one of the largest in South East Asia, PCG is the listed holding entity for all of PETRONAS' petrochemical production, marketing and trading subsidiaries and has a total combined production capacity of over 11 million tonnes per annum.

The petrochemicals business has consolidated under PCG, through joint ventures with multinational petrochemical companies, developed two Integrated Petrochemical Complexes (IPCs) at Kertih and Gebeng, along the eastern corridor of Peninsular Malaysia. The concept underlying the development of these IPCs is to achieve a competitive edge through the integration of petrochemical projects using common or related feedstock and common facilities within a self-contained complex.

PETRONAS' Kertih IPC consists principally of ethylene-based petrochemical projects, which include two ethylene crackers, a polyethylene plant, an ethylene oxide/ethylene glycol plant, a multi-unit derivatives plant, vinyl chloride monomer (VCM) and polyvinyl chloride (PVC) plants, ammonia/synthesis gas plants, an acetic acid plant, an aromatics complex and a low-density polyethylene plant. The petrochemical projects are fully integrated with the surrounding infrastructure facilities and other process plants in Kertih, including PGB's six gas processing plants and the Kertih Refinery, all of which are located within the IPC. A joint venture comprising PETRONAS (40%), Dialog Equity Group Sdn Bhd (30%) and Vopak Terminals Penjuru Pte Ltd (30%) owns and operates the

storage and distribution terminal, which has a throughput of approximately 2.7 million tonnes per annum. The Kertih marine facilities include six berths that can accommodate chemical tankers up to 40,000 dead-weight metric tonnes.

The Gebeng IPC comprises mainly of propylene-based petrochemical projects. The anchor project at the Gebeng IPC is a joint venture between PETRONAS and BASF, which owns and operates an acrylic acid/acrylic esters plant, an oxo-alcohols complex and a butanediol plant. PETRONAS, through PCG owns and operates an MTBE/propylene plant, a propane dehydrogenation plant and a polypropylene plant. The Gebeng IPC is also host to a number of multinational chemical companies, such as BP Chemicals, which owns and operates a purified terephthalic acid plant, and Eastman Chemicals, which owns and operates a copolyester plastic resin plant.

Both the Kertih and Gebeng IPCs are a major step towards establishing Malaysia as a regional petrochemical production hub.

The integrated development of Malaysia's petrochemical industry is expected to promote the development of the country's industrial base, especially the plastics and chemical based component manufacturing industry.

# Key Sustainability Indicators

Total Energy Savings - Domestic Downstream and Gas & Power Plants since 2007

2011	2010
22.2 million mmBtu	19.7 million mmBtu

▶ Refer to page 29

Lost Time Injury Frequency

2011	2010
0.39	0.31

▶ Refer to page 17

PETRONAS Domestic Greenhouse Gas Emissions

2011	2010
40.5 Million tCO <sub>2</sub> e	33.2 Million tCO <sub>2</sub> e

▶ Refer to page 28

Dividend Payment to the Malaysian Government

2011	2010
30 RM billion	30 RM billion

Fatal Accident Rate

2011	2010
2.58	3.36

▶ Refer to page 17

Loss of Primary Containment

2011	2010
46 Incidents	37 Incidents

▶ Refer to page 17

Percentage of Women Employees

2011	2010
27%	27%

▶ Refer to page 36

# Five-Year Group Financial Highlights

RM billion	FY2011	+/- (%)	FY2010	FY2009	FY2008	FY2007
Revenue*	241.2	14.4%	210.8	264.2	223.1	184.1
EBITDA*	107.9	29.5%	83.3	105.7	105.9	84.8
Profit Before Taxation (PBT)	90.5	34.5%	67.3	89.1	95.5	76.3
Net Profit after Minority Interests	54.8	36.0%	40.3	52.5	61.0	46.4
Total Assets	439.0	6.8%	410.9	389.8	339.3	294.6
Shareholder's Funds	263.8	8.6%	242.9	232.1	201.7	171.7
<b>Ratios</b>	<b>FY2011</b>		<b>FY2010</b>	<b>FY2009</b>	<b>FY2008</b>	<b>FY2007</b>
Return on Revenue (PBT/Revenue)	37.5%		31.9%	33.7%	42.8%	41.4%
Return on Total Assets (PBT/Total Assets)	20.6%		16.4%	23.0%	28.1%	25.9%
Return on Average Capital Employed (ROACE)*	17.5%		15.9%	22.0%	28.0%	24.0%
Debt/Assets Ratio	0.11x		0.13x	0.11x	0.11x	0.12x
Debt/Equity Ratio	15.3%		17.6%	15.9%	15.8%	17.4%
Dividend Payout Ratio	54.7%		74.4%	57.1%	39.3%	38.8%
Resource Replenishment Ratio (Triple-R)	2.5x		1.1x	1.8x	0.9x	1.8x

\*Revenue for FY2010 and EBITDA and ROACE for FY2007 to FY2010 have been restated to ensure consistency with the current year's presentation basis.

# Message from the President & CEO

In tandem with the spirit of its Corporate Enhancement Programme (CEP) to elevate organisational robustness and resilience, PETRONAS, during the Financial Year Ended 31 March 2011, continued to strengthen its corporate sustainability governance and implementation mechanisms to provide sharper focus and enhance its capacity in delivering its sustainability commitments.

As custodian of Malaysia's oil and gas resources, PETRONAS has always recognised that the approach it takes to discharging its duties as trustee — namely, to oversee their orderly and efficient development — is just as important as the results themselves. Indeed, the goal of contributing to the well-being of the people and to nations wherever we operate is the very essence of our Corporate Mission and shapes our commitment to conducting business in an ethically, socially and environmentally responsible manner, even as we strive to maximise returns for our Shareholder.

*Dato' Shamsul Azhar Abbas*



Robust sustainability practices will increasingly evolve into a source of competitive advantage in the oil and gas industry, rather than being merely a novelty that enhances a company's reputation as socially-responsible.

Players able to demonstrate the consistent ability to operate efficiently and safely in extreme environments will be favoured to succeed — PETRONAS is continuously enhancing its capacity to be at the forefront of these challenges.

Recent trends and developments worldwide have served to vigorously reinforce the growing sense that a review of the oil and gas industry's sustainability practices is urgently needed, particularly in light of new industry realities. Already half of today's new hydrocarbon discoveries are being made in more complex, technically-challenging physiographical settings — in deep- and ultra-deepwater, where extraction risks are substantially higher and the consequences of sustainability breaches, altogether more

severe; and in the future, this proportion is set to rise even further. Similarly, while unconventional hydrocarbons have held out the promise of opening up a whole new supply frontier in meeting the world's growing energy needs, the challenges posed by its sustainable extraction must be more resolutely addressed before it is readily accepted as a safe, reliable and clean source of energy by all sides.

These trends clearly suggest that robust sustainability practices will increasingly evolve into a source of competitive advantage in the oil and gas industry, rather than being merely a novelty that enhances a company's reputation as socially-responsible. In future, players able to demonstrate the consistent ability to operate efficiently and safely in extreme environments will increasingly be favoured to succeed.

Against the backdrop of these developments, PETRONAS embarked on a series of measures during the year to strengthen its ability to tackle the emergent challenges. We elevated membership of our Corporate Sustainability Council, which is now headed by an Executive Vice President and includes

Vice Presidents, Heads from the various Businesses as well as relevant Corporate Units. This structure will not only ensure closer interactivity between the Council and the Executive Committee (EXCO) — in other words, the highest levels of management — but also provide sustainability issues with the right level of management visibility commensurate with the aim of elevating Groupwide practices on this front.

Further, to enhance HSE performance management and improve compliance on the back of more robust policies and procedures, we have explicitly built clear HSE targets into our Group performance scorecard for the next financial period. These targets will be cascaded down systematically to drive HSE excellence at all levels of the Group — a goal that can now be achieved more effectively following last year’s changes to our organisational structure that has provided clearer lines of responsibility and accountability.

We also embarked on a Corporate Sustainability Study to assess our existing Group-wide sustainability practices relative to the industry’s best and also to delineate more effective strategies moving forward. The Study will not only enable us to re-evaluate our corporate sustainability vision but also provide greater clarity on future areas of priority, including requirements for systems, policies and initiatives. I look forward to sharing the results of the Study in future editions of this Report.

Meanwhile, we will continue to report on our corporate sustainability performance in a fair and balanced manner, consistent with the aim of promoting better corporate governance and enhancing transparency. We have reorganised the format of our Sustainability Report to more clearly surface pertinent issues across our key reporting areas and better highlight how we are addressing the attendant challenges. I invite the reader to explore these pages and judge for themselves our sustainability efforts and achievements for the year.

Looking to the future, PETRONAS will continue to forge ahead with single-minded pursuit of growth and performance excellence in striving to realise its aspiration of becoming a **“Global Energy Champion Known for its Resilience and Distinctiveness”**. In doing so, we resolve to uphold the highest standards of sustainability and integrity across all our operations to ensure we continue to sustain and enhance our reputation as a partner of choice — one that consistently returns greater value and in the process creates a meaningful, positive difference in the lives of present and future generations.



**DATO' SHAMSUL AZHAR ABBAS**  
President & CEO

# About This Report

PETRONAS has been reporting voluntarily since 2007, and this report represents our commitment to conducting our business in a safe, responsible and ethical manner. PETRONAS' Group Sustainability Report 2011 provides details on our corporate sustainability performance for the Financial Year ended 31 March 2011. We also make reference to initiatives that began before or just after the year under review, where applicable. Our 2010 Report was shortlisted for the ACCA Malaysia Sustainability Reporting Awards (MaSRA) 2010, a recognition of our effort to provide stakeholders with a balanced view of our performance.

The content is shaped by the Seven Result Areas of our Corporate Sustainability Framework, representing issues material to our stakeholders and the Corporation. This Report is focused on three core themes; Safety and Health, Climate Change and Environment, as well as Corporate Governance and Society. We reorganised the information contained in the Report as part of our efforts to improve our reporting process. Feedback and ongoing engagements with internal and external stakeholders, including our own internal assessments defined the issues and priorities set out in the Report. The Result Areas are reflected at the beginning of each theme.

The scope of data that this Report covers includes operating units where PETRONAS has operational control, unless otherwise stated. The data in this Report reflects our domestic and international operations.

We are continually improving our data collection procedure to accurately reflect PETRONAS' corporate sustainability performance by reviewing and improving current practices.

The PETRONAS Group Sustainability Report 2011 was prepared in accordance with the updated International Petroleum Industry Environmental Conservation Association (IPIECA) and Global Reporting Initiative (GRI) guidelines.

Our report is available on the corporate website at [www.petronas.com](http://www.petronas.com), where it is supplemented with additional information on PETRONAS' corporate sustainability activities.

For comments and queries, please contact:

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50088 Kuala Lumpur, Malaysia**

# Sustainability & PETRONAS

Sustainability to PETRONAS means carrying out our business in a socially responsible and holistic manner to ensure continued growth and success for the benefit of present and future generations wherever we operate.

In PETRONAS, corporate sustainability is a function driven by Group Sustainable Development Department, Group Health, Safety and Environment (GHSE) Division. The Department is responsible for establishing policies, guidelines and strategies for PETRONAS' Business and Operating Units. It is also responsible for tracking, and reporting on corporate sustainability performance. This approach provides more streamlined dissemination of guidance and action alignment across the PETRONAS Group to ensure consistency and synergy. GHSE Division reports directly to the President and CEO of PETRONAS.

To drive the development of Group-wide corporate sustainability policies and to make recommendations to the PETRONAS Executive Committee (EXCO) for implementation across the Group, PETRONAS has established its Corporate Sustainability Council. Formed in 2010 and reconstituted in 2011, it is a deliberative body now chaired by the Executive Vice President for Exploration & Production, Dato' Wee Yaw Hin, and comprises Vice Presidents and Heads of relevant business and corporate units.

The Council, which reports directly to the EXCO, is supported by Working Groups comprising cross-disciplinary business and technical experts who identify, evaluate and monitor PETRONAS corporate sustainability performance and broader sustainable development trends and issues.

## The Seven Result Areas of the PETRONAS Corporate Sustainability Framework

### Shareholder Value

Sustaining the Company's profitability through value creation, efficient extraction and manufacturing processes.

### Natural Resource Use

Efficient use of energy and water, and supporting the use of renewable energy.

### Climate Change

Limiting emissions of greenhouse gases into the atmosphere.

### Biodiversity

Responsibly managing biodiversity in our areas of operations, and undertaking selective conservation as a means of carbon management.

### Health, Safety & Environment

Preventing and eliminating injuries, health hazards and damage to property and conserving the environment.

### Product Stewardship

Ensuring quality products and services, with minimal impact to health, safety and the environment throughout the products' lifecycle.

### Societal Needs

Safeguarding human rights within our sphere of influence, contributing to community needs, ensuring fair employment practices, developing talents and conducting our business in a transparent manner.

**Result Areas discussed in this section:**

- Health, Safety & Environment
- Product Stewardship

# Safety & Health

## Highlights

2.58

Reduction of FAR from 3.36 in FY2009/10

90%

Percentage of domestic OPU's with completed HRAs

83.1%

Percentage of PETRONAS Carigali's staff in domestic operations measured during its BMI Campaign

Safety has always been a key focus area for the oil and gas industry, more so since the Gulf of Mexico incident in 2010. Industry players have been tightening and reviewing processes and procedures to ensure risks posed to people and the environment are minimised, and mitigating measures can be swiftly employed in the event of an incident.

PETRONAS is committed to the highest safety and health standards. We are enhancing the governance of health, safety and environment (HSE) in PETRONAS through the restructuring of Group Health, Safety and Environment Division (GHSED) to enable Business Units to have greater accountability. GHSED is also proactively developing a framework to consolidate the mandatory HSE standards to be implemented Group-wide. The main objective is to raise PETRONAS' HSE performance, reduce business risks and exposure, and maintain consistency in the implementation of HSE standards and requirements. The Framework is a set of mandatory requirements for all operating units and is targeted to be completed by the end of 2011. It will strengthen our HSE Management System (HSEMS) implementation which seeks to establish a pervasive HSE culture in the Corporation.

Ensuring the integrity of assets, and assessing the safeguards in place are integral components of maintaining a safe operating environment. We continue to monitor and review the integrity and reliability of our assets through our Operational Excellence and Process Safety initiatives.

Our governance procedure has been enhanced with the introduction of HSE Key Performance Indicators (KPIs) for the President and Executive Vice Presidents. They will be assessed based on the performance of their respective businesses' Fatal Accident Rate (FAR), Lost Time Injury Frequency (LTIF), Major Loss of Primary Containment (LOPC) incidents and major fires. The inclusion of these KPIs will help drive improvements in PETRONAS' process safety and capability performance.

To strengthen product stewardship practices across PETRONAS, we have begun developing and rolling out implementation plans across the Downstream business.

Measures to manage fatigue at the workplace and a fitness to work guideline have been developed by PETRONAS to better protect the health and safety of our workforce and communities where we operate.

# Safety Performance

In the year under review, we have experienced some safety incidents that have prompted us to review our systems, processes and procedures to ensure our operations adhere to the highest safety and health standards. The safety of our staff, contractors and communities living in the vicinity of our operations are paramount to us, and PETRONAS is proactively improving our safety measures.

In the year under review, we had 166 fires, including 12 major fires. There were no fatalities recorded in all the fire incidents, however there were injuries and property damage. A fire at Bekok C, one of our offshore platforms in Malaysia resulted in six injured personnel.

PETRONAS recorded an improvement in its Fatal Accident Rate (FAR), from 3.36 in FY2010 to 2.58 in the year under review. However, it is with regret that the Group recorded seven contractor fatalities in the year under review.

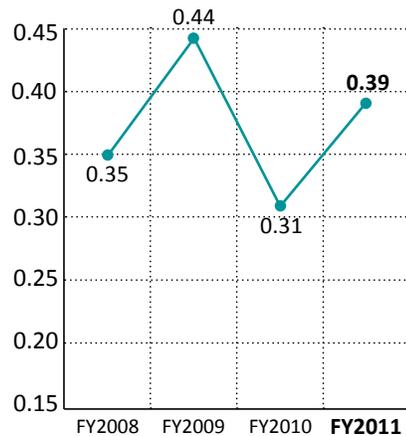
Lost Time Injury Frequency (LTIF) of the Group saw a rise to 0.39 in the year under review from 0.31 previously. Total Reportable Case Frequency (TRCF) this financial year was 0.81 compared to 0.78 in 2010.

To reduce the incident rate and severity of high risk activities across the Group, we have developed new PETRONAS Technical Standards (PTS) for Excavation, Working at Height and Marine Offshore Services. Existing standards for Scaffolding, Lifting, Diving Operations and Working in Confined Space have been revised to incorporate new regulatory requirements, best practices and lessons learnt.

Major Loss of Primary Containment (LOPC) incidents increased to 46 in the year under review, a 24% increase from the previous year. Twenty of the LOPC cases were process safety incidents.

## Lost Time Injury Frequency (LTIF)

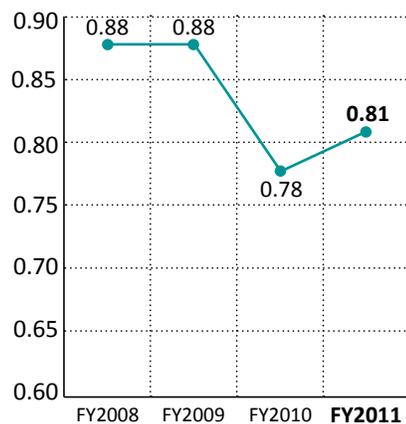
No of cases per one million man hours



## Total Reportable Case Frequency (TRCF)

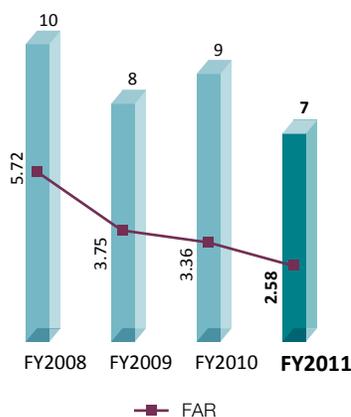
No of cases per one million man hours

TRCF Limit = 1.00

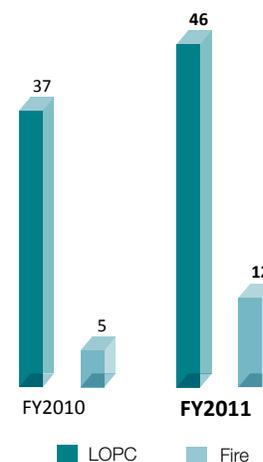


## Reportable Fatalities

Reportable Fatalities per 100 million man hours



## Major LOPC and Major Fire



To improve our process safety performance towards achieving operational excellence, PETRONAS has carried out a Third Party Process Safety Assessment on its implementation across the Group. The external assessment and benchmarking exercise was conducted in August 2010. The assessment recognised that process safety standards and requirements have been adequately established at Group level and translated into site-specific systems and documents at operating units. Action plans have been identified to address implementation issues on specific elements such as management of change, integrity management, work planning and procedures in order to improve process safety performance. These action plans include enhancement of technical governance through Tier-2 and Tier 3 assurance; extensive reporting on process safety implementation progress and performance to top management; strengthening of process safety leadership through management and leadership workshops, and the establishment of the HSE Control Framework.

Three management workshops for process safety leadership were held in August 2010 and February 2011 on the roles of senior leaders in preventing major process safety incidents as well as enhance their knowledge on the subject.

Feedback from the workshops has been positive and encouraging. These workshops will be conducted at different levels in the organisation until process safety is embedded as part of the PETRONAS culture.

ZeTo Rules or Zero Tolerance Rules, the ten mandatory rules that address all high-risk activities, have been implemented and are now rigorously tracked and monitored. Launched in 2010, ZeTo Rules aims to improve the safety performance of the Group by enforcing consequence management on employees and contractors who violate the rules. To date, consequence management action has been taken against 52 confirmed cases of ZeTo Rules violations.

PETRONAS has also introduced an enhanced incident investigation approach that is more organised, systematic and comprehensive. Aimed at enhancing the investigation process, the training sessions have been conducted for investigation team leaders to enable them to produce more accurate and effective lessons learnt towards fewer recurrences of incidents.

To improve our assurance processes, PETRONAS has developed standard assurance checklists for identified critical activities including Scaffolding, Lifting and Hydro Jetting. Training has been conducted for pilot assurance using the checklists and these will soon be used by all operating units to prevent recurrence of incidents.

There were 13 road accidents in the year under review. To improve road safety, the Land Transport Safety Steering Group formed in November 2010 has met to develop a roadmap on improving land transport safety performance across the Group. The existing PETRONAS Technical Standard on Land Transport Safety Guiding Principles, Minimum Standards and Key Performance Indicators was revised to incorporate new regulatory requirements, best practices and lessons learnt. One of the projects to be undertaken is producing a safety training module for tanker drivers to reduce road transport accident rates and severity. This safety training module will strengthen the awareness of road tanker drivers on common road hazards, high risk zones in Malaysia and expected driving behaviours.

## Health

PETRONAS has developed a guideline to outline the hours of service limit for staff in different work groups. To better manage fatigue at the workplace, stringent recommendations were made to the hours of service limit of the work groups involved in safety sensitive positions. Operating units are required to implement a Fatigue Management Plan to identify fatigue among staff and eliminate fatigue in the workplace.

Fitness to Work (FTW) Guidelines were rolled out in the year under review and is expected to be fully applied Group-wide by 2012. The Guidelines were developed to ensure that staffs' physical and mental health matches the required level needed for them to carry out their work effectively. Functions, especially those that are considered HSE critical, are assessed on their requirements on physical and mental health attributes to reduce or avoid a mismatch as well as to conduct timely interventions where necessary.

PETRONAS continues to carry out Personal Health Management Surveys and Programmes to gauge the health status of employees. The findings indicate that lifestyle-related health issues are the leading cause of morbidity and death among staff, and the data is similar to overall Malaysian data.



To counter this trend, PETRONAS is developing several personal health management initiatives and programmes for Group-wide implementation as part of our long-term strategy to reduce lifestyle-related health problems. This initiative will complement existing health programmes in operating units such as the BMI (Body Mass Index) Campaign at PETRONAS Carigali Sdn Bhd. The Campaign has seen a total participation of 6438 of its staff in domestic operations, where 83.1% were measured in the year under review. Apart from BMI measurements, the Campaign also included health talks, exercise and sports activities as well as diet consultation.

## Health Risk Assessments (HRA)

Health Risk Assessments (HRA) ensure risks associated with health hazards are assessed and managed using a common approach in meeting both corporate and legal requirements. In matters relating to Chemical Health Risk Assessment (CHRA), our methodology meets the requirements of Occupational Safety and Health (OSH) Use and Standards of Exposure of Chemical Hazardous to Health (USECHH) Regulations 2000.

PETRONAS has completed 90% of HRA for domestic operating units and obtained approval from the Malaysian Department of Occupational Safety and Health (DOSH) to utilise the HRA methodology to conduct CHRA in August 2010.

In accomplishing this initiative, health risks are adequately managed to ensure a healthy workforce.

Moving forward, operating units are tasked with addressing issues arising from the assessment, while Group and Businesses are responsible for developing common intervention plans and implementing HRA in their international operations. GHSED will also continuously review the HRA methodology to incorporate the latest requirements such as the new chemical classification and assessment methodology.

## Product Stewardship

PETRONAS has completed its Product Stewardship PETRONAS Technical Standard (PTS) for use by business units to provide guidance on Product Stewardship practices, which are embedded throughout our business processes. The PTS is part of our Product Stewardship journey to ensure PETRONAS' products and services maintain the required quality and pose minimal impact to HSE throughout the product lifecycle. The Product Stewardship Working Group has been actively engaging with businesses to educate and communicate with them.

In the European Union (EU), the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulations came into effect in the year under review. In meeting the standards and requirements across the different markets. PETRONAS is in the process of reviewing and registering our products to enable access to the EU market. OPTIMAL Glycols Sdn Bhd, a subsidiary of PETRONAS Chemicals Berhad, has registered its monoethylene glycol (MEG) with REACH.



## Managing Odour Concerns at Petrochemical Complex

Maintaining safe operations includes ensuring our activities do not impact the health of communities where we operate. PETRONAS has taken proactive steps to perform a detailed odour study at PETRONAS Petroleum Industry Complex (PPIC) at Kertih to identify root causes and implement specific controls.

A plant was selected for the pilot, and the study was conducted and completed in the year under review. The study focused on the significance of odour and its associated health impacts, root-causes of the issues and mitigating measures to control the exposure in the complex. Initiatives were undertaken to understand processes that potentially emit chemicals to the environment; reviewing the chemical registers and Safety Data Sheets; reviewing health risk assessments; chemical exposure monitoring and environmental monitoring reports. The complaints protocol, weather data, health records and plume dispersion were also reviewed.

Although the study indicated that the Odour Threshold and level of chemicals in the air were under the Permissible Exposure Limits, PETRONAS is reviewing measures to further reduce exposure to the environment and surrounding communities.



# Awards & Recognitions

Accolades are a testimony to the Group's continuous pursuit of excellence. We are delighted to have been bestowed with numerous awards and recognitions in the year under review by our peers, relevant authorities and organisations in recognition of our accomplishments.

## Royal Society for the Prevention of Accidents (RoSPA) Occupational Health and Safety Awards 2010

Since 1956, RoSPA has organised this prestigious national award scheme to recognise excellence in work-related health and safety performance by private and public sector organisations. The scheme is based on an assessment of a broad portfolio of evidence on the level of development and performance of an entrant's occupational health and safety management system, and also takes into account the entrant's reportable accident rate and enforcement experience.

### Sector Awards

#### Winner

Category - Oil & Gas

- PETRONAS Penapisan (Melaka) Sdn Bhd

#### Highly Commended

Category - Transport, Storage & Distribution

- Kertih Terminals Sdn Bhd

### Achievement Awards

#### Winners

##### Gold

- PETRONAS Ammonia Sdn Bhd
- Star Energy Group Limited
- Asean Bintulu Fertilizer Sdn Bhd
- Egyptian LNG

##### Silver

- PETRONAS Fertilizer (Kedah) Sdn Bhd
- Petlin (Malaysia) Sdn Bhd

## Malaysian Society for Occupational Safety and Health (MSOSH) Awards 2010

The MSOSH Award is an annual award presented to companies in Malaysia with proven outstanding Occupational Safety and Health (OSH) performance. Identified companies are subjected to stringent document and site verification audits by MSOSH Panel of Auditors in order to be considered for the award. The panel members comprise representatives from the Department of Occupational Safety and Health (DOSH), Social Security Organisation (SOCSO), National Institute for Occupational Safety and Health (NIOSH), SIRIM Berhad, QAS International and Federation of Malaysian Manufacturers (FMM).

### Winners

Category - Petroleum, Gas, Petrochemical and Allied Sectors

#### Grand

- PETRONAS Ammonia Sdn Bhd
- PETRONAS Fertilizer (Kedah) Sdn Bhd
- PETRONAS Penapisan (Melaka) Sdn Bhd
- Polypropylene Malaysia Sdn Bhd
- Asean Bintulu Fertilizer Sdn Bhd
- PETRONAS Gas Berhad, Centralised Utility Facilities Gebeng
- PETRONAS Gas Berhad, Gas Processing Plant, Complex B
- PETRONAS Gas Berhad, Technical and Facilities Development Division
- Petlin (Malaysia) Sdn Bhd

#### Gold Merit

- MTBE/Polypropylene Malaysia Sdn Bhd
- PETRONAS Carigali Sdn Bhd, Sabah Operations
- Vinyl Chloride (Malaysia) Sdn Bhd
- PETRONAS Gas Berhad, Centralised Utility Facilities Kertih
- PETRONAS Gas Berhad, Export Terminal
- PETRONAS Gas Berhad, Kertih Regional Office
- PETRONAS Gas Berhad, Transmission Operations Division, Segamat Regional Operations
- Kertih Terminals Sdn Bhd
- BP PETRONAS Acetyls Sdn Bhd

#### Gold (Class I)

- PETRONAS Carigali Sdn Bhd, Peninsular Malaysia, Onshore Gas Terminal
- PETRONAS Carigali Sdn Bhd, Peninsular Malaysia, Terengganu Crude Oil Terminal
- PETRONAS Penapisan (Terengganu) Sdn Bhd
- Aromatics Malaysia Sdn Bhd
- PETRONAS Gas Berhad, Bintulu Operations

#### Gold (Class II)

- PETRONAS Methanol (Labuan) Sdn Bhd
- MISC Integrated Logistics Sdn Bhd

## Chemical Industries Council of Malaysia (CICM) Responsible Care Awards 2009

The Chemical Industries Council of Malaysia or CICM, is the umbrella body representing the various sub-sector chemical groups ranging from oleochemicals, paints, fertilisers, petrochemicals, agriculture chemicals, industrial gases, coating resins and biodiesel sectors.

The Responsible Care Awards is organised annually to promote greater awareness of the Responsible Care Programme and its principles and to give recognition to those organisations that have made most progress in implementing the Responsible Care's Six Codes of Management Practices in Malaysia. The Codes developed are the Distribution Code, Process Safety Code, Pollution Prevention Code, Product Stewardship Code, Community Awareness and Emergency Response Code and the Employee Health and Safety Code.

### Winners

Category - Petrochemicals

#### Platinum

- BASF PETRONAS Chemicals Sdn Bhd

#### Gold

- MTBE/Polypropylene Malaysia Sdn Bhd
- PETRONAS Penapisan (Melaka) Sdn Bhd
- PETRONAS Penapisan (Terengganu) Sdn Bhd
- Aromatics Malaysia Sdn Bhd
- BASF PETRONAS Chemicals Sdn Bhd

#### Silver

- MTBE/Polypropylene Malaysia Sdn Bhd
- OPTIMAL Chemicals (Malaysia) Sdn Bhd
- Ethylene/Polyethylene Malaysia Sdn Bhd
- BASF PETRONAS Chemicals Sdn Bhd

#### Merit

- MTBE/Polypropylene Malaysia Sdn Bhd
- OPTIMAL Chemicals (Malaysia) Sdn Bhd
- PETRONAS Penapisan (Melaka) Sdn Bhd
- PETRONAS Penapisan (Terengganu) Sdn Bhd
- Ethylene/Polyethylene Malaysia Sdn Bhd
- Aromatics Malaysia Sdn Bhd
- Petlin (Malaysia) Sdn Bhd
- BASF PETRONAS Chemicals Sdn Bhd

## National Occupational Safety and Health Excellence Award

The National Occupational Safety and Health Excellence Award is an initiative by the National Council of Occupational Safety and Health, Ministry of Human Resources. It is intended to give credit and acknowledgement to organisations, employers and employees in various sectors in the industry that have achieved excellence in managing safety and health systems in their workplace.

### Winners

Category - Heavy Industry Sector (Petroleum/Gas/Chemical)

- PETRONAS Fertilizer (Kedah) Sdn Bhd

Category - Gas Utilities

- PETRONAS Gas Berhad, Transmission Operations Division, Kuantan Regional Operations

Category - Storage

- Kertih Terminals Sdn Bhd

## International Association of Oil & Gas Producers (OGP)

The International Association of Oil & Gas Producers (OGP) is a unique global forum in which members identify and share best practices to achieve improvements in every aspect of health, safety, the environment, security, social responsibility, engineering and operations.

OGP encompasses most of the world's leading publicly-traded, private and state-owned oil & gas companies, industry associations and major upstream service companies.

## Recognition

PETRONAS Carigali Sdn Bhd (PETRONAS Carigali) ranked second among the 41 Exploration and Production companies in OGP for recording Total Reportable Case Frequency (TRCF) of 0.54. The average TRCF for OGP is 1.68.

PETRONAS Carigali also achieved a Lost Time Injury Frequency of 0.23, better than OGP's average of 0.42 and ranked seventh among other players.

## 19th Annual National Irish Safety Organisation (NISO)/ Northern Ireland Safety Group (NISG) Safety Awards

This award is given to the winners of the Supreme Safety Award which have demonstrated continued commitment to health and safety.

Winners are assessed on how they have maintained and improved their HSE Performance under the following categories:-

- Health and Safety Management
- Hazard Identification and Risk Assessment
- Implementation and Operation of Health and Safety Policies and Procedures
- Emergency Preparedness and Response
- Health and Safety Communication, Consultation and Promotion
- Health and Safety Training
- Proactive Health and Safety Management
- Reactive Health and Safety Management
- Demonstration of Superior Performance in Health and Safety

## Platinum Award Winner

- PSE Kinsale Energy Limited

# Climate Change & Environment

## Result Areas discussed in this section:

- Natural Resource Use
- Climate Change
- Biodiversity
- Health, Safety & Environment

## Highlights

1.28

Million tCO<sub>2</sub>e avoided since September 2009 due to elimination of venting of associated gas at Sabah upstream operations

17%

Percentage of fresh water consumption decrease across domestic operations

22.7

Million mmBTU energy savings from domestic Downstream and Gas & Power operations since 2007

Climate change, and the protection of the environment continues to be among key sustainable development issues in the oil and gas industry. The industry is focused on efficient use of natural resources, the reduction of carbon emissions, and mitigating the impact on the environment while meeting the world's growing energy needs.

PETRONAS endeavours to use resources such as energy and water responsibly in all our operations and we aim to reduce our carbon footprint through new and ongoing initiatives. As the corporation explores new and unconventional opportunities to supply energy for ongoing socio-economic growth, PETRONAS will continue to balance socio-economic and environmental requirements as we address these emissions challenges.

We have enhanced our data collection for greenhouse gas (GHG), energy, water and biodiversity by utilising iHSE, our online information management system which is being rolled out across the Group.

In addition, PETRONAS' Working Groups for Carbon and Water have performed baseline assessments and have identified opportunities for immediate savings. Overall, our technical experts in Carbon management across PETRONAS assessed the corporation's performance and made

recommendations for improvements across the business, including assessing opportunities from its carbon stock.

Efficient use of water has become a key sustainable development issue globally, and is an essential resource in our operations. We have taken proactive steps to manage supply risk and minimise the use of fresh water in our operating units by reducing, reusing and recycling this natural resource where possible. PETRONAS has developed a guideline water conservation for onshore process facilities. Our Water Conservation Working Group has performed a water balance assessment and identified opportunities for savings.

During the year in review, PETRONAS has completed a biodiversity risk assessment at all our areas of operation, and we have taken the necessary measures to mitigate the impact of our the activities on surrounding areas. As we operate in mega-biodiverse countries, we take a risk-based approach and have completed a desktop assessment to identify high risk areas. We endeavour to minimise the effect of our activities on biodiversity at all our operational sites.

# Climate Change<sup>1</sup>

## GHG Emissions - Domestic Upstream

In the year under review, GHG emissions for our Malaysian upstream operations<sup>2</sup> were 13.25 million tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e). This is an increase of 0.57 million tCO<sub>2</sub>e from the previous year, due to increased flaring and venting from our upstream production facilities as well as an increase in overall activities, particularly in Sabah and Sarawak.

Nevertheless, PETRONAS continues to proactively seek opportunities to reduce flaring and venting of associated gas. A total of 1.28 million tCO<sub>2</sub>e was averted since September 2009 due to elimination of venting of associated gas at our Sabah upstream operations in Samarang.

## GHG Emissions - Domestic Gas & Power

GHG emissions from the Gas & Power Business remained relatively unchanged in the year under review compared to the previous year despite increased production from Malaysia LNG Sdn Bhd (MLNG). This was facilitated by a 26% reduction in gas flaring at MLNG and PETRONAS Gas Berhad (PGB).

## GHG Emissions - Domestic Downstream

Total emissions during the year in review for PETRONAS' domestic refineries increased by 0.61 million tCO<sub>2</sub>e from the previous year due to revamping activities at PETRONAS Penapisan (Melaka) Sdn Bhd (PPMSB). Total emissions for PETRONAS' Petrochemical plants rose 0.35 million tCO<sub>2</sub>e due to higher production at OPTIMAL and PETRONAS Methanol Labuan Sdn Bhd (PML).

## GHG Emissions - Maritime & Logistics

Total emissions from MISC Berhad increased by 22% in the year under review. The two major contributors to the increase in carbon emissions were MISC shipping business units (Fleet Management Services (FMS) and MISC Integrated Logistics Sdn Bhd (MILS) due to the introduction of new assets and increased business ventures.

## MISC's Fuel Efficiency Initiatives

MISC's Fuel Efficiency Campaign is aimed at reducing fuel consumption. Ships were required to review their operations to optimise operating parameters to keep total fuel consumption to a minimum and reduce GHG emissions. MISC LNG carriers use methane boil-off gas as fuel for the boiler and coat the vessels' underwater hulls with tin-free anti-fouling paint system to increase fuel efficiency. In the year under review, approximately 29,360 tonnes of fuel was saved with a reduction of 92,200 tCO<sub>2</sub>e in GHG emissions.

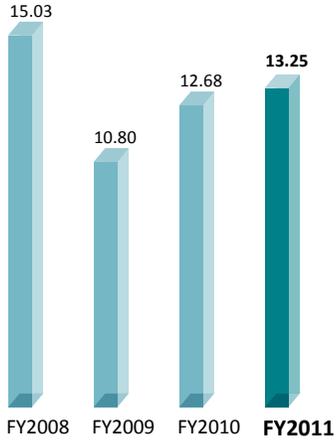


<sup>1</sup> PETRONAS reports GHG emissions using the operational control approach. Under operational control, a company reports 100% of emissions from joint ventures over whose operations it has control over. In principal, the company has the authority to impose its requirements such as HSE policies to the joint venture. The scope of GHG emissions reporting excludes retail and property.

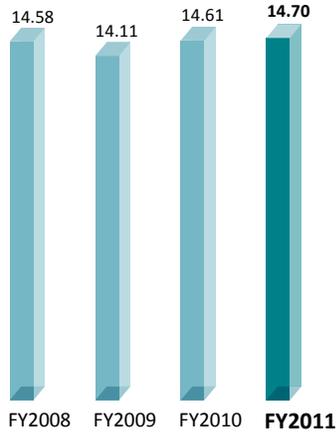
<sup>2</sup> PETRONAS Carigali-operated blocks in Malaysia.

# GHG Emissions Data\*

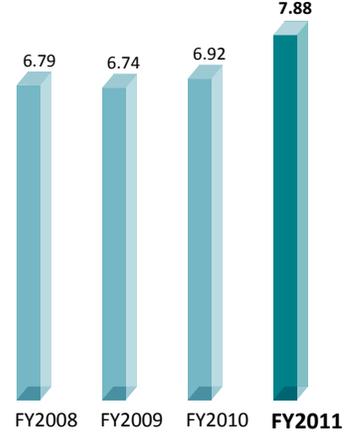
**E&P (PCSB)  
Business Emissions**  
(million tonnes of CO<sub>2</sub>e)



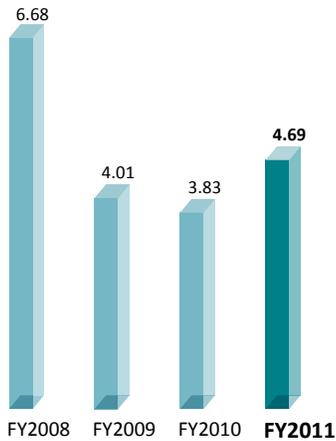
**Domestic Gas & Power  
Business Emissions**  
(million tonnes of CO<sub>2</sub>e)



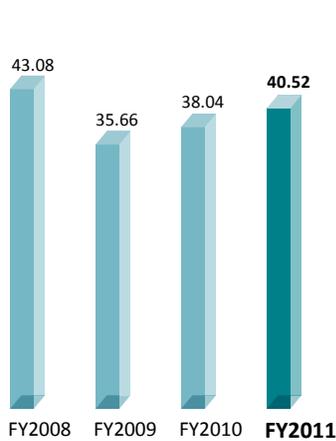
**Downstream  
Business Emissions**  
(million tonnes of CO<sub>2</sub>e)



**MISC Bhd CO<sub>2</sub> Emissions**  
(million tonnes of CO<sub>2</sub>e)



**Total GHG Emissions**  
(million tonnes of CO<sub>2</sub>e)



\* The GHG emissions figures have been revised as part of efforts to improve emissions data quality.

## Energy savings

PETRONAS continues to improve the energy efficiency of its Upstream, Downstream and Gas & Power operations through its Energy Loss Management (ELM) initiative. Increased energy efficiency reduces GHG footprint of the corporation's operations while using natural resources more prudently.

In the year under review, PETRONAS realised energy savings of 2.5 million mmBtu from its domestic Downstream and Gas & Power operations. This takes the cumulative savings to 22.2 million mmBtu to date. The savings were achieved primarily through energy efficiency projects carried out by MLNG and PGB in full.

In the domestic Upstream sector, energy efficiency initiatives have achieved savings of 0.5 million mmBtu.

## Cogeneration

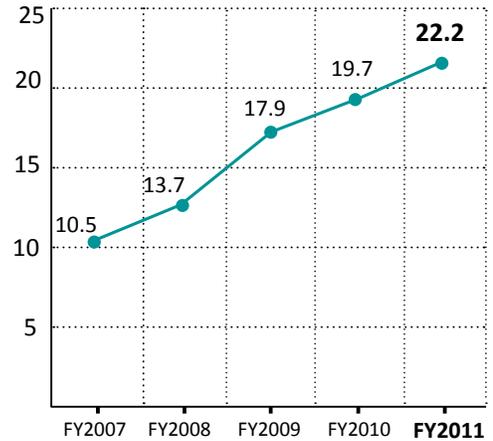
All our cogeneration facilities run on clean-burning natural gas, and have an overall energy efficiency of 72%. Cogeneration is an efficient means to generate electricity and thermal energy as it utilises waste heat to generate steam for plant operations. PETRONAS' fourth cogeneration facility at PETRONAS Fertilizer Kedah Sdn Bhd (PFK) has an installed capacity of 18 MW and steam production of 40 tonnes per hour. The facility enables PFK to reduce its natural gas consumption from existing package boilers for steam generation by three mmscfd. PETRONAS' other cogeneration facilities are at Central Utilities Facility Gebeng (CUFG) which has an installed capacity of 108 MW and steam production of 480 tonnes per hour, Central Utilities Facility Kertih (CUFK) which has an installed capacity of 180 MW and steam production of 720 tonnes per hour and PETRONAS Penapisan (Melaka) Sdn Bhd (PP(M)SB) which has an installed capacity of 150 MW and steam production of 500 tonnes per hour.

## Product Carbon Footprint

As part of our effort to reduce the carbon footprint of our products, PETRONAS has performed preliminary assessments on composite crude and methanol. A guideline to establish the carbon footprint of products has been completed to standardise the process based on international best practices. The scope of this initiative will include other key products in the future.

## Cumulative Energy Savings in Domestic Downstream and Gas & Power Operations

In million mmBtu



# Environment

## Oil Spill Preparedness and Response

PETRONAS is reassessing the effectiveness of our oil spill preparedness and response, and the outcome of the assessment will be used to establish a longer term strategy in this area. As part of ensuring effective preparedness and response, PETRONAS is a Subscribing Member of the Oil Spill Response Limited (OSRL). The key benefits of being a Subscribing Member of the OSRL includes guaranteed round the clock response to rapid aerial dispersant spraying facilities, one of the most effective methods of combating a major oil spill anywhere around the world.

PETRONAS organised a two-day workshop on Dispersant in Oil Spill Response at Port Dickson, Negeri Sembilan in February 2011, in collaboration with the International Maritime Organisation (IMO), International Petroleum Industry Environmental Conservation Association (IPIECA) and Petroleum Industry of Malaysia Mutual Aid Group (PIMMAG). The workshop brought together oil spill response practitioners from around the region to enhance the industry's understanding of the dispersants used to combat oil spills more effectively.



## Environmental Complaints Management

In the year under review, PETRONAS introduced a new guideline to manage environmental complaints such as odour and noise in our domestic operations to improve effective complaints management and provide faster response and mitigation in our areas of operation.

## Integrated Environmental Site Management

Integrated Environmental Site Management (IESM) is a systematic approach for PETRONAS to manage our activities at land-based sites to prevent, minimise and control the risk of land and groundwater contamination. Since the roll out of the IESM in 2010, PETRONAS has completed a risk screening programme involving our fuel storage depots in Malaysia which were ranked accordingly for follow up actions to reduce any further contamination risk. Plans are in place to conduct similar risk screenings for fuel retail stations domestically.

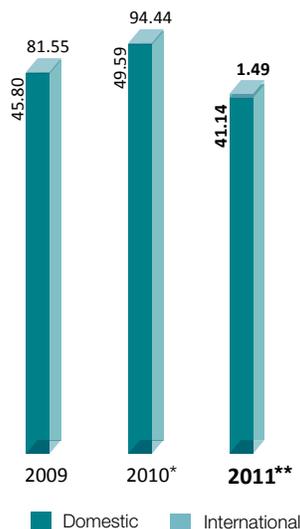
# Water Performance

Fresh water consumption across domestic process and non-process operating units decreased by 17% or 8.50 m<sup>3</sup> in the year under review compared to the preceding year. The reduction, which is equivalent of 3,381 Olympic-sized swimming pools, was due to water use optimisation including improved condensate recovery, cooling water recirculation cycles and wastewater recycling.

To manage risks, PETRONAS has established a risk factor on fresh water availability based on current operational water demand and the capacity of supply infrastructure to meet it. We have also developed a technical standard on the development of site-specific water conservation plans encompassing a water audit, best practices on water use optimisation and an economic evaluation of water saving opportunities.

## PETRONAS Water Consumption

(m<sup>3</sup>)



\* Number of international businesses included in reporting: 2009 and 2010 (Star Energy, ENGEN Ltd, Trans Thai-Malaysia (Thailand) Ltd, Vietnam downstream marketing)

\*\* 2011 (ENGEN, PLI, Star Energy, Vietnam downstream marketing, Philippines downstream marketing, Phu My Plastics and Chemicals Co Ltd, Trans Thai-Malaysia (Thailand) Ltd, Thang Long LPG Co Ltd).



## Water 3R at PP(M)SB

PETRONAS Penapisan (Melaka) Sdn Bhd (PP(M)SB), our refinery operations in the state of Melaka, has implemented its Water 3R (Reduce, Reuse, Recycle) initiative to promote efficient and responsible use of water in its operations, and as a strategic approach towards reducing supply dependency from local water supplier, Syarikat Air Melaka. Reliable water supply is vital for the refinery operations to run as scheduled.

The refinery's Water 3R initiative began in 2007, where water-saving initiatives were incorporated in capital and plant improvement projects.

PP(M)SB's Water 3R initiatives are categorised as:

- Reduce : Reduce fresh water import and waste water generation
- Reuse : Direct reuse of waste water from one unit to another with minimal or without pre-treatment
- Recycle : Reuse of waste water with pre-treatment

The target for the year under review was a reduction of freshwater import by 480 m<sup>3</sup>/day, and the refinery achieved 324m<sup>3</sup>/day as some of the proposed projects are in the process of being rolled out. Overall, the total freshwater reduction achieved since 2007 is 2532 m<sup>3</sup>/day or equivalent to 13.5% of total freshwater import. The water 3R initiatives were implemented at process, utility and offsite areas. PP(M)SB has targeted a reduction of freshwater consumption of 240m<sup>3</sup>/day by December 2011.

## Water Reuse Initiative at PML

PETRONAS Methanol Labuan Sdn Bhd (PML) has implemented various water recovery and reuse projects since 2009. The island of Labuan has had water supply issues in the past, and PETRONAS has put in place several initiatives at its operational sites to minimise intake of fresh water from municipal sources.

These projects include the recovery of Plant 2 process condensate to Plant 1 Water Treatment Plant which has reduced PML Plant 1's raw water requirements to 110m<sup>3</sup>/hr from 210m<sup>3</sup>/hr.

Apart from the reduction in fresh water requirements from municipal sources, the benefits also include a reduction of chemical consumption for regeneration of resins in Plant 1 and for Plant 2's cooling tower.

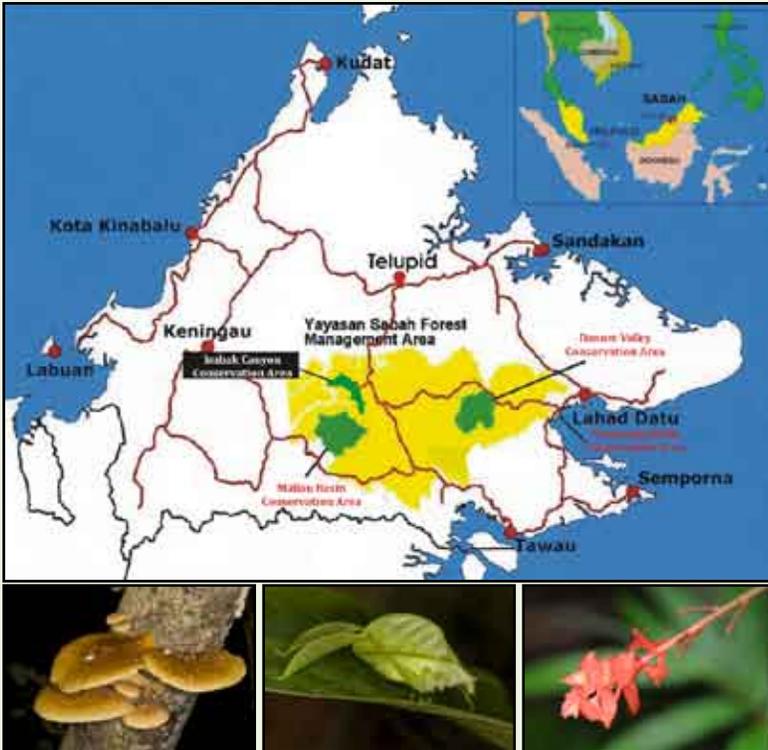


## Biodiversity

PETRONAS recognises that conserving biodiversity is a key issue globally. We have conducted biodiversity risk mapping Group-wide, assessing 48 operating sites.

We have also established biodiversity risk factors at each operating site based on existing ecological settings. Mitigation measures are put in place by operations, type of biodiversity monitoring conducted and community dependency on biodiversity.

We support and partner with others on initiatives with a long term impact to conserve the natural heritage for the benefit of present and future generations. For example, we have actively supported the ecoCare™ rehabilitation initiative for the conservation of the Kertih River mangrove habitat since 2005. The programme, run by our subsidiary OPTIMAL Group in partnership with the Malaysian Nature Society, has brought staff and the community together as we work hand in hand to plant mangrove seedlings and be educated on the importance of this habitat to the wellbeing of the area's ecosystem. Mangrove seedlings grown so far have an average survival rate of 40%.



## Imbak Canyon

We have partnered with Yayasan Sabah (Sabah Foundation) for the conservation of the Imbak Canyon Conservation Area (ICCA) since 2010. The ICCA is a 30,000 hectare Class 1 Forest Reserve in Sabah that has been largely unexplored. The conservation of this primary rainforest is important for the potential discovery of new plant and animal species, as a wildlife corridor linking the Danum Valley and the Maliau Basin Conservation areas as well as playing a role in future forest rehabilitation. ICCA is also a significant water catchment area for the Kinabatangan River. Our contribution of RM6 million goes towards environmental education and the construction of the Imbak Canyon Studies Centre, community outreach and public awareness programmes. We are also a member of the Steering Committee to oversee the project development.



## Partnership with FRIM

PETRONAS in partnership with the Forest Research Institute Malaysia (FRIM) began the quantification of carbon stocks and timber value at selected sites. The study was commissioned as part of the Corporation's conservation effort at its sites – Universiti Teknologi PETRONAS (UTP) in Tronoh, Perak and the KLCC Park, which is adjacent to the PETRONAS Twin Towers in Kuala Lumpur. The total carbon stocks, the amount of carbon stored in the vegetation, contained at UTP and KLCC Park is calculated at 60,987 tonnes of carbon. Both sites combined span 216.37 hectares.

Forested sites play an important role in sequestering carbon, avoiding emissions, conserving the biodiversity of the area as well as Malaysia's rich natural heritage. At UTP, three endangered tree species were discovered at the 194.17 hectare site: *Shorea platycarpa*, *Shorea hemsleyana* and *Vatica flavida*.

The latter are considered critically endangered. UTP is currently undertaking initiatives to conserve the three species.



**Shorea platycarpa**

Result Areas discussed in this section:

- Shareholder Value
- Societal Needs

# Corporate Governance & Society

## Highlights

41,623

Number of PETRONAS employees

1,627

Number of children who have participated in our ECCD activities in Myanmar

3,185

Number of Malaysian students sponsored for higher education in the year under review

As an energy company with a wide international reach, PETRONAS places importance on balancing business objectives with societal needs and concerns at countries in which we operate.

At the Corporate level, we understand that stakeholders are increasingly interested to understand how we conduct our business and not just the profits we generate. PETRONAS' ongoing Corporate Enhancement Programme (CEP) reflects the commitment we have to elevating our governance practices for greater accountability, ownership and disclosure. PETRONAS aims to communicate our business direction, performance and goals on a regular basis through quarterly financial results reporting, and engagements with stakeholders on issues that are important to them.

PETRONAS has a zero tolerance for bribery and corruption, and this is made clear in our Code of Conduct and Discipline (COCD). Our COCD is in the process of being revised and updated to include new areas.

As a responsible corporate citizen, we recognise that we can achieve positive influence on communities where we operate through our employees conduct and behaviours, spin-off economic opportunities created,

community and capacity-building, as well as education programmes. We continue to sponsor deserving students from Malaysia and other countries to pursue tertiary education in critical disciplines relevant to the corporate and oil and gas industry.

PETRONAS respects the rights of individuals and communities, and seeks to mitigate the impact of our operations on their way of life and livelihoods.

As an employer with a multinational workforce, we recognise our responsibility to develop the capabilities of our employees, nurture and reward high performers, and provide a motivating working environment. We have strengthened our Human Resources operating model to improve the efficiency and effectiveness of managing our workforce. This enhancement enables our human resource professionals at the centre to focus on strategy development whilst transactional and administrative matters are handled by Business and Operating Units.

We continually assess our societal practices and programmes to ensure they remain relevant in supporting our business objectives and contribute to the development of society in areas where we have business operations.

## Corporate Enhancement Programme (CEP)

Good corporate governance drives sustainable growth and forms a foundation for addressing business challenges with transparency and accountability. To enhance our governance practices to support the Corporation's next phase of growth, PETRONAS embarked on a Corporate Enhancement Programme (CEP) to ensure greater ownership and accountability; elevate governance and transparency; strengthen greater business focus; and establish clear and visible succession planning and leadership development.

PETRONAS has also successfully introduced structural changes such as the reconstitution of the Board; the establishment of the Governance & Risk and Remuneration Committees in addition to the Audit Committee; the establishment of an Executive Committee as the highest decision-making body within the Corporation; the reorganisation of PETRONAS' business along the lines of its core activities, and the introduction of quarterly results reporting.

## PETRONAS People

Our employees are central to the success of the Corporation, and PETRONAS continues to enhance and implement initiatives that attract, develop and retain our talent. Attracting and retaining talent remains an industry challenge. PETRONAS has implemented strategic talent management initiatives in the year under review, in line with the Corporation's focus on core activities, to ensure we have a pool of talented and motivated employees to drive business growth. Businesses are empowered to make recruitment decisions and drive talent management and succession planning.

At the Corporate level, People Development Committees (PDCs) were established at various levels in the organisation that empower the business to take ownership and accountability on talent management. Various levels of staff are represented in the PDCs for balanced, objective and fair decisions on talent development, performance and consequence management, as well as mobility. We have also implemented the PETRONAS Leadership Development Framework in identifying and developing more top talents in the Corporation to support our business.



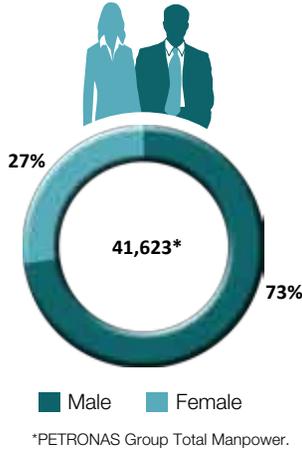
Employees attend regular internal and external training programmes to enhance their knowledge and skills and in the year under review, 8% of our workforce cost was spent on training. A total of 14,823 participants across PETRONAS and its affiliates attended various leadership development programmes at the PETRONAS Management Training centre (PERMATA). A total of 13,406 participants including engineers and technicians attended skills upgrading programmes at Institut Teknologi Petroleum PETRONAS (INSTEP).

PETRONAS has introduced differentiated remuneration packages to recognise and reward individual employee's performance, skills and competencies. We have also introduced flexible working hours and Smart-Casual Fridays to encourage better work-life balance and increase productivity.

We foster a working environment that is conducive for productive work, and are committed to resolving legitimate staff grievances through a formal procedure within a stipulated timeframe.

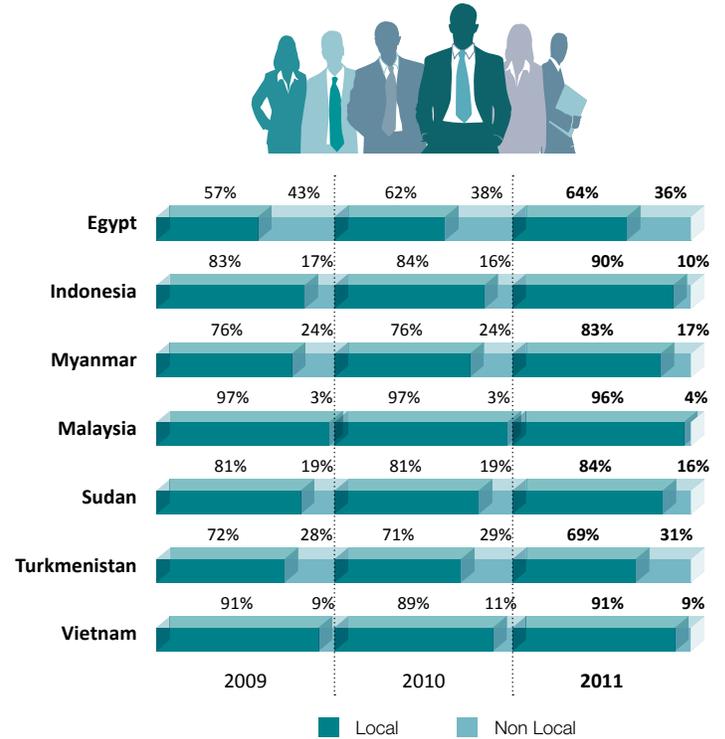
# PETRONAS Group Manpower Data

## 1. Gender breakdown



## 2. Local vs Non Local

Malaysia and selected countries



## 3. Percentage of Employees covered under collective bargaining

The overall number of % employees covered under collective agreement	31%
For Employees of PETRONAS Companies in Malaysia	33%
For Employees of PETRONAS Companies in other Countries	24%

## 4. Percentage of Management Staff

Malaysia and selected countries



% - percentage over total population of each management grouping of the respective countries.

# Community Engagements

Community engagements are an important platform for us to meet and share information with communities living in the vicinity of new or ongoing projects. For the Sabah-Sarawak Gas Pipeline project (SSGP), PETRONAS held regular meetings with heads of indigenous communities and leaders on the project to address various issues. Apart from regular meetings, we employ local people from the project areas as public relations officers to enable us to better communicate and reach out to the communities. People with any grievances are encouraged to approach the project camps. An SSGP Taskforce which includes state public officials is an avenue provided to discuss any issues raised and formulate solutions.

# Community Programmes

## Aid to Hardcore Poor

Program Sentuhan Harapan PETRONAS provides underprivileged families living within our Malaysian areas of operation with monthly essential food aid. The programme was launched in the year under review, and over 2,000 poor and hardcore poor families have benefitted from the aid distributed through selected Mesra convenience stores which are located at our service stations. Financial literacy trainings have been carried out in stages to create awareness amongst the families involved in this programme on basic financial management. The eradication of hardcore poverty and hunger is a Millennium Development Goal (MDG), and also a National Key Result Area to raise the living standards of low income households in Malaysia. Program Sentuhan Harapan PETRONAS is carried out in support of community development by providing assistance to families in need.



## Yetagun Socio Economic Development Programme

Our Yetagun Socio Economic Development Programme in Myanmar has been actively contributing to community wellbeing since 1997. Its three focus areas; Education, Health and Computer Training have benefitted children and adults in villages in the Dawei district. The programme engages local participation through volunteers who run the activities in their villages.

The programme's Early Childhood Care and Development (ECCD) initiative supports children's overall development. The educational toys the children use are made by members of the community from recycled and locally-sourced material. In the year under review, 1,627 children in 38 villages participated in the activities, and two new ECCD centres were established.

We also have an educational support programme which increases access to education for underprivileged and academically outstanding children living along our pipeline operations. A total of 288 students received support in the year under review. To equip people with the necessary training to run these programmes, training was provided to enhance the skills and knowledge of 764 volunteers.

The ongoing Reproductive, Adolescent Reproductive and Newborn Health programmes reached over 19,000 people in 53 villages in the Dawei district. Over 6,000 members of the community received health education and two libraries for youth programmes were established in the year under review.

Computer skills provide the opportunity for people to improve their livelihood, and our Computer Training Programme gives youths an opportunity to learn basic and advanced computer skills and improve their chances of securing employment or getting a better job. A total of 275 youths participated in the computer skills training, and up to 13% of the students successfully gained or improved their employment status.



## Republic of The Sudan and The Republic of South Sudan

PETRONAS has been in The Sudan since 1995 and we are looking forward to continue contributing towards the development of the energy industry in the Republic of The Sudan and The Republic of South Sudan. As a business entity, PETRONAS takes a neutral, apolitical stand wherever we operate, and we welcome a peaceful transition for the benefit of the people and the socio-economic development of the two countries.

We have expanded our presence in The Republic of South Sudan with the establishment of our operations office in Juba. We have also signed a Memorandum of Understanding with the Ministry of Energy and Mining on petroleum management training in February 2011. Our presence in the Republic of The Sudan remains, and we continue to focus on business growth and build on our education and capability-building initiatives in both nations.

PETRONAS has upstream and downstream interests across both countries. We are part of a joint operatorship in White Nile Petroleum Operating Company (WNPOC), Greater Nile Petroleum Operating Company (GNPOC) and Petrodar Operating Company (PDOC) for the development, exploration and production for our upstream interests.

For downstream retail, we currently have 83 petrol stations in The Sudan and are planning to increase the number over time. Currently, we are the second largest retail player with about 17% of market share as well as the market leader for aviation fuel.

Our operations at present are currently staffed by 128 people, 33 of whom are from the Republic of The Sudan and The Republic of South Sudan. PETRONAS employs based on merit and provides various training and learning opportunities for all employees for personal and professional development. The health, safety and security of all our personnel is our key concern in all our areas of operations. We have emergency procedures put in place including Emergency Evacuation Plans, and conduct briefings on a regular basis.

Sustainability issues encompassing environmental and socio-economic concerns influence our business at all our areas of operations. We endeavour to minimise the risk and impact of our operations on the environment through careful planning and monitoring of our activities.

For example, the water quality at our bioremediation projects at WNPOC and GNPOC sites are regularly tested to ensure the levels of heavy metals and trace elements in soil and plant samples are within normal levels of international oil and gas industry standards. In addition, WNPOC has conducted an Environmental Fact Finding Study at its bioremediation site for the benefit of the environment and surrounding communities.

For capability and capacity-building development, we work with our stakeholders in both countries on longterm programmes which contribute towards the socio-economic growth of both the Republic of The Sudan and The Republic of South Sudan. Through our education sponsorship programme, we have sponsored students to further their tertiary education at Universiti Teknologi PETRONAS (UTP) in Malaysia since 2000. There have been 176 recipients to date. The students who have graduated are working in various organisations in the Republic of The Sudan and The Republic of South Sudan as well as other locations, including PETRONAS headquarters in Kuala Lumpur. These scholars form a growing pool of talent in both countries whose expertise will contribute towards achieving national aspirations.



## Supplier Development and Capability Building

PETRONAS' Long Term Service Agreement (LTSA) was developed with the objective to build the capability of Local Service Providers (LSP) and secure sustainable services for PETRONAS' fleet of gas turbines. In achieving the objectives of the LTSA and to ensure efficient integration, PETRONAS has paired up Original Equipment Manufacturers and the LSP: Rolls-Royce (RR) with OTEC Kemajuan Sdn Bhd (OTEC), General Electric (GE) with Sapura Power Services Sdn Bhd (Sapura) and Solar Turbines with Turboservices Sdn Bhd (Turboservices). The LSP are required to provide local warehousing and inventory management, local repair and overhaul facilities, training programme for operators and transfer of technology to their vendors.

RR and OTEC have effectively executed and facilitated the LTSA with PETRONAS by forming two joint venture companies. Advance Gas Turbine

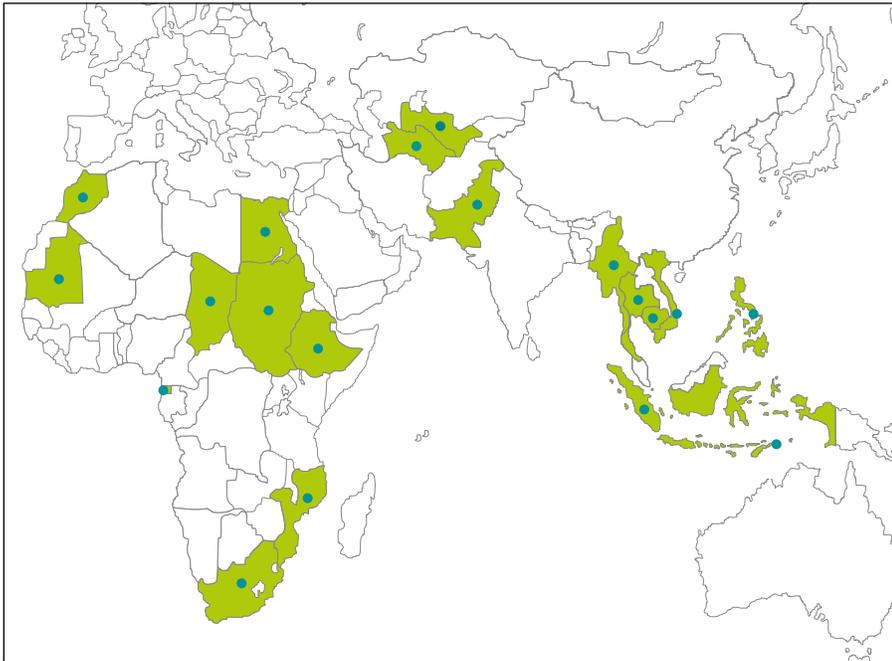
Solutions Sdn. Bhd. (AGTS) manages gas turbine services through Fleet Management Services and Rolls Wood OTEC (RWO), which performs engine overhauls at their Kota Kamuning overhaul facility.

Sapura have been qualified as a GE service provider and parts supplier with the overhaul and service centre at Shah Alam. Sapura has also initiated a vendor capability programme through PETRONAS' Vendor Development Programme (VDP) as part of its commitment to their Localisation Programme.

Turboservices has conducted annual forums or technical seminars for operators and developed a Maintenance Master Schedule in coordination with Production Sharing Contractors/operating units. They are developing their Testing Facility at their service and overhaul centre in Senawang.

## Education

### International Students Sponsored for Study at UTP in the year under review



CAMBODIA	MOROCCO	THAILAND
16	1	42
CHAD	MOZAMBIQUE	TIMOR LESTE
19	13	1
EGYPT	MYANMAR	TURKMENISTAN
45	9	36
EQUATORIAL GUINEA	PAKISTAN	UZBEKISTAN
1	10	27
ETHIOPIA	PHILLIPPINES	VIETNAM
UG: 8 *PG: 3	5	35
INDONESIA	SOUTH AFRICA	* Postgraduates
31	30	
MAURITANIA	SUDAN	
9	UG: 57 *PG: 23	

PETRONAS has sponsored 3,185 Malaysian students to study at institutions of higher learning in the year under review. Since 1975, about 20,000 Malaysian students have been sponsored for undergraduate and postgraduate education. We have spent nearly RM2.5 billion on education sponsorship since then.

PETRONAS' involvement in education has long benefitted the Corporation, the oil and gas industry and countries where we operate through our support for institutions of higher learning. A total of 978 international students were awarded sponsorships to study at Universiti Teknologi PETRONAS (UTP) since 1998.

Our strategic approach to education serves PETRONAS' business objectives and is in line with the Corporate Enhancement Programme

(CEP). We are moving towards establishing ourselves as a regional education and learning hub for the oil and gas industry that will help feed the rapid growth of the industry with a competent and highly skilled workforce, serving the needs of Malaysia and the region. The three drivers to achieve this aspiration are: academic positioning and excellence, research and development (R&D) stewardship, and industry engagement. These drivers will be strengthened through the learning units within the Group. Industry engagement is a vital catalyst for achieving academic positioning and excellence, and R&D stewardship. This is achieved through fostering and expanding collaborations and partnerships with the industry players such as oil and gas companies and the industry service providers. The collaborations include knowledge and technology transfer, R&D, industry attachments, student sponsorship and funding.

# Our Approach to Reporting

Our sustainability reporting is guided by the International Petroleum Industry Environmental Conservation Association/American Petroleum Institute (IPIECA/API) Oil and Gas Industry Guidance on Voluntary Sustainability Reporting 2nd Edition, 2010. This index is also cross-referenced with the Global Reporting Initiative (GRI) indicators defined in the Sustainability Reporting Guidelines, Version 3.1.

## PETRONAS Sustainability Report: IPIECA/API and GRI Index

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