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Petroliam Nasional Berhad (PETRONAS) (20076-K)

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50088 Kuala Lumpur, Malaysia

SUSTAINABILITY REPORT 2018



## ENERGISING GROWTH



## Cover Rationale

Energy that is accessible and affordable is the foundation of inclusive growth. As we continue to build off the momentum to bring sustainable energy to all corners of the Earth, we are reminded of the daily lives that we touch and empower from the work that we do.

As global energy demand continues to grow, we take pride in our ability to deliver uninterrupted energy and the life-changing possibilities that it carries.

Moving forward, we will continue using the transformative power of energy to improve the quality of life, build trust and develop leading-edge solutions, so that we can energise growth wherever we go.

## Introduction

We have structured this report according to our sustainability priorities, providing an outline of the business context and our strategic responses, followed by an overview of our actions and performance. The scope encompasses our business that is integrated across the energy value chain where we have deep knowledge and expertise across the upstream and downstream segments.

In this report, to be read as part of our reporting suite alongside the Annual Report, we disclose PETRONAS' sustainability impact as a responsible, safe and efficient business. The wider context of the energy transition and how PETRONAS is balancing business needs with sustainability requirements is explained throughout the report.

## Sustainability Reporting Frameworks

Our disclosure is guided by the International Petroleum Industry Environmental Conservation Association's Oil and Gas Industry Guidance on Voluntary Sustainability Reporting (2015). IPIECA is the global oil and gas association for environmental and social issues. Additionally, the International Integrated Reporting Framework <IR> informs our assessment of financial and non-financial capitals.

For more information, refer to About This Report on page 94.

## Stakeholder Inclusiveness

The progress of our business depends on the support of our stakeholders. It is a business prerequisite to understand and be responsive to stakeholder needs and interests – it is how we can create and enhance value in a meaningful way.

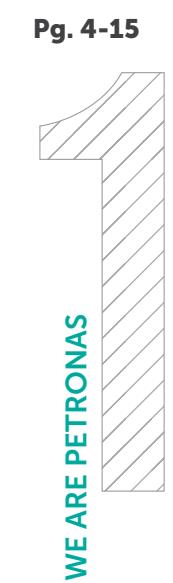
Our goal is to nurture relationships that are built on respect and trust. Understanding the needs and perspectives of stakeholders helps us make more informed decisions that take into account a diverse range of views. We engage with a wide range of stakeholders – refer to page 95 for a list of our key identified stakeholders.

## Materiality Topics

The structure of this year's Sustainability Report is based on our classification of material matters into six topics. Please refer to page 20 for an overview of material sustainability topics.



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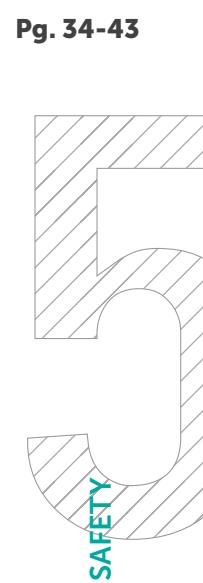
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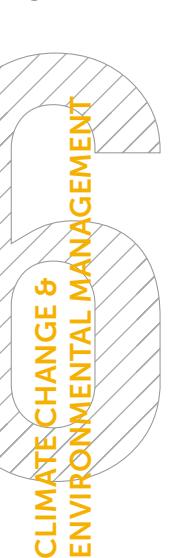
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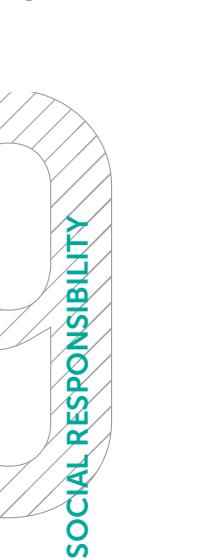
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## WE ARE PETRONAS

## WE ARE PETRONAS

# PETRONAS At a Glance

We deliver energy efficiently and reliably, having built capabilities across every stage of the oil and gas value chain.

We maximise the value of every molecule through our fully integrated business model. We continue to strengthen our portfolio of conventional and unconventional resources, broaden our offering of diverse petrochemical products and maintain our track record of successful project delivery.

As we progress towards a low-carbon energy future, we continue to leverage technology, technical capabilities and our diverse, resilient and competent workforce to sustainably deliver energy to the world.



▷ Refer to Annual Report 2018

### UPSTREAM



### DOWNTREAM

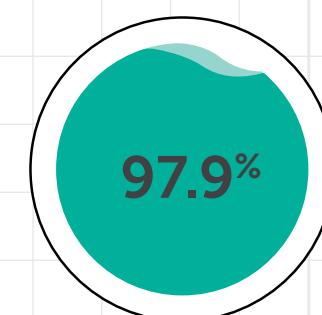


Launch of  
**NEW PETRONAS PRIMAX<sup>95</sup> with Pro-Drive**

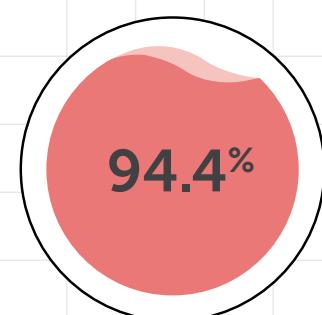
**5-Time Consecutive World Constructors' Champion**  
in Formula One™

Roll-out of **Setel** and **ROVR** to drive new customer experience

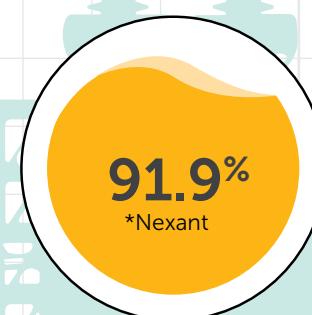
### Reliability



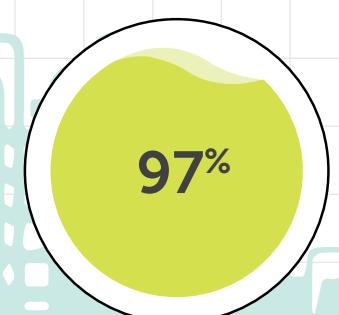
### Overall Equipment Effectiveness



### Petrochemical Plant Utilisation



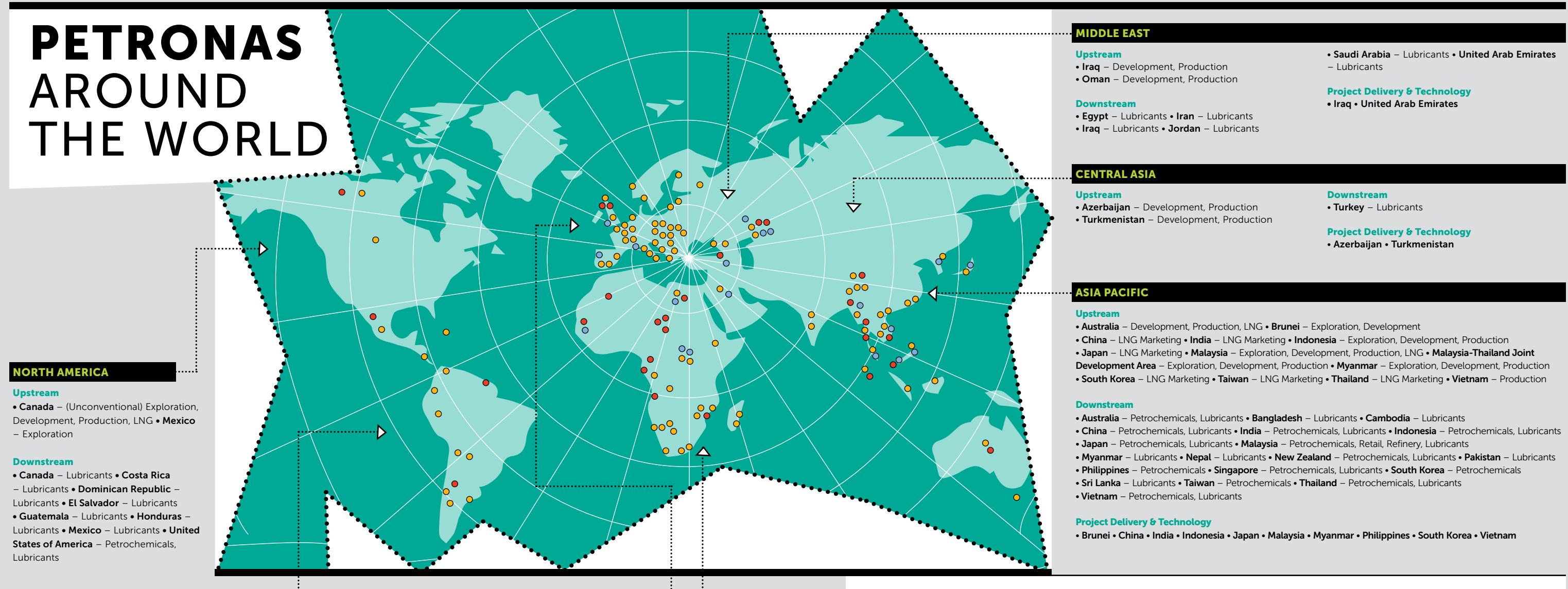
### Pengerang Integrated Complex (December 2018)



▷ Please refer to the PETRONAS Group Annual Report 2018 for more information, accessible at [www.petronas.com](http://www.petronas.com)

# PETRONAS AROUND THE WORLD

● UPSTREAM ● DOWNSTREAM ● PROJECT DELIVERY & TECHNOLOGY



## LATIN AMERICA

**Upstream**

- Suriname – Exploration • Argentina – (Unconventional) Development, Production

**Downstream**

- Argentina – Lubricants • Bolivia – Lubricants
- Brazil – Lubricants • Chile – Lubricants • Colombia – Lubricants • Ecuador – Lubricants • Guyana – Lubricants
- Paraguay – Lubricants • Peru – Lubricants • Suriname – Lubricants • Uruguay – Lubricants

## EUROPE

**Upstream**

- Ireland – Production • United Kingdom – LNG & Gas Trading, Gas Storage

**Downstream**

- Austria – Lubricants • Belgium – Lubricants • Bulgaria – Lubricants
- Czech Republic – Lubricants
- Denmark – Lubricants • Finland – Lubricants • France – Lubricants
- Germany – Lubricants • Greece – Lubricants • Hungary – Lubricants
- Italy – Lubricants • Moldova

**Project Delivery & Technology**

- Italy • Spain • United Kingdom

## AFRICA

**Upstream**

- Angola – Exploration • Chad – Production • Egypt – Development, Production, LNG • Gabon – Exploration • Gambia – Exploration
- Republic of South Sudan – Development, Production
- Republic of Sudan – Development, Production • Senegal – Exploration

**Downstream**

- Algeria – Lubricants • Angola – Lubricants • Botswana – Retail, Lubricants • Burundi – Lubricants • Cameroon – Lubricants • Chad • Côte D'Ivoire – Lubricants
- Democratic Republic of the Congo – Retail, Lubricants • Ethiopia – Lubricants • Gabon – Retail, Lubricants • Ghana – Retail, Lubricants
- Kenya – Retail, Lubricants • Lesotho – Retail, Lubricants

• \*\*Malawi – Retail, Lubricants • Mali – Lubricants • Mauritania – Lubricants

• Mauritius – Retail, Lubricants • Morocco – Lubricants • \*\*Mozambique – Retail, Lubricants • Namibia – Retail, Lubricants • Republic of South Sudan

• Republic of Sudan • \*\*Reunion – Retail, Lubricants • \*\*Rwanda – Retail, Lubricants • South Africa – Refinery, Retail, Lubricants • Swaziland – Retail, Lubricants • \*\*Tanzania – Retail, Lubricants • Togo – Lubricants • Tunisia – Lubricants • \*\*Zambia – Retail, Lubricants • \*\*Zimbabwe – Retail, Lubricants

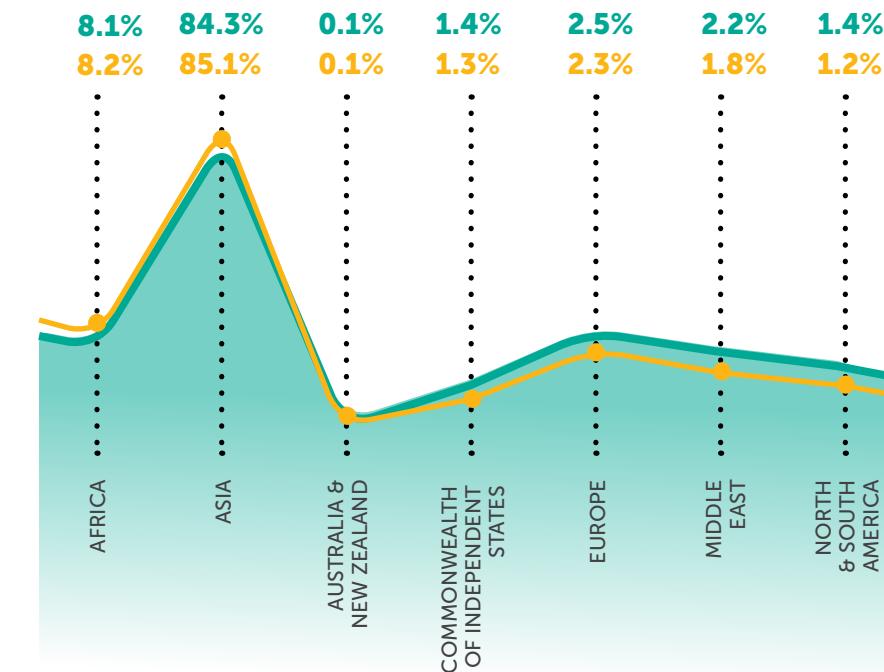
\*\* Engen Holdings (Pty) Limited entered into a transaction with Vivo Energy plc, which saw Engen's operations now transferred to Vivo Energy.

**Project Delivery & Technology**

- Egypt • Mauritania • Republic of Sudan • Republic of South Sudan

## OUR WORKFORCE

Breakdown of talents by region (%)



● 2018 ● 2017

## Total number of talents

**48,001** **49,911**

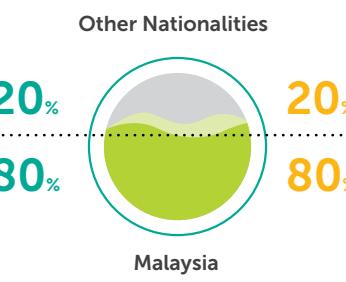
### Employment type

**87%** Permanent **85%**  
**13%** Contract **15%**

### Gender distribution

**73%** Male **72%**  
**27%** Female **28%**

### Breakdown of employees



## WE ARE PETRONAS

## WE ARE PETRONAS

### Our Profile

#### VISION

# A LEADING OIL AND GAS MULTINATIONAL OF CHOICE

#### MISSION

We are a business entity

Oil and gas is our core business

We add value to this resource

We contribute to the well-being of society

Petroliam Nasional Berhad (PETRONAS) is Malaysia's national oil and gas company, ranked amongst the largest corporations on Fortune Global 500®.

Since 1974, we have built our capabilities across every stage of the oil and gas value chain. We seek opportunities in hydrocarbon investments across the globe and maximise the value of every molecule through our integrated business model.

Our portfolio includes conventional and unconventional resources and a diverse range of fuel, lubricant and petrochemical products. This is further strengthened with a successful product delivery track record.

Our customers are at the heart of everything that we do and our businesses are anchored on meeting their needs.

Our technology is our differentiator and the key to ensuring excellence in all that we offer – energy, products and solutions, as well as unlocking new opportunities.

Sustainability is at the core of everything that we do, as we believe in harnessing the good in energy to add quality to everyday lives.

People are our strength and our partners for growth.



#### SHARED VALUES

##### Loyalty

Loyal to corporation

##### Integrity

Honest and upright

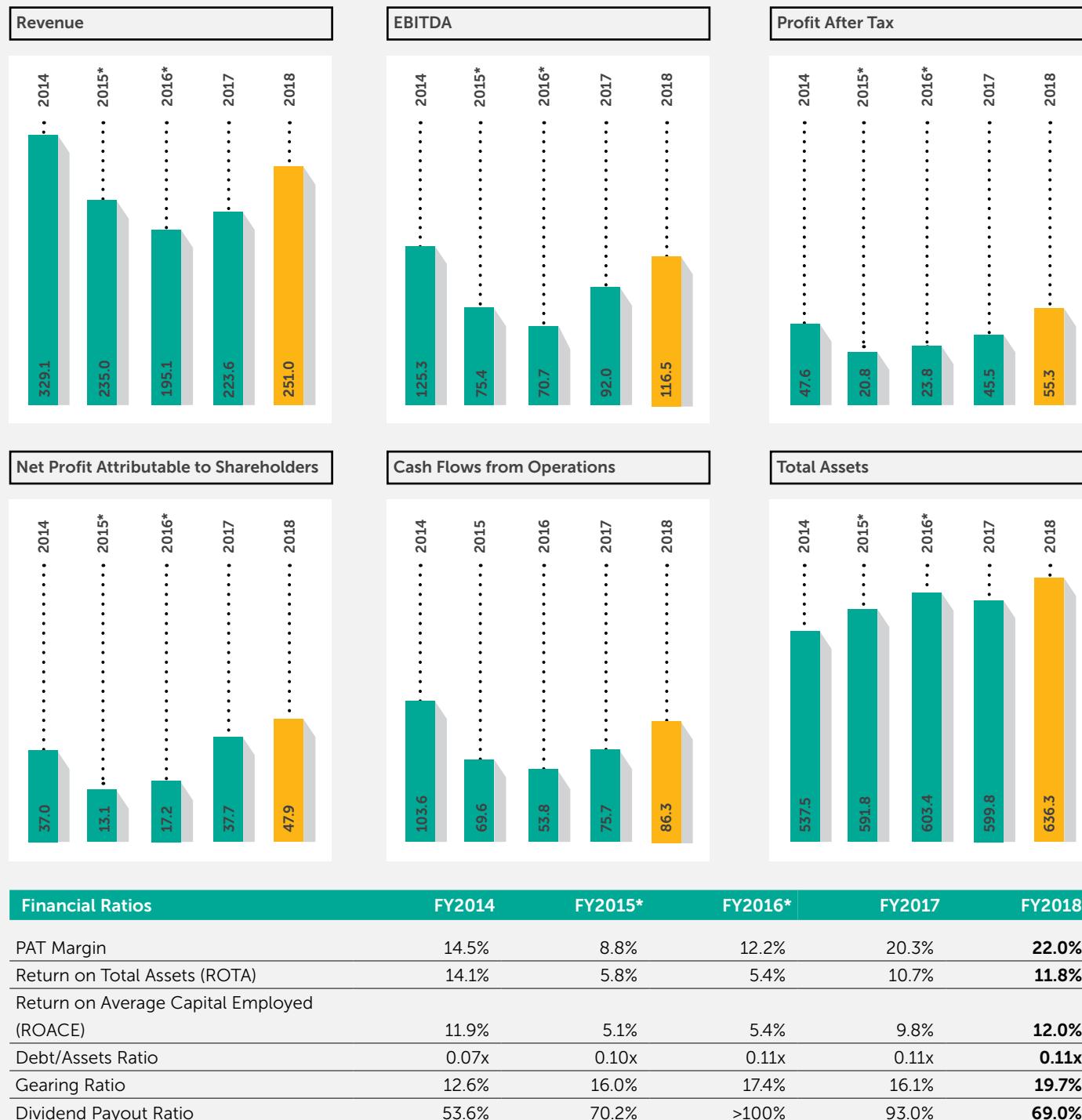
##### Professionalism

Strive for excellence

##### Cohesiveness

United, trust and respect for each other

# PETRONAS' FIVE-YEAR KEY FINANCIAL INDICATORS (RM BILLION)



\* Certain financial information and its corresponding financial ratios have been restated due to the change in accounting policies with respect to revenue reporting and inventory valuation for gas trading activities.

## MESSAGE FROM THE PRESIDENT AND GROUP CHIEF EXECUTIVE OFFICER



TAN SRI WAN ZULKIFLEE WAN ARIFFIN

**"As we transition towards a low carbon economy, PETRONAS is committed to managing the impact of climate change through advancing operational discipline and capabilities as well as harnessing technological developments in ensuring a sustainable and better energy future for generations to come."**

## LETTER FROM THE CHAIRMAN, CORPORATE SUSTAINABILITY COUNCIL



IR M FIROUZ ASNAN

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The year 2018 was characterised by greater volatility in oil and commodity prices and diverging geopolitical and macroeconomic trends. While forecasting the state of the world in the next few decades is not easy, megatrends are providing indications of potential opportunities and challenges on the horizon.

## LETTER FROM THE CHAIRMAN, CORPORATE SUSTAINABILITY COUNCIL

The growth of the global population, rapid urbanisation, demographic change and changing societal needs will lead to an increased demand for energy and resources.

At the same time, a growing push for sustainability and collective action on climate change are disrupting how we work. Consumers, organisations and governments are now actively exploring ways for efficient energy use, putting environmental awareness into practice and at the fore of their focus.

In the face of rising concerns, PETRONAS aims to be more agile and resilient by enhancing our competitive advantage. We'll continue in our commitment to delivering safe, secure and clean energy solutions for the people and environment and enriching the lives of the communities where we operate.

### THE ENERGY TRANSITION

Energy is an essential commodity - a clean, affordable and accessible energy is important for economic growth, particularly in developing nations. In moving towards a low-carbon future, businesses and government agencies are reducing the environmental impact of the way we work, travel and power economy with renewable energy and resources.

To manage the energy transition that is taking place, PETRONAS applies the three-pronged strategy for business sustainability: maximising cash generation, expanding our core business and stepping out to future-proof the organisation.

As a global player in the energy sector, we take a holistic approach across our businesses in addressing this shift in the energy world. We supply affordable energy reliably and at the same time we embrace the production of resources in a sustainable manner.

Here, we are guided by the PETRONAS Climate Change Framework, which is reinforced by extensive efforts, from measuring and reducing GHG emissions as well as adapting to the impact of climate change. We have recorded GHG reductions of over 12 million tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e), cumulatively between 2012 and 2018.

We have also made inroads into a low-carbon economy with the Company's investment in solar energy and embarked on a technology agenda that will strengthen our commitment to deliver cleaner energy.

Our efforts indeed reflect our commitment to move towards sustainable energy, which will ultimately result in a safe and prosperous future for our communities and stakeholders.

### PEOPLE AS OUR ASSET

Our people are important assets to the Company and we strive to create a conducive working environment that allows talents to thrive, which includes a safe workplace with ample opportunities for them to progress in their careers through various programmes aimed at enhancing knowledge and skills. By embedding the principles of diversity and inclusion in the way we do business, we have created a diverse workforce and an inclusive environment that nurtures and respects different people.

In creating sustainable socio-economic development, we continue to empower local communities with the right knowledge, skills and capabilities, guided by the PETRONAS Corporate Social Responsibility (CSR) Framework. Our community development initiatives focus specifically on education, community well-being and environment.

These CSR initiatives are invested and conducted in a sustainable manner, effectively achieved through our engagement and collaboration with relevant stakeholders. This active engagement is even more crucial when implementing high-impact programmes and projects that will benefit local communities.

### SAFETY OF OUR PEOPLE

The safety of our people, both at operational and office facilities, remains our top priority. To ensure everyone goes home safely, it is our commitment to safeguard the people, the well-being of the environment as well as communities living in the vicinity of our operations.

We have continued to improve our Health, Safety, Security and Environment (HSSE) performance in 2018. We recorded improvements in Lost Time Injury Frequency (LTIF) from 0.17 number of cases per million man-hours in 2017 to 0.09.

Intensive efforts have also been channelled into improving the design, technical and operational integrity of our assets. This has resulted in improvements in the process safety incident. In 2018, we recorded a significant reduction in Tier 1 Process Safety Event (PSE) to eight cases this year from 12 in 2017.

To sustain HSSE excellence, we focus on building the right mindset. With this in mind, we have launched a series of "Because We Care" initiatives to foster and create a culture of genuine care in the workplace. This will translate not just to more engaged employees, but also the strengthening of PETRONAS Cultural Beliefs within the organisation in the long term.

## LETTER FROM THE CHAIRMAN, CORPORATE SUSTAINABILITY COUNCIL

### OUR JOURNEY TOGETHER

Sustainability is a business prerequisite for long-term growth. The PETRONAS Corporate Sustainability Framework (CSF) outlines nine areas that are applicable to all aspects of our operations, group-wide. They guide the overall decision-making and underscore the Company's commitment to undertake business in a responsible and sustainable manner. To this end, I would like to call upon all our stakeholders to continue lending us your unwavering support in our journey towards a sustainable future.

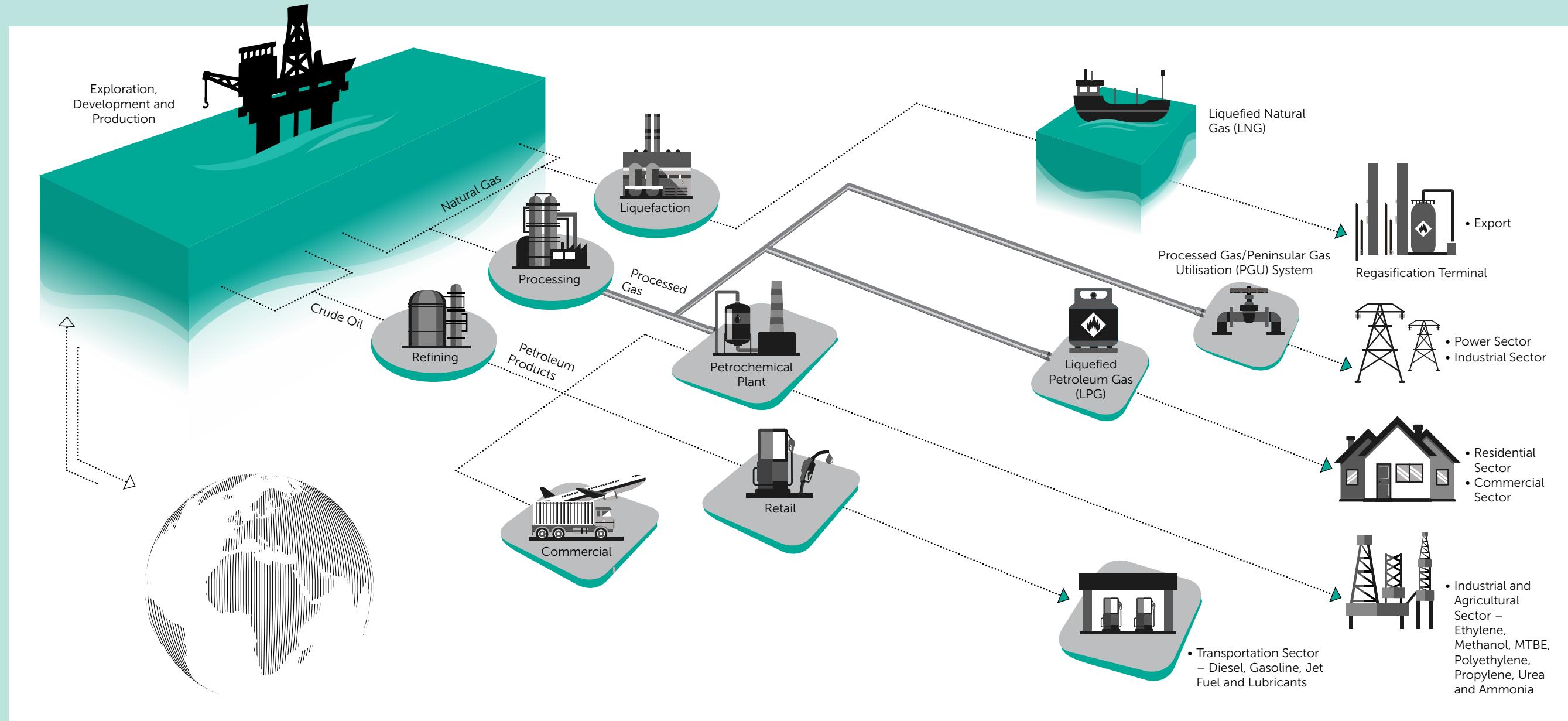
Thank you.

# SUSTAINABLE VALUE CREATION

Every day, we work towards safe, secure and cleaner energy whilst striving towards prosperity for all.

For PETRONAS to deliver value, remain fit for the future and continuously generate social, economic and environmental impact, our strategies must adapt to changing times and address multiple challenges. Our purpose is to be a progressive energy and solutions partner enriching lives for a sustainable future. As the energy sector is in a phase of relatively rapid transition, our sustainability focus is not a static overview.

We are continuously moving forward with better solutions to respond to the risks and new opportunities presented to us. Our aim is to minimise the impact of our own footprint whilst developing and delivering climate-friendly strategies and solutions.



## EXPLORATION AND PRODUCTION

**EXPLORATION**  
Developing resource potential and building up commercial reserves.

**DEVELOPMENT**  
Field development and construction (including supporting infrastructure).

**PRODUCTION**  
Drilling and production of hydrocarbons.

## PROCESSING

**LIQUEFACTION**  
Converting gas into liquid state by increasing pressure and reducing temperatures to shrink the gas volume.

**PROCESSING**  
Turning streams of natural gas into commercial products, in addition to treating gas deposits.

**REFINING**  
Processing crude oil and condensates into useful petroleum products.

## MARKETING AND DISTRIBUTION

**RETAIL**  
Selling and marketing of fuel and non-fuel products and providing one-stop convenience centres at service stations.

**COMMERCIAL**  
Trading and marketing of crude oil and petroleum products to individual and commercial customers.

**PETROCHEMICAL PLANT**  
Processing of oil and gas into products from which other chemicals are derived.

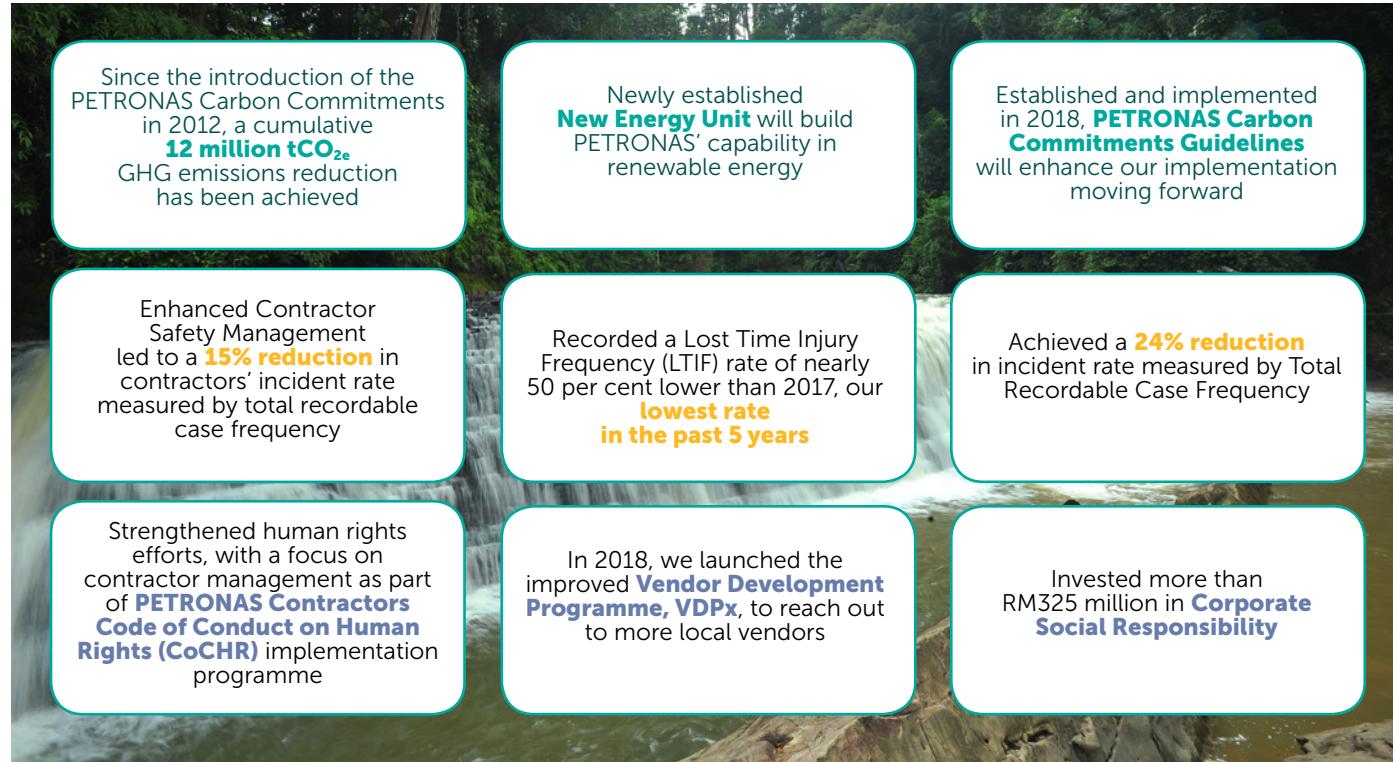
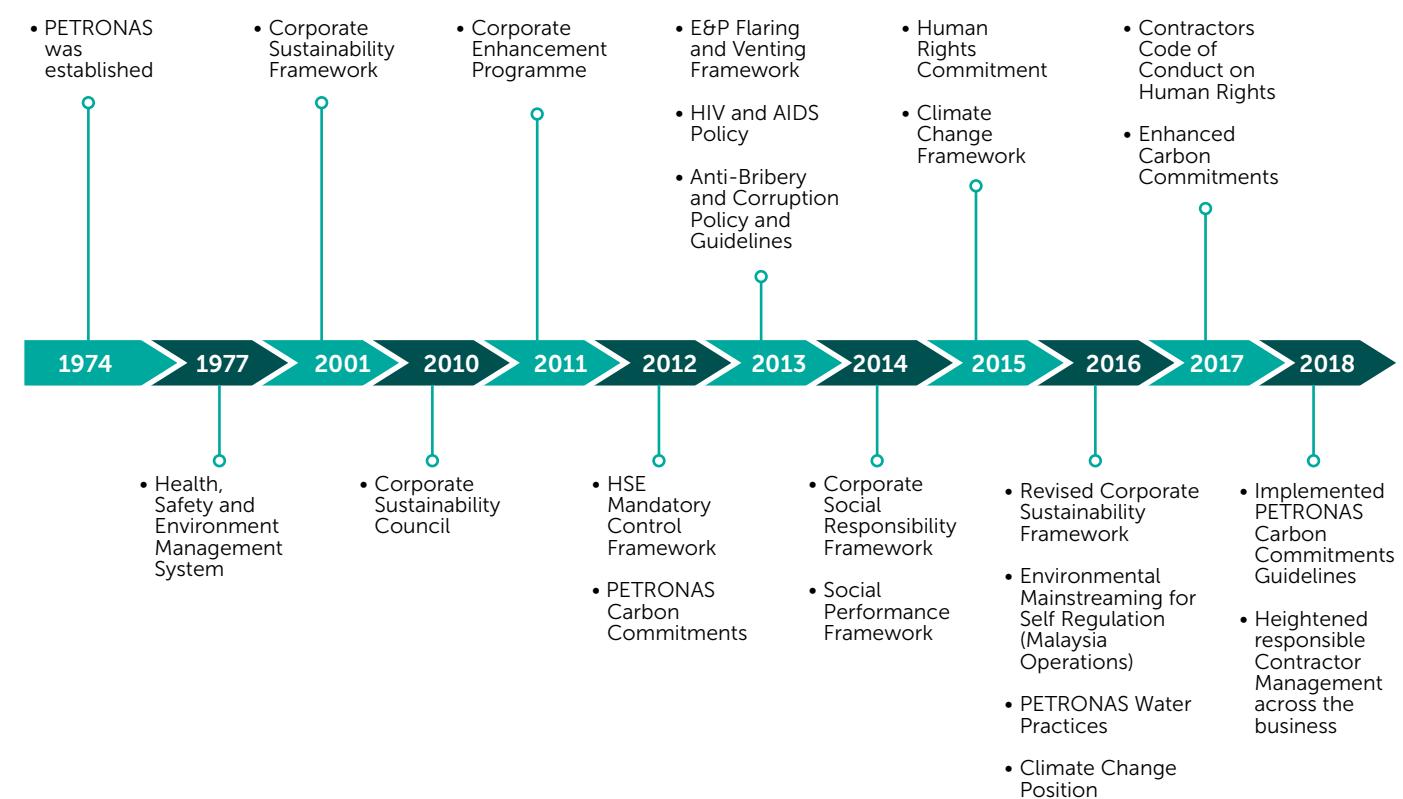
**LIQUEFIED PETROLEUM GAS (LPG)**  
Propane and butane components used as cooking fuel, transport fuel and feedstock for petrochemicals.

**PROCESSED GAS/PENINSULAR GAS UTILISATION (PGU) SYSTEM**  
Natural gas is processed and fed into a pipeline system that delivers it to different sectors.

**LIQUEFIED NATURAL GAS (LNG)**  
Natural gas that is liquefied under extremely cold temperatures to facilitate storage or transportation in specially designed vessels.

## SUSTAINABLE VALUE CREATION

### Our Sustainability Milestones



## SUSTAINABLE VALUE CREATION

### Focus Areas

Our sustainability efforts are guided by the **PETRONAS Corporate Sustainability Framework (CSF)** that defines the areas where we have a role to play in managing risks and impacts. The Framework, conceptualised in 2001, was revised in 2016, taking into view our business aspirations, the Paris Agreement and the United

Nations Sustainable Development Goals (SDGs). The CSF constitutes nine areas that are applicable to all aspects of our operations, group-wide. This includes our Public Listed Companies, where CSF may be adopted or localised to suit the unique business characteristics.

Sustainability Area of Focus	Details
 • <b>Shareholder Value</b>	Fulfilling our responsibility as a business entity to deliver returns to our shareholders through long-term economic value creation.
 • <b>Natural Resource Use</b>	Promoting optimum use of hydrocarbons and water in our operations through efficient processes and technology application.
 • <b>Climate Change</b>	Recognising our responsibility as a player in the global energy sector to balance the issue of climate change with the challenge of sustainably producing affordable and reliable energy.
 • <b>Biodiversity and Ecosystem Services</b>	Ensuring projects and operations do not pose significant impacts on biodiversity and local ecosystems.
 • <b>Health, Safety and Environment</b>	Ensuring our facilities, products, and services are in accordance with all legal requirements and the industry's best practices to safeguard the health, safety and well-being of our employees, contractors, communities, and the environment.
 • <b>Governance and Business Ethics</b>	Upholding the organisation's integrity and trustworthiness in delivering value through strong governance mechanisms and ethical business practices.
 • <b>Human Rights</b>	Respecting internationally-recognised human rights in our operations and ensuring compliance with our Code of Conduct and Business Ethics, and all relevant legal and regulatory requirements.
 • <b>Corporate Social Responsibility</b>	Investing in sustainable initiatives as a socially responsible organisation, in line with our purpose to contribute to the well-being of society.
 • <b>Workforce Development</b>	Equipping our workforce with the skills and mindset as we move to deliver sustainable high performance.

## SUSTAINABLE VALUE CREATION

### Material Factors

PETRONAS' material sustainability factors guide the content of our Sustainability Report. The Report is built on materiality assessments to ensure the information provided is timely and meaningful and includes input and verification by PETRONAS subject matter experts and data owners. As we work towards integrated reporting, processes are constantly reviewed for more efficient ways to incorporate financial and non-financial materiality factors.

In reporting our material factors for 2018, we have structured them to fall under six overarching topics – Governance and Ethics, Safety, Climate Change and Environmental Management, Product Stewardship

and Supply Chain, Health, Wellness and Workplace and Social Responsibility. All material factors are accompanied by disclosure management approaches, year-on-year performance data as well as key highlights.



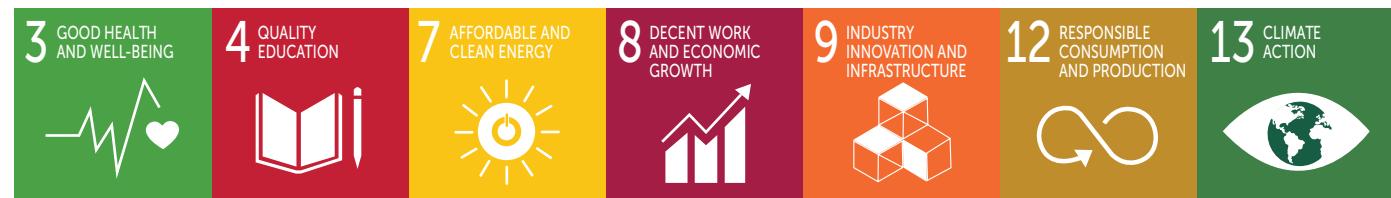
Topic	Material Factors	Capitals Employed
<b>Governance &amp; Ethics</b>	<ul style="list-style-type: none"> <li>• Good Governance</li> <li>• Compliance</li> </ul>	Intellectual Capital Human Capital Social and Relationship Capital
<b>Safety</b>	<ul style="list-style-type: none"> <li>• Personal Safety</li> <li>• Process Safety</li> <li>• Emergency Preparedness and Crisis Management</li> <li>• Security</li> </ul>	Human Capital Social and Relationship Capital
<b>Climate Change &amp; Environmental Management</b>	<ul style="list-style-type: none"> <li>• Climate Change</li> <li>• Environmental Management</li> <li>• Biodiversity and Ecosystem Services</li> </ul>	Natural Capital
<b>Health, Wellness &amp; Workplace</b>	<ul style="list-style-type: none"> <li>• Health &amp; Wellness</li> <li>• Human Capital</li> </ul>	Human Capital Social and Relationship Capital
<b>Product Stewardship &amp; Supply Chain</b>	<ul style="list-style-type: none"> <li>• Product Stewardship</li> <li>• Supply Chain</li> </ul>	Manufactured Capital Intellectual Capital
<b>Social Responsibility</b>	<ul style="list-style-type: none"> <li>• Human Rights</li> <li>• Corporate Social Responsibility</li> </ul>	Social and Relationship Capital

Further details of our Stakeholder Engagement can be found on page 95.

Our materiality factors are aligned with the UN SDGs since it came into effect in 2016. The SDGs represent an opportunity for us to prioritise business-led solutions that generate the greatest positive impact to society.

It enables us to build on our efforts towards nation-building and the global sustainability agenda, whilst enhancing partnerships to deliver sustainable value creation.

In 2018, we identified seven SDGs that are relevant to our corporate practices. Moving forward, we will link the SDGs more closely to our business operations, sustainability governance, key performance metrics, and material sustainability factors.



Source: United Nations General Assembly

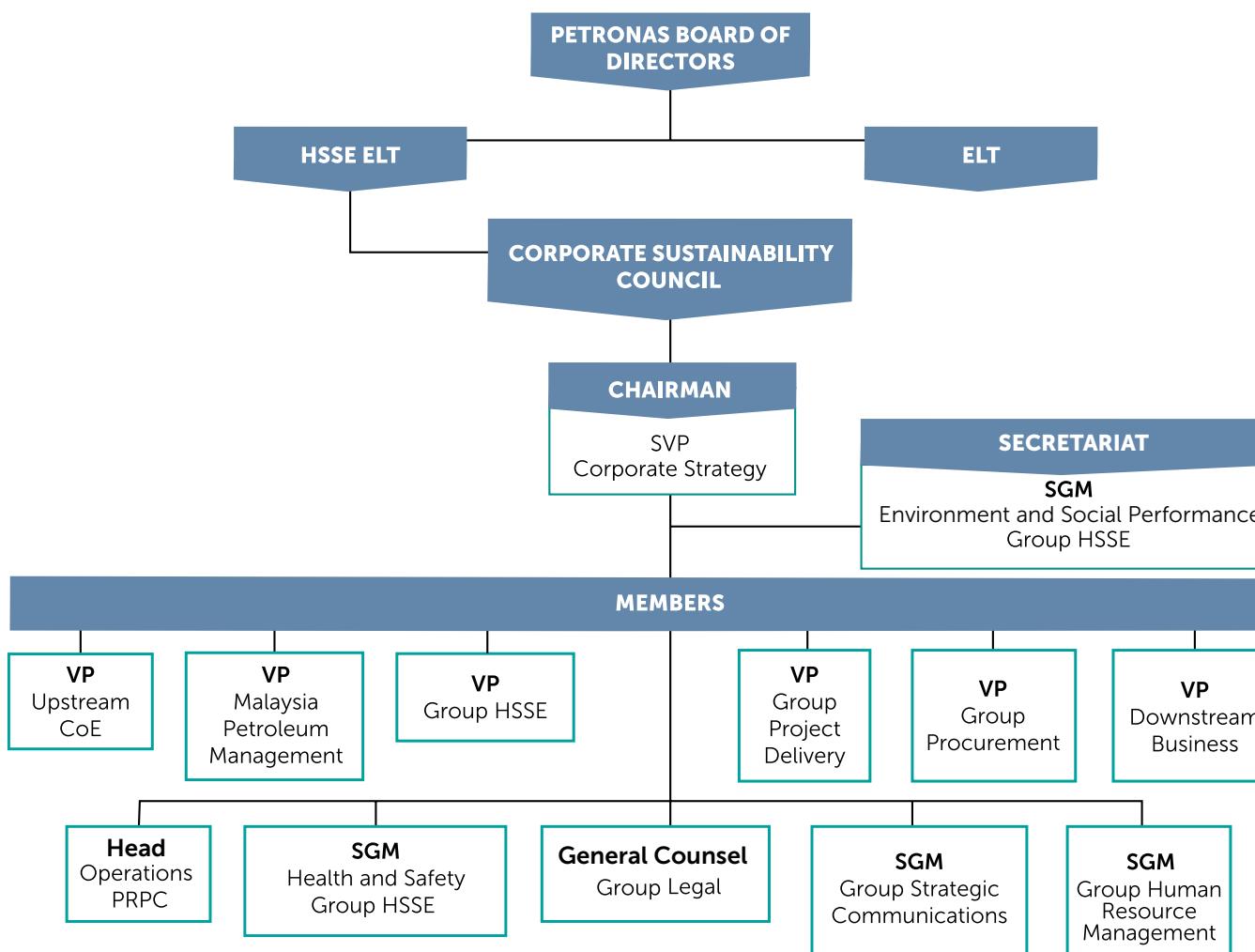
## SUSTAINABLE VALUE CREATION

### Sustainability Governance

**The Corporate Sustainability Council (the Council) is an advisory body that oversees the integration of sustainability practices in PETRONAS, including all Businesses, Operating and Holding Company Units.**

The Council is made up of senior management members, representing our integrated business value chain. The Council undertakes quarterly reviews to ensure a fair representation of broader sustainability issues across the organisation as well as assessments

of the environmental, social and governance (ESG) landscape in specific activities.



**Notes:**

ELT - Executive Leadership Team

SGM - Senior General Manager

CoE - Centre of Excellence

PRPC - PETRONAS Refinery and Petrochemical Corporation Sdn Bhd

Secretariat to the Council is SGM, Environment and Social Performance, Group HSSE

## SUSTAINABLE VALUE CREATION

### PETRONAS CORPORATE SUSTAINABILITY COUNCIL HIGHLIGHTS OF 2018

Towards a Lower Carbon Future	Momentum to Enhance Management of Human Rights	Consolidating Sustainability at PETRONAS
Establishment of the New Energy Division at PETRONAS. Initiated collaboration with divisions within PETRONAS, including Project Delivery & Technology.	Reviewed PETRONAS Human Rights risk assessment system for compliance and accountability across contractors and suppliers.	Reviewed PETRONAS Sustainability Implementation and Value Impact including collaboration opportunities within PETRONAS divisions to strengthen disclosure to stakeholders and public.

### Partnerships and Collaborations

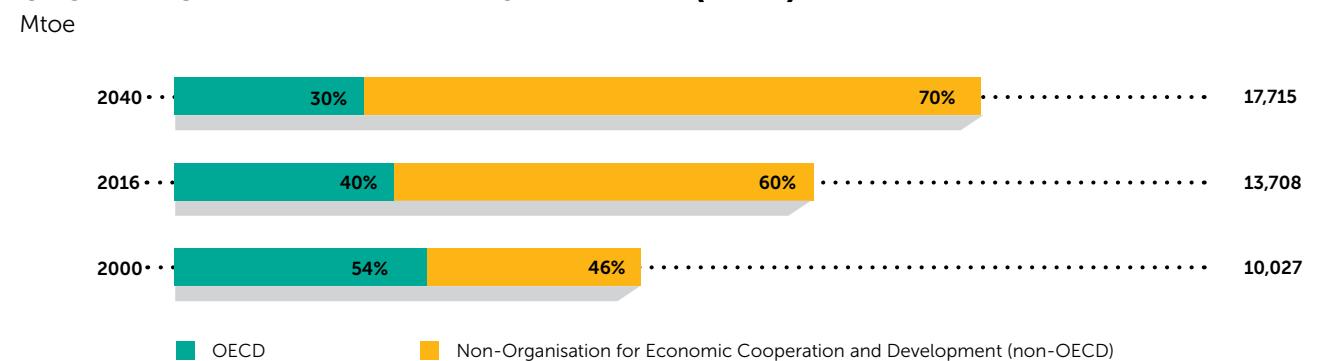
We support the development of the wider oil and gas sector and continue to enhance our relationships with stakeholders. The major changes occurring in the sector provide many opportunities, but we recognise that we can only truly understand the magnitude of change, embrace it and create impact through meaningful partnerships and collaborations with stakeholders.

OUR APPROACH TO PROMOTING INDUSTRY GROWTH	KEY ACTIVITIES IN 2018
Participation in membership organisations, associations, events and working groups in Malaysia and internationally.	<ul style="list-style-type: none"> <li>PETRONAS is a corporate advisor for the Malaysian Business Consortium on HIV/AIDS (MBCH) – a platform for Malaysian companies to address HIV/AIDS</li> <li>World Gas Conference 2018</li> <li>Human Rights Commission of Malaysia (SUHAKAM) event: Sharing on human rights management</li> <li>Malaysian Gas Association (MGA) and PETRONAS' Integrated Hydrocarbon Management (IHM) networking event for policymakers and members</li> <li>8<sup>th</sup> National Energy Forum Industry panel on Energy Security and on Renewable Energy</li> <li>Asia Petrochemical Industry Conference (APIC) 2018: As the host, we focused on meaningful collaborations in the face of disruptions encountered by the industry.</li> </ul>
Collaboration and joint initiatives aimed at addressing HSSE and sustainability risks as well as opportunities.	<ul style="list-style-type: none"> <li>Working with industry peers to collectively develop sustainability opportunities (decommissioning guidelines, contractor management)</li> <li>PETRONAS Leading Women Network (PLWN) offered leadership programmes and engagement sessions for women in the industry.</li> </ul>
Cascading insights amongst internal Community of Practice (CoP) on the various HSSE and sustainability disciplines.	<ul style="list-style-type: none"> <li>Trainings, on-the-job exposure at our operational facilities and our CoP on various HSSE disciplines.</li> </ul>

# THE ENERGY TRANSITION

The transition to a low-carbon economy is one of the great challenges of our time. The Paris Agreement has set the global expectations for combating climate change. Together with other commitments, the pressure is high for countries to accelerate actions and initiate changes in their energy systems. Rising urbanisation, ageing populations and a growing middle class also add to the evolving requirements for energy systems globally.

## GLOBAL TOTAL PRIMARY ENERGY DEMAND (TPED)



Source: IEA World Energy Outlook 2018

## Addressing the Energy Trilemma

The energy industry is an important sector of the economy that creates jobs and value by extracting, transforming and distributing energy goods and services. Its products are also needed for nearly all economic activities, goods and services. Currently, the global energy sector is undergoing a transition in response to climate change, digitalisation and changing consumer behaviour.

Decarbonisation of the world's energy systems is accelerating. As the push for a low-carbon economy intensifies, renewable energy has been making inroads, supported by favourable government policies such as subsidies and power grid priority dispatch.

Global energy demand has been growing in recent years, reaching an estimated 13,708 million tonnes of oil equivalent (Mtoe) in 2016, compared to 10,027 Mtoe in 2000. It will continue to grow another 29 per cent by 2040, driven by the increasing middle class, urbanisation and economic growth in emerging markets. Although Europe, Japan and other Organisation for Economic Cooperation and Development (OECD) nations will demonstrate a decline in Total Primary Energy Demand (TPED) from 40 per cent to 30 per cent by 2040 due to ageing populations, sluggish economic growth, higher energy efficiency and digitalisation, the non-OECD share of Global TPED will rise from 60 per cent to 70 per cent.

## Megatrends and their impacts on the energy sector

Megatrends	Impacts
<b>RAPID URBANISATION</b> More than two thirds of the world's population will be living in cities by 2040.  Malaysia's population is forecast to exceed 40 million.	Increase in demand for energy.
<b>DIMINISHING RESOURCES</b> Demand for land for housing, agriculture and economic activities, raw materials, food, water and resources coupled with depletion and extraction of natural resources.	Increase in global demand for natural resources by 30% between 2016 and 2040 tempered with energy-efficient systems.
<b>CHANGING DEMOGRAPHICS</b> The global population is ageing, supported by advances in public health and medical technology and coupled with a reduction in birth rate.  In Malaysia, the percentage of people aged 65 and above is projected to more than double from 6.3% in 2017 to 14.5% in 2040.	Energy demand, particularly from the residential sector, may undergo changes in line with an increase in the aged population.
<b>TECHNOLOGY TRENDS</b> The next industrial revolution – Industry 4.0 – is upon us, both globally and in Malaysia. In particular, unprecedented advances will be made in computing power, automation, Internet of Things (IoT), Artificial Intelligence (AI) and Augmented Reality (AR).	For Malaysia's energy sector, these trends offer immense opportunities to reduce the cost of doing business through improved efficiencies and productivity and to realise new business opportunities and decarbonise the economy.
<b>SHIFTING GLOBAL ECONOMIC AND POWER BALANCE</b> The global power axis will shift from established developed nations to developing ones, particularly China and India.	Geopolitical shifts, new distribution of powers and energy trade flows will create both challenges and opportunities for energy security.

## THE ENERGY TRANSITION

### Outlook: Continued Demand for Fossil Fuels

Fossil fuels made up about 81 per cent of the world's energy demand in 2016. By 2040, the IEA forecasts that fossil fuels will still account for 75 per cent from the total energy consumed. Natural gas is the only fossil fuel to record a growth in demand, with its share expected to rise to 25 per cent in 2040 from 22 per cent in 2016.

Gas is anticipated to be the second most important power generation fuel until 2040, after coal. Globally, coal's share is expected to decline to 22 per cent in 2040 from 27 per cent in 2016, eroded by stricter government policies aimed at reducing emissions.

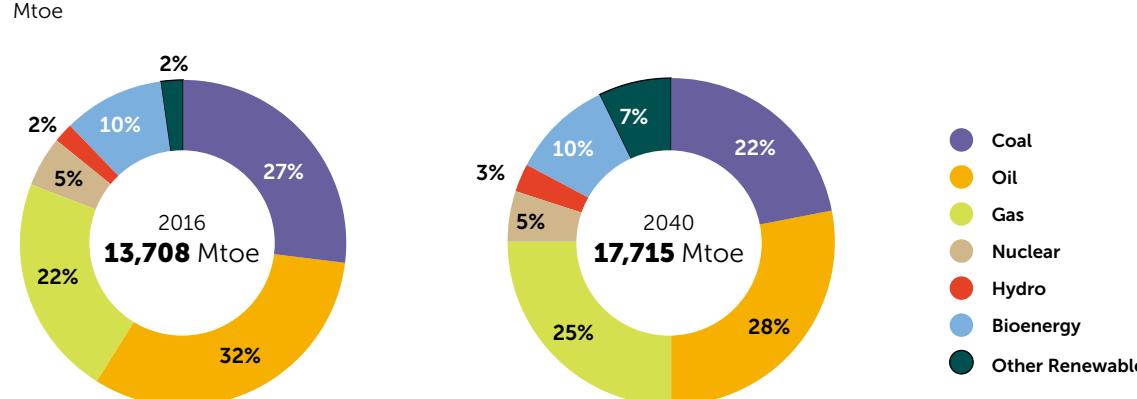
Worldwide oil demand will grow by 12 per cent between 2016 and 2040 in absolute terms, despite its declining fuel share from 32 per cent to 28 per cent in the primary energy mix. Fuel efficiency policies and the growing fleet of electric passenger vehicles will erode demand, but at the same time, heavy vehicles, aviation and marine vessels continue to rely on the unrivalled energy density of refined oil products. The petrochemical sector will also contribute to the rise in demand for oil, as the expanding population will create more demand for plastics, packaging, fertilisers, clothing, detergents, solvents, medical equipment, digital devices, tyres and other derivatives used in everyday consumables. Petrochemicals are estimated to account for more than a third of the growth in world oil demand by 2030 and nearly half by 2050, propelling it to become the largest driver of global oil demand in the long run.

While fossil fuels will remain core to the global energy mix, we continue to promote the use of natural gas and liquefied natural gas (LNG) as lower carbon fuels. Today, natural gas is Malaysia's largest source of energy, providing nearly half of the fuel required for power generation and a third of the industrial sector's energy needs. It also forms the backbone of Malaysia's petrochemical industry.

Renewable energy has demonstrated double-digit year-on-year growth in recent years, but the share of renewable energy, including hydro, bioenergy, solar and wind, remain relatively small at 14 per cent. While coal, oil and natural gas continue to be dominant up to 2040, the overall share of renewables will increase from 14 per cent to 20 per cent, consisting mostly of growth in solar photovoltaic and wind power.

The challenge of increasing the share of renewables in the global primary energy mix lies in the intermittent nature of solar and wind power generation. Additionally, the efficiency of most solar panels in converting sunlight into power ranges from 15 per cent to 18 per cent compared to a combined-cycle gas turbine that exceeds 60 per cent efficiency today. Therefore, natural gas demand is expected to increase as the preferred lower carbon fuel in power generation.

### GLOBAL TOTAL PRIMARY ENERGY DEMAND (TPED) BY FUEL



### PETRONAS Paving the Way Towards a Low-Carbon Economy

A resilient integrated business model supports our efforts towards transitioning to a low-carbon economy. Over the years, PETRONAS has invested heavily in the development of new technology to maximise hydrocarbon resources and reduce our environmental footprint, for example through CO<sub>2</sub> management. Investments have also been made in emerging technologies through collaboration with academia and various corporations. Since 2016, PETRONAS has embarked on a journey of digital transformation that will allow us to deliver greater value by leveraging on advanced digital analytics and machine learning.

We are guided by the PETRONAS Climate Change Framework to identify, assess and prioritise risks pertinent to our business operations. Identified high risk elements are subsequently integrated into the PETRONAS Enterprise Risk Management profile across the Group.

#### A Thematic Approach:

Investing in low-carbon solutions	Driving operational excellence	Building resilience
<ul style="list-style-type: none"> <li>New Energy Unit to be fully operationalised by 2019. The unit develops revenue streams decoupled from oil and gas, with an initial focus on solar and wind.</li> <li>Research and development in Carbon Capture, Utilisation and Storage (CCUS).</li> <li>Delivering fuel efficiency in our products (Primax and Syntium).</li> <li>PETRONAS Research collaborates with Daimler Automotive on green projects, such as Low-Carbon Fuel &amp; Vehicle Emissions Control.</li> <li>PETRONAS supports Yayasan Sabah in the conservation of Imbak Canyon Conservation Area (ICCA), a class-1 forest reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Zero continuous flaring and venting of hydrocarbon in the design of new Upstream and Downstream facilities and projects.</li> <li>Reduce continuous flaring of hydrocarbon for all existing Upstream and Downstream facilities.</li> <li>Malaysia Petroleum Management (MPM) to apply a country level CO<sub>2</sub> emissions allowance in the planning process for high CO<sub>2</sub> field development.</li> <li>Promoting natural gas as a low-carbon fuel.</li> <li>Energy efficiency in operations.</li> </ul>	<ul style="list-style-type: none"> <li>PETRONAS has several existing solar photovoltaic (PV) projects with a combined capacity of about 10.7 MW in Gebeng, Pahang, Suria KLCC and a Solaris retail kiosk in Kuala Lumpur.</li> </ul>

We will continue to build our expertise in the sustainable production of oil and gas to provide an uninterrupted supply of energy, contributing towards a better quality of life for all. At the same time, we are investing in cleaner energy solutions to accelerate the energy transition towards a low-carbon economy.

## THE ENERGY TRANSITION

### The future of gas

We forecast that in the next few decades, natural gas will grow globally much faster than either oil or coal. New technologies for the efficient removal of CO<sub>2</sub> in high-CO<sub>2</sub> gas fields have developed rapidly in recent years, allowing us to venture into the sources of natural gas.

Although fossil fuel emissions from the combustion of natural gas are much lower than those from coal and oil, there are other environmental risks to consider in its production. For example, methane leakage can negate the greenhouse gas emissions advantages of using natural gas. The key to developing a low-carbon LNG industry is to reduce the methane emissions associated with the production, transportation and liquefaction of natural gas.

At PETRONAS, while we continue to expand our LNG portfolio and promote gas advocacy, we also utilise cutting edge technologies to ensure sustainable extraction and processing of LNG.

As an integrated global LNG player with over 35 years of experience, PETRONAS is the world's third largest LNG supplier. Our innovative suite of LNG solutions includes among others break-bulking, ship-to-ship LNG transfers, LNG bunkering and ISO-tank solutions.

#### PETRONAS Floating Liquefied Natural Gas Facilities

While our floating LNG facilities help us achieve a sustainable supply of LNG and create a more competitive gas market, they position us to be at the forefront of technology and innovation in carrying out our strategies to monetise gas.

Our first floating LNG facility, PFLNG Satu, comprising several square kilometres of production, processing and offloading facilities fit-to-purpose onto a compact 365-metre long structure, has revolutionised the landscape of LNG production. Located offshore Sarawak, PFLNG Satu is acknowledged as the pioneer in the new way of adding value to stranded gas fields.

In continued recognition since the project began in 2016, Petroleum Economist, an esteemed provider of macro-economic and geopolitical analysis of the energy industry, recognised PFLNG Satu as LNG Project of the Year 2018. The award criteria included having a sound corporate strategy, high operating standards and clear evidence of innovation in business operations.

PETRONAS' second floating LNG facility, PFLNG Dua, also achieved a significant milestone in 2018. All major structures including the Living Quarters, Turret Mooring System and Flare System have been lifted and integrated with the Hull.

Our strength lies in our teamwork and collaboration, working cohesively as a team to overcome every hurdle throughout the journey.

#### Gaining business opportunities in the LNG industry

PETRONAS has a solid reputation as a reliable LNG supplier and solutions provider. PETRONAS took final investment decision on the 25 per cent partnership in LNG Canada, possibly Canada's largest-ever private sector investment to date. The project in Kitimat, British Columbia is expected to create 10,000 jobs at the height of construction, leading to billions of dollars in direct government revenues including hundreds of millions of dollars in construction contracts for local businesses.

#### Promoting natural gas as a low-carbon fuel

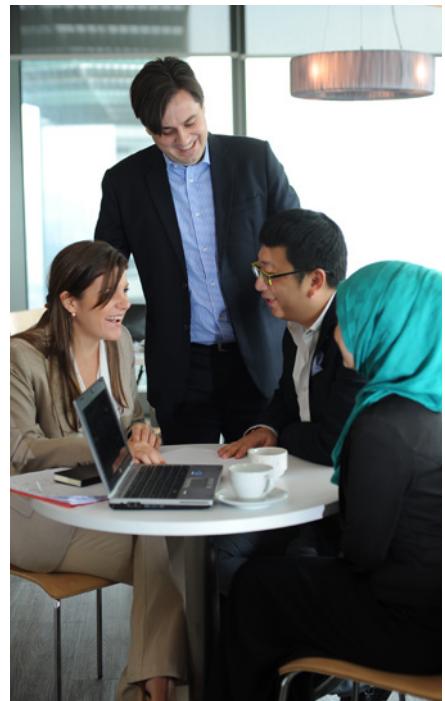
We work together with our stakeholders to advocate the use of LNG as an alternative to other fossil fuels with higher emissions. We work hand in hand with investors, policymakers, regulators, financiers and other industry enablers to develop and implement the right frameworks that facilitate the acceleration of LNG adoption.



## THE ENERGY TRANSITION

# GOVERNANCE & ETHICS

**Our fundamentals of good governance and ethics bind us together and underline our strategy and purpose.**



## 2018 KEY HIGHLIGHTS:

- Employees: Over 74 Integrity Programmes reached about 5,950 employees.
- A group-wide Integrity Survey reached about 10,000 employees.
- Vendors and others: 33 Integrity Programmes for vendors, reaching 1,597 participants from third-party service providers and 3,226 from external organisations with interest in anti-corruption issues.

## MATERIAL FACTORS:

- Good Governance
- Compliance

We maximise positive environmental and social impact wherever we operate by adhering to the highest standards of corporate governance.

### What Governs Us

- PETRONAS Code of Conduct and Business Ethics (CoBE)
- PETRONAS Anti-Bribery and Corruption (ABC) Manual
- PETRONAS Whistleblowing Policy
- PETRONAS "No Gift" Policy

The key to our business resilience lies in our commitment to a culture of integrity, ethical behaviour and strong governance. The organisational effectiveness that follows is central to long-term business competitiveness. Our shared values of Loyalty, Integrity, Professionalism and Cohesiveness are the cornerstone of how we do business. These values, alongside the CoBE as well as relevant commitments, form the fundamentals of our solid corporate governance practice.

Our policies are developed and implemented in adherence to all applicable laws and regulations. We benchmark our policies and procedures against prevailing international standards to ensure we adopt industry best practices and are able to respond to the growing expectations of stakeholders worldwide for good corporate citizenship.

## Driving Change Today

We are committed to conduct our business in an ethical and compliant manner, ensuring that we respect the rights of all people.

Good governance drives an ethical and focused mindset, one that is committed to delivering the best with no compromises. Underlying the approach are strong commitments and policies including the Code of Conduct and Business Ethics (CoBE), PETRONAS Integrity Compliance Framework (PICF) and PETRONAS Corporate Sustainability Framework.

## Progressing for Tomorrow

Ongoing structured programmes are in place to empower employees and contractors wherever we operate to reaffirm our governance policies and systems at all times. To ensure our contractors share our efforts, we will be enhancing assessments of their social, ethical and environmental standards to safeguard against governance risks as well as human rights risks.

## Good Governance

### The PETRONAS Code of Conduct and Business Ethics

The CoBE is applicable to all employees of PETRONAS. In addition, third parties are required to always act consistently with CoBE when dealing with, acting on behalf of, or in the name of PETRONAS Group. It covers areas such as conflict of interest, anti-corruption, competition, anti-money laundering, international trade and export controls. Disciplinary action will be taken against any employee not complying with CoBE, subject to applicable laws.

CoBE is the essential guide assisting all PETRONAS employees in exercising their judgment to act in the best interest of PETRONAS.

### PETRONAS Anti-Bribery and Corruption Manual

#### PETRONAS has a zero-tolerance policy with regards to all forms of bribery and corruption.

The PETRONAS Anti-Bribery and Corruption Manual (ABC Manual) governs matters such as engagement with public officials, no facilitation payments, engagement with third parties, as well as gifts, entertainment and corporate hospitality.

The ISO 37001 is a testament of PETRONAS' commitment to implementing international practices to combat corruption and our strong commitment towards zero tolerance for bribery and corruption.

### PETRONAS Whistleblowing Policy

The PETRONAS Whistleblowing Policy provides employees and members of the public with an avenue to disclose any improper conduct (misconduct, criminal offence or malpractices).

The Whistleblowing Committee deliberates and decides on the course of action for the submissions and monitors the progress of submissions.

PETRONAS Whistleblowing Policy and Procedures are available on PETRONAS' corporate website at [www.petronas.com](http://www.petronas.com)

In 2018, a total of 94 submissions were reported via the whistleblowing channel i.e. [whistle@petronas.com](mailto:whistle@petronas.com)

## GOVERNANCE & ETHICS

### Anti-Bribery and Corruption

**PETRONAS has zero tolerance for any form of corruption.**

### Our CoBE ensures that we uphold the highest level of integrity wherever we operate.

We have been a signatory of the Malaysia Corporate Integrity Pledge (CIP) since 2012. CIP is a voluntary, unilateral declaration against corrupt practices and a pledge to operate with the highest standards of business ethics and principles. We have signed a Memorandum of Understanding (MoU) with the Malaysian Anti-Corruption Commission (MACC) to increase awareness and eradicate bribery and corruption. We are also signatories of the Corruption-Free Pledge (CFP), signed by the PETRONAS Executive Leadership Team in 2017, to strengthen the company's resolve towards becoming a graft-free organisation. The pledge signified our

continuous commitment to upholding high standards of governance and combating any form of corruption within our organisation.

The setting up of Group Integrity demonstrates PETRONAS' commitment towards a corruption-free business environment within the PETRONAS Group of Companies.

Known as Chief Integrity Office when it was established in 2012, Group Integrity (GI) has been responsible for building awareness among employees and external stakeholders on anti-bribery and corruption through appropriate integrity programmes and initiatives. In 2018, we continued to

#### Anti-Bribery & Corruption Programme 2018

As part of our efforts towards cultivating good corporate governance and a strong sense of awareness and understanding of CoBE, KLCC Property Holdings Berhad hosted an Anti-Bribery & Corruption Programme for all executives. Over 300 participants were kept abreast of the topic, including the gift declaration policy and processes as well as international case studies on power abuse, corruption and bribery.

communicate the CoBE, ABC and other related topics, including the evolution of international and local anti-corruption jurisdiction through training, events and internal communication.

### GROUP INTEGRITY HIGHLIGHTS 2018:

- Internally, Group Integrity collaborated with other units and departments within PETRONAS in organising 74 Integrity Programmes that reached about 5,950 employees.
- About 10,000 employees took part in a group-wide Integrity Survey in December 2018. The survey assessed the risk of corporate fraud, corruption and misconduct in PETRONAS and the manner in which these risks are managed.
- Group Integrity organised 33 Integrity Programmes for third parties involving 1,597 participants from our vendors/dealers and 3,226 participants from external organisations were interested in anti-corruption topics such as Selangor State Government, Bank Negara Malaysia, Malaysia Anti-Corruption Academy (MACA), SIRIM, Perbadanan Kemajuan Negeri Selangor (PKNS), Universiti Teknologi MARA (UiTM), Komisi Pemberantasan Korupsi (KPK) Indonesia and Ministry of Finance, Indonesia.
- Raised awareness on the new provision under the MACC Corporate Liability Act that was gazetted in May 2018 and will come into force in 2020. Certified with the SIRIM

ISO 37001 Anti-Bribery Management System (ABMS), PETRONAS introduced the system as a component in programmes.

- Developed a comprehensive "Internalising Integrity" Training Module for targeted employees of Group Integrity, Group Legal and other employees as part of the "train the trainers" programme who carry out Integrity functions across PETRONAS. The Module is to be rolled out in 2019 and the new trainers will be able to:
  - Administer integrity functions effectively
  - Perform Integrity & Corruption Risk Management (ICRM) on key business functions
  - Carry out basic investigations in Integrity cases
  - Manage due diligence where required

The group-wide Integrity Survey in 2018 reached almost 10,000 employees. The survey assessed the risk of corporate fraud, corruption and misconduct in PETRONAS and the manner in which such risks are managed.

## Payment to Host Governments

The long-term nature of our business and the scale of our operations enable our business activities to make significant contributions to the national and local economies in areas where we operate.

The payments to host governments can be used to provide essential government services to the citizens of those countries. We pay all relevant taxes, royalties and other levies

where applicable in amounts determined by the legislation of relevant national, regional or local governments, as necessary.

Our operations also provide direct and indirect employment to local communities. We support economies by developing local talent as well as by procuring goods and services from local suppliers.

## Compliance

As a corporate leader committed to nation-building, PETRONAS prioritises compliance of good governance and adherence to regulations. PETRONAS Integrity Compliance Framework (PICF) has been developed to ensure compliance with PETRONAS CoBE in the business activities of PETRONAS Group of Companies. PETRONAS Integrity Awareness Committee (PIAC) coordinates, monitors and ensures the effectiveness of programmes planned under PICF. The PIAC comprises members from Group Legal, CIO Office and Group Human Resources.

In pursuit of the highest standards of governance, the Legal Compliance Department was formed under Group Legal, with the appointment of a Chief Compliance Officer, responsible for overseeing all legal compliance matters in PETRONAS Group. This formation will enable us to ensure ethics and compliance are managed in the right way across the business with enhanced monitoring as part of how we do business.

As part of our ongoing efforts, various training and internal communication were delivered concerning critical laws, for example, 11 sessions on Personal Data Protection, three on Sanctions and Export Control, three on Competition and 72 on Business Ethics and Compliance.

We conducted a Compliance State of Assessment Exercise to evaluate the state of compliance within PETRONAS Group, focusing on 26 pilot business units. The results, together with proposed follow-ups, were presented and approved by the Executive Leadership Team. The findings were used to draw a Legal Compliance Framework which will be used to govern the implementation of legal compliance controls within PETRONAS Group in 2019. A measured and progressive effort towards integrating compliance is key towards ensuring effective implementation of controls and systems in the organisation.

## GOVERNANCE & ETHICS

# SAFETY

**Our focus on safety ensures that we continue to be reliable and productive as an organisation. The safety of our employees and contractors is the foundation of all business progress and the key towards our agility and effectiveness.**



## 2018 KEY HIGHLIGHTS:

- An improved Lost Time Injury Frequency (LTIF) rate of close to 50% lower than 2017. LTIF was at its best performance in the past five years.
- Achieved a 24% reduction in incident rate measured by Total Recordable Case Frequency (TRCF).
- Enhanced Contractor Safety Management which led to a 15% reduction in contractors' incident rate measured by TRCF.

## MATERIAL FACTORS:

- Personal Safety
- Process Safety
- Emergency Preparedness and Crisis Management
- Security

## Target of Four Zeros:

Zero Fatality, Zero Major Fire, Zero Major Loss of Primary Containment and Zero Major Security Incident.

## Our commitment to safety is driven by clear leadership and integration across the business.

In our ever-evolving industry, providing a safe working environment is a complex task, requiring stringent guidelines and solid processes. Due to our comprehensive value chain, the context varies significantly between business units. This, coupled with the different safety standards in multiple jurisdictions, intensifies the need for a strong safety mindset and group-wide policies.

## Driving Change Today

We adopt a holistic approach to safety that encompasses:

- Design, operational and technical integrity of assets
- Competent HSSE personnel, including subject matter experts across all levels
- Assurance and audits
- Mindset, culture and safety leadership
- Crisis management and emergency preparedness

## Progressing for Tomorrow

While continuously improving our HSSE awareness, performance and culture, we are enhancing efforts on data management and predictive analysis. By tracking key metrics, we can measure progress, proactively manage incidents and establish best practices. PETRONAS Stewardship, Health, Information & Environment Linked Database (SHIELD), the single platform to facilitate our efforts, will be enhanced moving forward.

## 2018 PETRONAS HSSE Themes and Strategies

### Operating Discipline

#### Achieved a 24 per cent reduction in Total Recordable Case Frequency rate

##### 2018 outcomes:

- Improved HSSE learning by leveraging digital technology to reach a larger audience and making visual materials including multilingual videos effective in communicating occupational health and safety.
- Standardised Stop Work Authority process that allows employees to halt a task or process when encountering imminent hazard or danger at work. Due to the standardised process and encouragement given to employees, the number of Stop Work reports increased in 2018, to more

than 10 times the number recorded in 2017. 'Jom Toolbox' is a programme designed to improve safety communication in day-to-day operations in a plant. It provides clear guidelines on how to conduct effective site meetings with employees and contractors. 'Jom Toolbox' was rolled out in 2018, accompanied by internal communications (i.e. video material) as well as an assessment process to measure effectiveness.

## Enhanced Approach to Compliance:

- Developed a Fire Prevention & Mitigation Framework (FPMF) on the compliance of Upstream assets, as well as developed plans for its implementation at PETRONAS Energy Canada Ltd (PECL) and Engen Petroleum Ltd in South Africa.
- We have in place a Loss of Primary Containment (LOPC) Reduction Framework in Malaysia and an implementation plan at our international assets.
- HSSE capability development for frontline supervisors in RAPID project through the Engagement & Commitment programme for 600 contractors and personnel during construction and strengthened RAPID operational readiness through safety reviews during systems commissioning and startup.

## Enhanced HSSE Learning Tools:

- Four modules of HSSE e-learning and a Toolbox Talk video are now available for employees. The aim is to enhance the effectiveness of safety learning and to standardise processes.

## SAFETY

### Leadership and Personal Accountability

**149 HSSE Change Agents and 184 Management Leaders trained in HSSE**

#### 2018 outcomes:

- Continued proactive HSSE systems and practices towards a generative culture.
- Implemented Rakan HSSE programmes for supervisors which were held regionally and multiple safety leadership workshops were held throughout the year. 'Jom Toolbox' is a component of Rakan HSSE training programmes.
- Strengthened communication on health and safety.



#### RAKAN HSSE

We improved supervisory and communication skills through Rakan HSSE, our group-wide frontline supervisor programme. The aim of the programme is to integrate health and safety consciousness in all aspects of decision-making and fortify a culture of compliance. Rakan HSSE has been implemented in 25 operating units since October 2017. In 2018, 22 Rakan HSSE workshops were conducted.

### Contractor Management

**15 per cent reduction in contractors' incident rate measured by Total Recordable Case Frequency (TRCF)**

#### 2018 outcomes:

- Enhanced PETRONAS Technical Standards (PTS) by adding and strengthening contract clauses including actions towards Contractor HSSE Management during pre-award and post-award periods including execution stage. We also improved the procurement process through pre-screening and assessing shortlisted bidders on HSSE criteria.
- Conducted 12 PTS Contractor Management Briefing Workshops.
- Established the Contractor Mentorship Programme in collaboration with the Department of Occupational Safety and Health of Malaysia (DOSH). A gap assessment and closure plan was conducted for participating contractor companies to improve their HSSE performance. In its first year, 24 contractors have been nominated and registered in the programme.
- Strengthened Contractors Performance Evaluation to include HSSE indicators in the Supplier Tracking Assessment Rating (STAR) system, that allows us to record and monitor the performance of our contractors. Contractor performance rating from STAR is used in future bidding processes. The STAR programme was introduced in 2018 and is an enhancement of our prior system.

### Collaboration

**Best practices adopted for improvement**

#### 2018 outcomes:

- Conducted two HSSE dialogue sessions with Malaysia Petroleum Management.
- In collaboration with the Malaysian Oil & Gas Services Council (MOGSC), we conducted a briefing session on safety leadership for 60 of our contractors.

### Capability

**40 per cent reduction in health and safety incidents with competency issues identified as the root cause**

#### 2018 outcomes:

- Enhanced HSSE training programmes which recorded 14,000 training entries throughout the year and established the first Auxiliary Police training framework.
- Enhanced HSSE online training modules.
- Accelerated HSSE personnel competency and upskilled employees as per Individual Development Plan and the Technical Manager Competency Assessments (TMCA).
- Conducted communication campaigns on personal safety within PETRONAS. We also improved defensive driving training materials and conducted defensive driving training for contractors.

## Personal Safety

**Embedded across the organisation is a deep commitment towards safety. Identifying and managing safety risks are the job of each and every one of us – we are working hard to share best practices with business partners and contractors.**

The PETRONAS Zero Tolerance (ZeTo) Rules instil safety behaviour of the workforce and contractors. The PETRONAS ZeTo Rules prescribe 10 mandatory principles which must be adhered to by everyone, including third-party contractors at our facilities. Such rules apply to our contractors who undertake services for us. We have standardised our Consequence Management for violations against ZeTo Rules.

Our continued emphasis on ensuring that solid safety measures are in place can only be effective by embedding a culture of HSSE across the organisation. HSSE culture to us is an intricate mix of management systems, processes, technologies,

health and safety expertise, compliance values, leadership and even behavioural psychology. There is a strong correlation between HSSE culture and HSSE performance. As a result, we are committed to learning from incidents and taking steps to prevent recurrences. This is part of our efforts to achieve our goals which emphasise the importance of safety for all and it goes beyond compliance.

Our stringent HSSE standards are driven by multidisciplinary teams across PETRONAS.

We have mechanisms in place to improve HSSE personnel's knowledge and skills, such as targeted capability development programmes and



### What Governs Us

- PETRONAS Health, Safety and Environment Policy
- Health, Safety and Environment Management Standard, Mandatory Control Framework, including Technical Standards and Guidelines

regular capability assessments. These include training, on-the-job exposure at our operational facilities and communication on HSSE issues. One of the most important avenues for training and communication is our Community of Practice (CoP) network on various health and safety disciplines.

In 2018, the PETRONAS leadership team reinforced our focus towards nurturing a strong safety culture through a town hall session. The session highlighted how *Everyone Goes Home Safely* must define our safety fundamentals and how a culture of safety will continue to be reinforced throughout the organisation. Moving forward, the three themes that will drive safety culture more strategically will involve Leadership, Compliance and Capability.

### HSSE Culture Maturity Survey 2018

We took stock of our HSSE efforts in 2018 through the Culture Maturity Survey. The objective of the survey was to gauge HSSE culture maturity, revalidate our strategies and interventions, as well as identify and enhance areas for improvement. It covered a range of HSSE aspects in line with the HSE Management System covering assets and operations in Malaysia. With an 85 per cent response rate, comprising respondents of all positions, the results placed PETRONAS' HSSE towards a "Generative" culture indicating HSSE is embedded in how we do business in PETRONAS. This survey will be conducted periodically to continuously gauge our progress towards reaching this culture standing.

**SAFETY****CONTRACTOR SAFETY MANAGEMENT**

To ensure safety is embedded across our operations, we work closely with contractors and third-party suppliers. Clear accountability and active engagements are part of our contractor safety management efforts.

Contractor management is one of the five HSSE focus areas for PETRONAS in 2018 and we have taken steps to provide better delivery and ensure enhanced HSSE performance.

An end-to-end contractor HSSE management review in

2018 revealed implementation areas to focus on. Some of the areas that require improvements include clarity in terms of standard requirements, adequate assurance to assess compliance, standardised HSSE requirements in contract documents as well as consistency of contractor HSSE performance assessment from the pre-award to post-award stage.

Moving forward, we are reviewing proposals on ways to enhance initiatives and will roll out improvements in 2019.

**PETRONAS CONTRACTOR HSSE MENTORSHIP PROGRAMME**

We are proactive in improving capacity-building and the safety performance of our contractors. Installing safety controls and safeguards are only meaningful if safety awareness transcends across the operations, within the workforce and is extended to our contractors.

The PETRONAS Contractor HSSE Mentorship Programme is a three-year programme that aims to strengthen

contractor capacity in HSSE Management and reduce incidents. Launched in 2018, the programme will bring together mentors from various PETRONAS operating units and mentees from partnering contractor companies. The structured mentorship aims to enhance collaborative efforts along the supply chain and subsequently transfer capacity building down the value line. Sharing best practices with contractors will help us build better HSSE performance standards across the industry.

**COLLABORATION WITH MOGSC**

We regularly engage with the Malaysian Oil & Gas Services Council (MOGSC) to increase awareness among safety supervisors of contractors.

The collaboration which began in 2018, aimed to reach out to contractors under MOGSC who work with

PETRONAS. We provided the training modules and trainers for the sessions that focused on enhancing HSSE engagement and communication between contractors, embedding a strong culture of communicative feedback and inculcating active safety awareness to halt unsafe acts and prevent unsafe conditions for the safety of all personnel. These collaborations will continue in 2019.

**Process Safety**

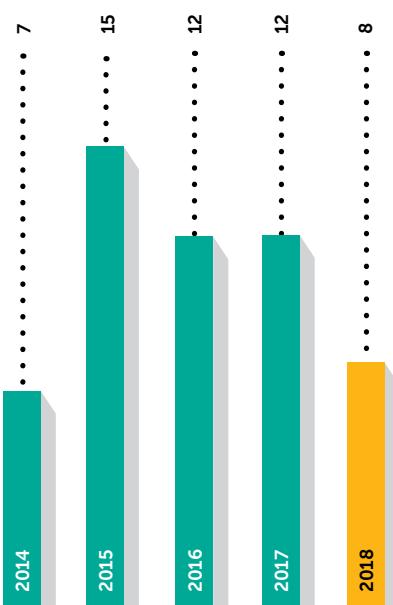
**The integrity of our assets is paramount, thus the focus of process safety is on design, operational and technical integrity of our assets. Embedded in the overall Health, Safety and Environment Management System is the process safety management aspects aligned with internationally-recognised codes and standards. We started a series of initiatives to improve process safety management in 2017 and continued these efforts in 2018, including assessing and ensuring plant reliability and integrity by collaborating with our internal technical experts.**

The Process Safety Loss of Primary Containment (LOPC) Reduction Framework was introduced in 2017 to provide a structured and focused approach to prevent LOPC which includes unplanned or uncontrolled releases of hazardous material due to an unintended event or condition. In 2018, we continued to implement and improve the Framework based on analysis of data collected in the previous years. Among the improvements made are on the prevention of LOPC for subsea pipelines and retail business. Moving forward in 2019, enhancements made will be on the Vibration and Stress Analysis and competency requirements for Mechanical Joint Integrity.

To complement the LOPC Reduction Framework, a Fire Prevention and Mitigation Framework (FPMF) was introduced in 2018 to provide a

structured approach to ensure our readiness and ability to prevent and mitigate fire or explosion events—the main consequences of LOPC. The FPMF comprises of the management of ignition sources, fixed fire-fighting systems, fire and gas detection systems and comprehensive Fire Safety Adequacy Reviews.

The effective implementation of these Frameworks is reflected in the decreasing number of LOPC incidents. This denotes that the interventions are effective solutions to address prevailing concerns contributing to LOPC incidents. Moving forward, strong leadership commitment and collaborative efforts between all relevant parties are crucial for effective and sustainable implementation of the Frameworks towards achieving excellent process safety performance.



Number of Tier 1 Process Safety Event

Note:  
Tier 1 Process Safety Event is a Loss of Primary Containment (LOPC) with consequences defined in API 754, which includes fire/explosion.

**PROCESS SAFETY RECOGNITION**

PETRONAS Penapisan (Terengganu) Sdn. Bhd. PP(T)SB won the IChemE Malaysia Process Safety Award in 2018 for "Plant Instrument Process Safety Management Excellence".

PP(T)SB was recognised for establishing a framework that eliminates potential failures of overfill protection systems. The key success was the establishment of the Safety Instrumented Function (SIF) Framework and Safety Integrity Level (SIL) Study Roadmap, to define the specific needs for the SIF including equipment needed and timelines. The structured approach is a key enhancement in process safety efforts and also enables significant cost savings.



## SAFETY

## Emergency Preparedness and Crisis Management

In running operations like ours, we need to be prepared to effectively and efficiently address potential impacts arising from incidents and accidents, irrespective of their size or location. This is to contain the extent of exposure as quickly as possible, with the primary intent of saving lives and protecting the environment.

We have systems in place to ensure that the flagging of and response to emergency scenarios that may arise are met with adequate response. The PETRONAS Global Crisis Response Team (PGCRT), established in 2017, ensures the reliability of our resources and the capacity of our response teams in countries where we operate.

In 2018, we improved our Crisis Management Information System (CMIS) by rolling out a new component, Emergency Log System (ELS). CMIS consists of digital tools to assist and facilitate responders and management in making decisions during emergencies or crises. ELS is an online integrated emergency log system that allows live and simultaneous data entry from multiple emergency and crisis teams, further improving the speed of communications and efficiency in decision-making, both of which are essential in crisis management. There is also a provision for applications to assist operations, particularly the Vessel Monitoring and Environmental Sensitivity Index (ESI).

In addition, we continued to intensify capability development for emergency preparedness and crisis management internally and within the industry. We improved two of our internal training modules to comply with the relevant requirements: Confined Space Rescue and Fire Watch. Both modules focus on upskilling our employees and contractors. The changes were made in collaboration with training providers as well as various operating units within PETRONAS.

Two main events for emergency and crisis management capacity building organised and conducted by PETRONAS Group Health, Safety, Security and Environment (GHSSE) were FireSchutz Forum 2018 and Unmanned Aircraft System (UAS) Conference.

We regularly conduct emergency exercises for different types of emergency scenarios of varying severity. In 2018, we continue to ensure that Tier 2 and Tier 3 emergency exercises were carried out and organised at our facilities according to our requirements, with Tier 3 being the highest level of response in managing a crisis.

PETRONAS' efforts in improving industry standards and sharing best practices with peers and partners as well as government agencies work

**FireSchutz Forum 2018** – This forum was conducted in collaboration with the Central Emergency and Fire Services (CEFS) Response Kerteh. Inspired by InterSchutz in Germany, this first forum of its kind in Malaysia brought together not only fire safety experts, emergency responders/practitioners and HSE & Risk practitioners from the industrial sectors, but also international and local associations, authorities and academia. The objectives of the forum were to showcase best practices and interactive demonstrations in fire safety and emergency response, as well as to exhibit innovative products on fire safety and emergency response.

**Unmanned Aircraft System (UAS) Conference** – This was our first forum as part of our efforts to streamline internal standards on UAS safety. The conference offered a platform for collaboration, knowledge and experience sharing, demonstrations, as well as technical presentations. Furthermore, a panel discussion session was conducted amongst UAS experts and regulatory bodies on critical concerns of UAS in general and its applications in PETRONAS facilities. Valuable insight was gained on how UAS can help optimise emergency response in adverse situations. The feedback will be used to improve UAS application and safety in PETRONAS operations.

towards creating enhanced policies and Standard Operating Procedure (SOP) for emergency management. We undertook several exercises in collaboration with government agencies in 2018 including:

- **Ex-Jerung Emas:** Exercise to cover emergency scenarios offshore, onshore and at ports in Kota Kinabalu, Sabah. The aim of this exercise was to develop the readiness and competencies of Naval Special Warfare Forces (Pasukan Khas Laut – PASKAL) in the event of a security breach at platforms.
- **Ex-CAMAR:** A new joint exercise to minimise the response time as well as better coordinate efforts of various agencies and authorities for search and rescue.

### Centralised Bintulu Integrated Emergency Response and Preparedness

The Central Emergency and Fire Services (CEFS) Response in Bintulu, to be completed in 2019, is a collaboration amongst various levels, including internal and external stakeholders. The Bintulu CEFS is modelled on the successful agency of the same nature serving Kerteh, also initiated by PETRONAS.

The establishment of Bintulu CEFS is expected to reduce manpower and equipment maintenance, minimise frequency of fire truck and equipment replacement and achieve a significant reduction in firefighting foam stockpile through optimising efforts.

In 2018, we strengthened our emergency preparedness and upskilled the responders within PETRONAS in Bintulu to respond to a Major Accident Hazard (MAH) in the Bintulu region. This involved an integrated training and a Tier 3 Emergency Exercise. The initiative was to address gaps in the firefighters' capability in responding to different major incidents with different MAH causes, as well as to improve the response coordination.

### Situational Analysis of Medical Emergency Response Preparedness (MERP) in PETRONAS Carigali (Turkmenistan)

PETRONAS Carigali Turkmenistan (PC(T)SB) operates onshore and offshore gas facilities. The operation which involves the development of gas facilities in the Caspian Sea is a reflection of Carigali's technical expertise and ability to transfer knowledge to the local workforce. Carigali has exerted efforts to ensure high standards of medical emergency preparedness despite the complexity of its operation.

As part of our MERP, when injury or acute illness occurs at the worksite, medical emergency response is managed through a 4-stage response of treating and providing the individual with medical attention rapidly. If the response time or requirements for the 4-stage response cannot be reasonably met, a medical emergency response risk assessment is conducted and its risk mitigation measures are followed to ensure that the risks are kept as low as reasonably practicable.

The onshore PETRONAS Kiyandy Complex consists of the gas treatment plant, onshore gas terminal (GTPOGT) and offshore facilities. All medical emergencies for onshore operations are managed by a medical team led by a trained doctor stationed at a medical point located in the vicinity of GTPOGT whereas the medical emergencies offshore are supported by trained first aiders and managed by a visiting doctor whenever there are

critical activities. Evacuation of casualties are by helicopters or stand-by vessels.

To better prepare for the medical emergencies, a medical emergency response situational analysis was conducted in 2018. The results revealed shortages in the preparedness regarding offshore emergencies during bad weather conditions that often restrict flight movements and increase flight times. Helideck facilities were not available at all points of operations. During high swell, stand-by vessels were to move to a safe anchorage area, three hours away from the platform. Due to these reasons, the response time varied between 110 and 120 minutes, which was longer than the recommended response time.

The study recommended improvements to on-site emergency response services, including periodic drills, upgrading first response competency, the installation of Automated External Defibrillators (AED) and first aid kits at remote worksites as well as assigning medical staff on-site and offshore. All the mitigation measures recommended are now fully operationalised. Further improvement efforts are focused on ensuring the adequacy and competency of medical resources, improving collaboration between relevant departments and conducting regular training and emergency exercises.



## SAFETY

# Security

**Oil and gas assets are generally located across multiple geographical locations, where global operations are often interconnected using advanced technological systems. An increased systematic interface due to ongoing digitalisation efforts typically increases security risks beyond conventional dimensions.**

Adding to this is the changing face of international geopolitics which fortifies the degree of volatility already weathered by the energy sector, with some operations requiring extensive security controls such as external security services.

PETRONAS adopts integrated, holistic and effective security management practices to remain steadfast amidst a dynamic external environment wherever it operates. This includes undertaking continuous efforts to identify, evaluate, manage and monitor security risks to its people, property, information as well as operations. In upholding this commitment,

PETRONAS ensures it adheres to its Security Policy, Security Management System and Mandatory Minimum Security Standards, all of which are aligned with good industry practices including the Voluntary Principles on Security and Human Rights. Third-party service providers acting for and on behalf of PETRONAS are also required to abide by PETRONAS relevant governance mechanisms on security management.

In 2018, PETRONAS appointed dedicated personnel to oversee, spearhead and streamline security management practices across PETRONAS' various businesses. The bolstered emphasis on security was accompanied by a series of asset classification exercises covering PETRONAS' facilities in Malaysia and internationally, followed by ongoing gap closure initiatives which are anticipated to carry on through 2019. Complementing these implementations was a targeted security awareness campaign for PETRONAS staff which strengthened the understanding of individual roles and responsibilities in upholding a security-compliant culture. To date, PETRONAS also works alongside various stakeholders wherever it operates, ensuring the availability of relevant controls, infrastructure and resources in upholding security excellence.

### What Governs Us

- PETRONAS Security Policy
- PETRONAS Information Security Policy
- PETRONAS Security Management System
- Mandatory Minimum Security Standards



## SAFETY

# Maritime Security

**PETRONAS consistently pursues efforts to uphold the safety and security of its offshore assets in Malaysia through the deployment of multiple physical and digital controls. This includes collaborating with government authorities and relevant enforcement agencies to uphold the integrity of PETRONAS' upstream installations in Malaysian waters.**

Several engagement sessions have also been carried out to supplement a long-standing joint signature programme, *Sahabat Maritim*. The aim is to raise awareness on topics such as fishermen encroachment and fish bombing incidents and concurrently to share insights on effective fishing solutions among selected members of the fishing community.

A notable achievement in 2018 was PETRONAS' pilot deployment of an advanced technologically-efficient radar surveillance and security system (RS3) at selected offshore platforms in Sabah waters, making PETRONAS among industry pioneers to pursue the leading-edge solution, namely, taking an integrated security surveillance system approach. The RS3 is anticipated to significantly enhance PETRONAS' offshore surveillance capability, which in turn will enable effective management of security risks affecting PETRONAS' operations. To date, access to real-time data transmission has been extended to identified government enforcement agencies to augment collective response capabilities.

### Strengthening Physical Controls

PETRONAS adopted an Integrated Contractors Management System (ICMS) to tighten existing security controls. ICMS, a centralised system, solidifies PETRONAS' building security system through more stringent screening of contractors. As a single-source of credible information, ICMS provides holistic insights into an individual's background, namely, HSSE non-compliance. The ICMS which auto-syncs with PETRONAS' existing access control system thereby prohibits access to any third-party service provider with a compromised track record. ICMS is also an effective solution to promote stronger HSSE behaviours among contractors, including emphasising the importance of effective security risk management.

ICMS is being implemented in phases from 2018, following a successful pilot programme. To date, ICMS has been introduced at selected operating units in Malaysia, alongside the Fatigue Management System. Roll-out of ICMS will continue through 2019.

### Security Engagement

PETRONAS conducts targeted briefings, including disseminating advisories to identified staff and scholars on the discipline of security. Highlights of the sessions as well as advisories include imparting an overview of the security landscape, evolving trends and best practices to uphold safety, security and well-being. Overall, the holistic insights strengthened the appreciation of security acumen, inculcating a stronger understanding of an individual's role in managing personal security.

PETRONAS makes available a dedicated 24-hour security assistance service to all staff on business travel, in Malaysia and internationally.

# CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

We are tackling climate change by reducing emissions across our business and developing solutions for a low-carbon economy.



## 2018 KEY HIGHLIGHTS:

- Reduced our monitored carbon footprint by 13% from 2017, a cumulative 12 million tonnes of greenhouse gas (GHG) emissions reduction since the PETRONAS Carbon Commitments were introduced in 2012. This is largely due to strong efforts in reducing flaring and venting in the Upstream business, in our Malaysian and international operations.
- Climate change strategies and long-term GHG emissions reduction roadmaps are in development to address key climate change risks and opportunities.
- Guiding principles are developed to support businesses to effectively implement the enhancement of the PETRONAS Carbon Commitments.
- Stepped up growth in renewable energy initiatives and development of products with lower GHG emissions.

## MATERIAL FACTORS:

- Climate Change
- Environmental Management
- Biodiversity and Ecosystem Services

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### Climate Change

In light of the world's growing energy demand, it is imperative that nations work together towards reducing anthropogenic greenhouse gas (GHG) emissions to limit global warming of more than 2°C above pre-industrial times and prevent catastrophic climate change impacts.

The oil and gas industry has a pivotal role to play in this global shift to a decarbonised economy by leveraging innovative low-carbon solutions to deliver sustainable energy.

PETRONAS embraces the energy transition and is committed to supporting host countries in meeting their pledges to the Paris Agreement as well as in harnessing potential opportunities in this new era.

#### Driving Change Today

The PETRONAS Carbon Commitments (PCC) drive our actions and contribute towards the realisation of host countries' pledge to the Paris Agreement. We continue our efforts on flaring and venting reduction, as well as improving our energy efficiency.

PETRONAS Renewable Energy initiatives to reduce our carbon footprint will continue to develop, with the latest possibility of installing solar PVs across our network of retail stations in Malaysia.

We collaborated with key stakeholders in Malaysia by leading the Oil & Gas, Energy and Environment (OGEE) workstream to develop action plans for a clean and decarbonised energy industry.

#### Progressing for Tomorrow

We continue expanding our core business with progress in fields and aspects such as gas advocacy, products that promote low-carbon emissions and new low-carbon ventures (e.g. New Energy Unit).

We will continue to adhere to our targets of zero continuous venting and zero continuous flaring of upstream and downstream facilities where economically feasible, guided by our Carbon Commitments. We hope to achieve zero continuous venting by 2024 and zero continuous flaring by 2030.

We are focusing on building knowledge on climate science and establishing processes and tools to undertake vulnerability and adaptation assessments to ensure our assets are resilient to climate change impacts.

### PETRONAS Climate Change Position

We duly recognise our role as a player in the global energy sector to balance the issue of climate change with the challenge to sustainably produce affordable and reliable energy.

We acknowledge that the emerging low-carbon economy poses potential liability, physical and transitional risks to the business which will need to be managed, particularly in Malaysia where we have the greatest presence. Nevertheless, our climate-focused actions offer potential growth opportunities for PETRONAS

to continue delivering operational excellence, technological development and the expansion of our cleaner energy portfolio, as a progressive energy and solutions partner for a sustainable future.

We are committed to work towards better management of climate

change risk and opportunities within PETRONAS, whilst keeping abreast of the changing external landscape. Our climate actions serve to both mitigate GHG emissions and adapt our businesses to the potential impacts of climate change to ensure business sustainability and secure our position in the new energy landscape.

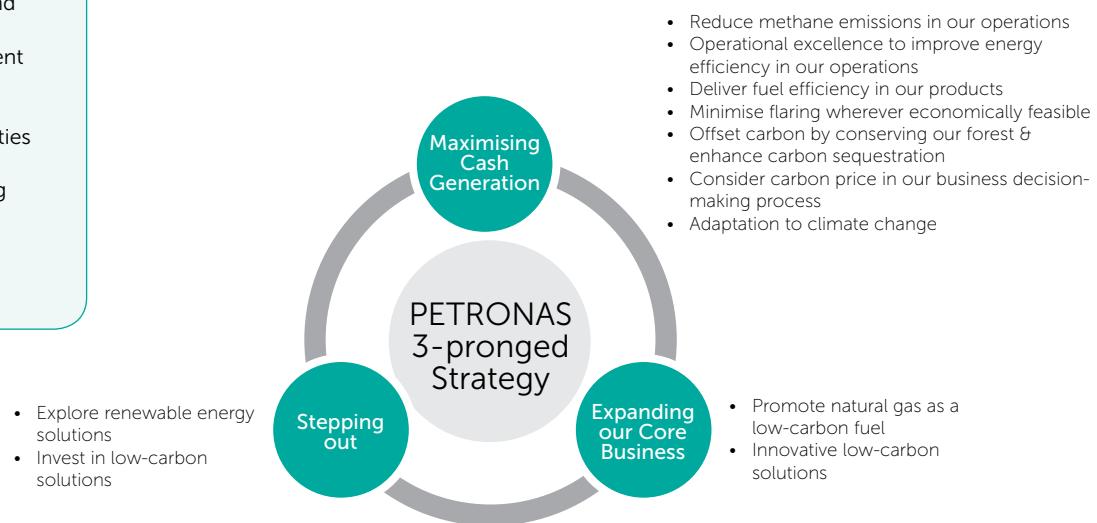
## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### What Governs Us

- PETRONAS Health, Safety and Environment Policy
- PETRONAS Climate Change Position Statement
- PETRONAS Climate Change Framework
- PETRONAS Carbon Commitments and Guidelines
- PETRONAS Mandatory Control Framework – Air Emissions/GHG
- PETRONAS Technical Standards on GHG Monitoring, Reporting and Verification
- PETRONAS Project Management System
- PETRONAS Procedures and Guidelines on Upstream Activities
- PETRONAS Exploration and Production Flaring and Venting Framework
- PETRONAS Energy and Loss Management System

Our climate actions which propel us into the future as an energy partner are focused on expanding our core business by advocating the low-carbon benefits of natural gas, as well as stepping out into renewables in support of the energy transition. Operationally, reducing flaring and venting and driving energy efficiency improvements throughout our operations are among the measures taken to generate revenue and lower our carbon footprint.

We are guided by the PETRONAS Climate Change Framework in identifying, assessing and prioritising risks pertinent to our business operations. The framework drives our climate actions in the areas of carbon footprint, mitigation and adaptation. Our climate actions are aligned to meet our three-pronged strategy.



### PETRONAS CARBON COMMITMENTS

The PETRONAS Carbon Commitments (PCC) were developed in 2012 to guide the management of our GHG emissions. PETRONAS is now in the midst of formulating the next set of targets, leading up to 2030, consistent with the aspirations set under the Paris Agreement and the United Nations' Sustainable Development Goals (SDGs). These commitments are key drivers in reducing GHG emissions whilst generating value and building business resilience.

The PCC are applicable to all businesses and Petroleum Agreement Contractors (PACs). Upstream and Downstream businesses, together with Group Project Delivery and

Technology (PD&T), are responsible for the incorporation of the PCC requirements in relevant business systems and processes, both domestic and international. Group HSSE monitors and reports on the progress of PCC implementation to the Corporate Sustainability Council (CSC) and the PETRONAS HSSE Executive Leadership Team.

The PCC were enhanced in 2017 to include requirements on managing high CO<sub>2</sub> fields, carbon price, carbon offsets and renewable energy. In 2018, we developed the PETRONAS Carbon Commitments Guidelines to help businesses implement the commitments effectively.

Through the PCC, we make efforts in climate change by identifying, assessing and prioritising risks pertinent to our business operations. Identified high-risk elements are subsequently integrated into the PETRONAS Enterprise Risk Management profile for group-wide implementation.

We highlight emerging legislation in relation to climate change and work closely with Group Risk Management and Group Corporate Strategy as well as the Business Risk units to manage potential exposure arising from carbon liability. We partner with Group Research and Technology to ensure that the right technologies are developed at the right time.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### PETRONAS Carbon Commitments

#### PLANNING AND PROJECTS

- Zero continuous flaring and venting of hydrocarbon shall be incorporated in the design of new Upstream and Downstream facilities and projects.
- Malaysia Petroleum Management (MPM) shall apply a country level CO<sub>2</sub> emission allowance in the planning process for high CO<sub>2</sub> field development.
- High CO<sub>2</sub> field development in Upstream shall incorporate Carbon Capture, Utilisation and Storage (CCUS) technologies at design stage.
- Carbon price shall be considered in project decision-making together with the option of carbon offsets where economically feasible.

#### OPERATIONS

- Zero continuous venting of hydrocarbon for all existing Upstream and Downstream facilities.
- Reduce continuous flaring of hydrocarbon for all existing Upstream and Downstream facilities where operationally and economically feasible.
- Downstream and LNG operating assets shall meet and sustain top quartile energy performance.

#### RENEWABLE ENERGY

- Renewable Energy technologies shall be considered in all facilities and projects where operationally and economically feasible.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### Our Climate Actions

We are addressing climate change through various initiatives that both mitigate GHG emissions and ensure our business can adapt to the potential impacts of climate change. Through these actions, we will ensure PETRONAS remains a formidable force in the new energy landscape.

#### 1. Promoting natural gas as a low-carbon fuel

By tapping into our existing natural gas reserves, we can meet the demand for energy towards a greener economy. We continue to expand our LNG portfolio and utilise cutting edge technologies to ensure sustainable extraction and processing of LNG.

PETRONAS' Research and Development of Carbon Capture, Utilisation and Storage (CCUS) technologies is currently focusing on monetisation of high CO<sub>2</sub> gas fields, including exploring options to convert contaminants into valuable products. PETRONAS gas technology has developed innovative sustainable solutions to handle offshore sour gas, specifically in CO<sub>2</sub> removal.

#### 2. Minimise flaring wherever economically feasible

PETRONAS designs projects to have zero continuous flaring and reduce continuous flaring by monetising the hydrocarbon gas for existing facilities where feasible, as required by PETRONAS Carbon Commitments (PCC).

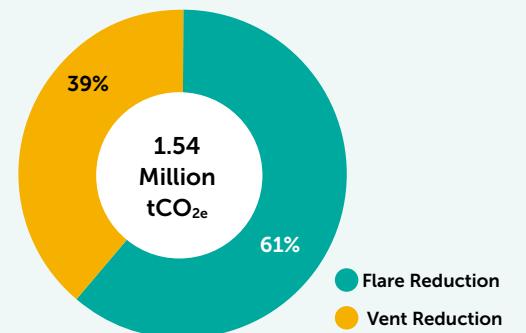
PETRONAS has been seeking opportunities where flaring can be minimised, for example by improving gas compressor availability and reliability and enhancing plant processes to reduce low-pressure flare gas.

In 2018, 0.94 million tCO<sub>2e</sub> emissions

We work together with our stakeholders to advocate the use of LNG as an alternative to other fossil fuels with higher emissions. We work hand in hand with investors, policymakers, regulators, financiers and other industry enablers to develop and implement the right frameworks that facilitate the acceleration of LNG adoption. In 2018, we undertook various roles, including regional coordinator for South and Southeast Asia in International Gas Union (IGU), leader in ASEAN Council on Petroleum (ASCOPE) gas advocacy task force and President of Malaysian Gas Association (MGA).



**2018 GHG Emissions Reduction Projects**  
(Mil tCO<sub>2e</sub>/yr)



#### Upstream GHG Emissions Reduction Projects

In 2018, PETRONAS Upstream operationalised four key projects to reduce hydrocarbon flaring and venting which significantly contributed to a reduction in our GHG emissions of 1.54 million tCO<sub>2e</sub>, where 53 per cent was attributed to the Domestic Upstream business.



**SABAH ASSET**  
**Sumandak:** Flare reduction through enhancement of compressor availability, reducing 0.17 million tCO<sub>2e</sub>



**PENINSULAR MALAYSIA ASSET**  
**Terengganu Crude Oil Terminal:** Flare reduction through zero flaring project, reducing 0.05 million tCO<sub>2e</sub>



**SARAWAK ASSET**  
**Bayan:** Vent reduction through improvement of compressor reliability, reducing 0.60 million tCO<sub>2e</sub>



**TURKMENISTAN OPERATIONS**  
**Magtymguly Oil & Gas Terminal:** Flare reduction through gas sales to an ethane cracker, reducing 0.72 million tCO<sub>2e</sub>

#### 3. Reduce methane emissions in operations

In line with PCC, PETRONAS has embarked on a move to eliminate continuous venting with a focus on key methane sources from legacy assets.

Our Leak Detection and Repair (LDAR) programmes help reduce methane and non-methane volatile organic compounds (VOCs), and we have embarked on quantifying fugitive emissions from our operations as an enhancement to the LDAR programmes.

In 2018, a key vent reduction project took place at the Bayan platform in Sarawak, reducing 0.60 mil tCO<sub>2e</sub>.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### Reducing Flaring and Venting

Since efforts to monitor CO<sub>2e</sub> began in 2012, PETRONAS has reduced CO<sub>2e</sub> by 10.07 million tonnes up to 2017. This momentum continued through 2018 with a further reduction of 1.54 million tonnes of CO<sub>2e</sub>, due to concerted efforts in reducing flaring and venting in the Upstream business, both in Malaysia and international operations.

Moving beyond 2018, we have developed a long-term GHG emissions reduction roadmap containing internal emission reduction initiatives to support Malaysia's commitment to the Paris Agreement.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### 4. Operational excellence to improve energy efficiency in our operations

PETRONAS produces steam and electricity through cogeneration plants in Malaysia with a total installed capacity of 2,973 MW.

Continuous efforts in Downstream have improved energy utilisation via Energy and Loss Management System (ELMS) and ameliorated Overall Equipment Effectiveness (OEE), which have increased the plant utilisation rate from 83.4 in 2017 to 85.2 in 2018 and subsequently reduced Downstream GHG emissions.

### 5. Considering carbon price in our business decision-making

PCC requires carbon price, together with the option of carbon offsets, to be factored in for business decision-making both in Upstream and Downstream.

The application of an internal carbon price in project economics is undertaken to assess investment feasibility and deliver optimum design for operations and projects, which ultimately builds economic resilience against emerging climate legislation.

### 6. Delivering fuel efficiency in our products

For five consecutive years (2014-2018), PETRONAS' Fluid Technology Solutions™ has powered the Mercedes-AMG PETRONAS Formula One team to become F1 World Champions.

We continued the development of high performance, efficient fuels and lubricants for daily public consumption, for example, PETRONAS Syntium, PETRONAS Primax and PETRONAS Sprinta – all of which lead to a reduction in scope 3 emissions.

Our lubricants improve engine efficiency with their CoolTech™ technology which cools the engines and reduces GHG emissions for every kilometre driven. PETRONAS Lubricants International's commitment to greener products was evident in 2018 with 75 per cent of its research and technology investment injected into innovative technologies that reduce CO<sub>2</sub> emissions.

The diesel sold in Malaysia contains 7 per cent of biodiesel which helps the transport sector reduce 296,959 tCO<sub>2e</sub> annually in GHG emissions and positively contributes to the Malaysian Government's commitment to the Paris Agreement. Moving forward, there are plans to further increase the biodiesel blend percentage to further reduce scope 3 GHG emissions.

#### PETRONAS Lubricants International (PLI) response to Global Energy Transition



PLI pledges to improve energy efficiency and lower CO<sub>2</sub> emissions in the mobility sector, upheld in 2018 by dedicating 75 per cent of Research & Technology (R&T) investment into projects that will result in CO<sub>2</sub> reduction from the use of PETRONAS lubricants and functional fluids.

**ETRO+** base oil and **PETRONAS Tutela** were developed to promote energy efficiency and **PETRONAS Syntium 7000 Hybrid with 'CoolTech™'** was PETRONAS' first engine oil for the hybrid car market. PETRONAS made significant move into the Electric Vehicle (EV) market

with the development of the next-generation of E-fluids, showcased in the **PETRONAS ionia** range; **PETRONAS ionia Thermal** battery fluid, **PETRONAS ionia Integra** driveline fluid and **PETRONAS ionia Glide** bearing fluid.

The impact on CO<sub>2</sub> emissions from one vehicle using **PETRONAS Syntium 7000 Hybrid with 'CoolTech™'** alone, over a yearly period, is estimated to be equivalent to the CO<sub>2</sub> sequestered by 10 trees. These exciting products will be launched in Quarter 1, 2019 at the Geneva Motor Show in Switzerland.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### 7. Exploring renewable energy solutions

In response to the global energy transition, PETRONAS has started exploring renewable energy solutions.

Solar photovoltaic (PV) technology is one solution we have adopted, with our largest undertaking since 2014 being a 10 MW solar PV Independent Power Producer (IPP) project in Gebeng, Pahang. We expect to expand this effort to our network of retail stations in Malaysia in an endeavour to reduce our scope 2 emissions.

PETRONAS established a New Energy Unit in April 2018, utilising talents from within PETRONAS as well as experienced industry personnel to build our capability in renewable energy. The New Energy Unit will focus on developing a clean energy business arm to enhance PETRONAS' energy portfolio.

#### Going SOLAR

In 2012, PETRONAS embarked on its first solar power project with the commissioning of a 685-kilowatt solar photovoltaic system on the rooftop of Suria KLCC in Kuala Lumpur; successfully supplying 30 per cent of the building's electricity demand. Following this project was a 10MW solar plant in Gebeng, Pahang and a solar photovoltaic (PV) system at Arexons (a division of PETRONAS Lubricants International) in Italy.

In 2018, our solar portfolio further expanded with the installation of solar PV panels at the Pengerang Integrated Complex (PIC) in Johor, serving power to the control buildings at the Cogeneration Plant as well as the upcoming PIC Visitor Centre, with a total capacity of 207 KW.

Moving forward, we will be operationalising SINARAN (Solar INstallation and Application on PETRONAS Rooftops & Assets Nationwide), with an identified potential for 30 MWp of solar PVs on the rooftops of our facilities. In addition, PETRONAS has established a New Energy Unit, with an initial focus on solar and wind, to ultimately grow a substantial business in clean energy to proactively weather potential transitions in the oil and gas industry.



## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### 8. Investing in low-carbon solutions

PETRONAS has undertaken research and development in CCUS-related technologies to spur the monetisation of high CO<sub>2</sub> gas fields through carbon capture and storage as well as exploring alternatives to transform CO<sub>2</sub> into valuable products. Our solutions are customised according to the availability of feedback and energy. The development of technology covers the multiple convention route of CO<sub>2</sub> into valuable chemical and patented technology to form high quality products.

### 9. Conserving Our Forests to Enhance Carbon Sequestration

PETRONAS supports Yayasan Sabah in the development of Imbak Canyon Studies Centre (ICSC), located within the 27,599-hectare core zone of the Imbak Canyon Conservation Area (ICCA). This partnership aims to conserve a gazetted forest reserve in Borneo, as well as explore opportunities in carbon sequestration from reforestation.

### 10. Adaptation to Climate Change

PETRONAS participated in the national vulnerability and adaptation assessment exercise in Malaysia. The outcome was incorporated in the 3rd National Communication Report to the United Nations Framework Convention on Climate Change (UNFCCC).

In addition, PETRONAS continues to build capability on adaptation to boost business resilience.

#### Stakeholder Engagement on Climate Change

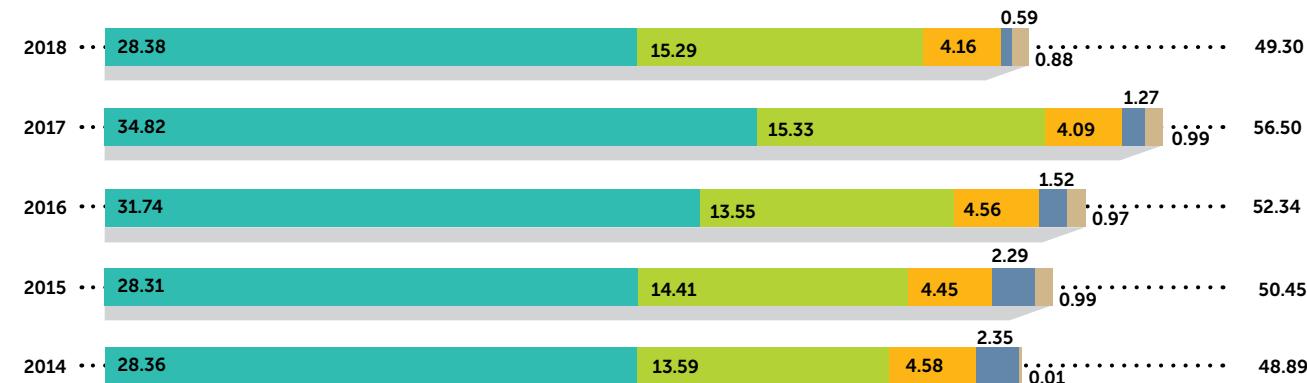
In 2018, we worked closely with various stakeholders globally through discussions and participation in initiatives on climate change. These include our membership in the IPIECA Climate Change Working Group and the International Gas Union. Closer to home, we engaged with various Malaysian regulatory bodies to shape the country's move towards realising its pledge under the Paris Agreement.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### Greenhouse Gas Performance

#### PETRONAS CARBON FOOTPRINT (GHG EMISSIONS)

(million tCO<sub>2e</sub>)



■ Domestic Upstream ■ Domestic Downstream ■ MISC ■ International Upstream ■ International Downstream

Note:

1. Our carbon footprint is reported on an operational control basis which includes the following international assets:
  - a. Upstream business - Indonesia, Myanmar, Turkmenistan.
  - b. Downstream business - Argentina, Belgium, Brazil, China, Italy, South Africa and Spain.
2. GHG data for 2013-2017 have been restated following ongoing efforts aimed at streamlining our accounting practices with the revised PETRONAS Technical Standard on Greenhouse Gas Monitoring, Reporting and Verification.

PETRONAS has revised its Technical Standard on Greenhouse Gas Monitoring, Reporting and Verification to align with the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. The most significant impact is the change in values of the Global Warming Potentials which is reflected in our restated GHG performance figures this year.

In 2018, PETRONAS successfully reduced its carbon footprint by almost 13 per cent from 56.50 million tCO<sub>2e</sub> in 2017 to

49 million tCO<sub>2e</sub> in 2018. This is largely due to flaring and venting reduction initiatives as well as other operational excellence drivers that were implemented in Upstream operations and supported by Downstream improvements in plant efficiency and plant utilisation rates.

MISC Berhad exhibited a 1.7 per cent increase in GHG emissions compared to 2017, which was mainly a result of increased fleet activity.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

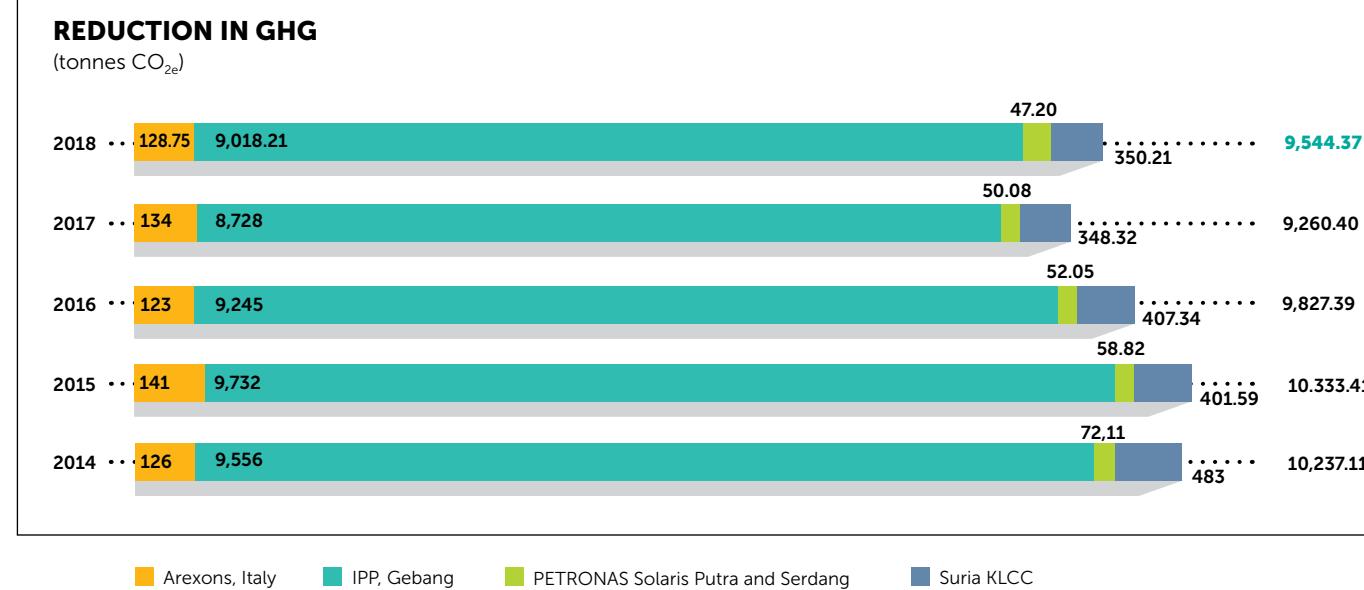
Since the introduction of the PETRONAS Carbon Commitments, we have cumulatively reduced 12 million tCO<sub>2e</sub> and monetised 187 million standard cubic feet of gas per day over the past 5 years. In 2018 alone, PETRONAS further reduced 1.54 million tCO<sub>2e</sub> and monetised an additional 37.25 million standard cubic feet of gas per day. This was largely attributed to PETRONAS Domestic Upstream business that successfully reduced 0.82 million tCO<sub>2e</sub> through three key flaring and venting reduction projects. The remaining 0.72 million tCO<sub>2e</sub> was achieved by International Upstream through flare reduction.

### Renewable Energy

We continue to produce solar energy from our existing solar photovoltaic (PV) projects in Malaysia and abroad. In Malaysia, the electricity generated is sold to the national grid. In 2018, we generated approximately 14,039.36 MWh of electricity through our solar generation projects, thereby resulting in GHG emission reduction of 9,544 tCO<sub>2e</sub>.

We improved the maintenance programme of the independent solar power plant in Gebeng in 2018, which reduced the number of plant downtime and increased solar energy generation by 3 per cent.

We also investigated the feasibility of installing solar panels at PETRONAS assets, including training centres, buildings, depots and petrol stations, some of which have been planned for commissioning in 2019.



### Moving Forward

Host countries are expected to accelerate their pace to drive climate actions, which may include more stringent targets for reduction of GHG emissions, supported by climate legislation, for example, cap and trade programmes or carbon tax.

To ensure PETRONAS' resilience in this period of transition, we will strengthen our climate actions to include improvements in GHG monitoring, reporting and verification, further reducing GHG emissions as well as building our knowledge and capability in climate change adaptation.

Strengthening partnerships between consumers, businesses and governments to work as one will become key to successful business resilience in this new low-carbon economy.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

### Environmental Management

**We recognise the increase in environmental awareness, standards and regulations applicable to the oil and gas industry. We continuously work towards improving operational excellence and processes to reduce our environmental impact and manage our operations safely and responsibly.**

Much effort has been put into complying with applicable environmental regulations. We have internal standards to manage air emissions, wastewater, hazardous waste, soil and groundwater, project environmental management and use of natural resources. We benchmark against external standards and guidelines such as International Finance Corporation (IFC), World Bank and local requirements to establish our internal standards.

In 2018, we continued to support the Malaysian government's initiative in promoting a self-regulation system to enhance compliance with environmental laws by rolling it out across the Group. We also proactively share our technical expertise with relevant authorities on air emissions, storage and handling of hazardous wastes/materials, environmentally hazardous substances, marine water, decommissioning, environmental-related crises, and project environmental management.

### WATER

The availability of freshwater is a growing challenge due to increasing demand for water resources, growing population and expectations and water-related legislations. These factors may affect the sustainability of our water supply and wastewater discharge.

Water is essential to our operations especially in the Downstream business. We are endeavouring to optimise water and wastewater management through internal standards and procedures including in the Downstream Operational Excellence Management System.

We continue to evaluate water practices in the Downstream business in stages. In 2018, we completed PETRONAS Water Practices (WAPS) verification in our facilities in Kedah and Sabah.

#### What Governs Us

- PETRONAS Health, Safety and Environment Policy
- PETRONAS Mandatory Control Framework – Air Emissions, Environmentally Hazardous Substances, Waste Management, Soil and Groundwater, Project Environmental Impact Assessment and Wastewater Management
- PETRONAS Technical Standards and Guidelines
- PETRONAS Project Management System
- PETRONAS Procedures and Guidelines on Upstream Activities

### ENVIRONMENTAL PERFORMANCE

#### Freshwater Withdrawal

Total freshwater withdrawn in 2018 stood at 59.18 Mm<sup>3</sup> from Malaysian and international operations compared with 56.00 Mm<sup>3</sup> in 2017. The increase was mainly attributed to the Company's facility in Sabah going into full operation. The downstream business constituted 53.45 Mm<sup>3</sup>, encompassing gas processing, petrochemicals and refining. The remaining 5.73 Mm<sup>3</sup> was attributed to the upstream business and non-process facilities.

#### Wastewater Discharge

Wastewater from our operations is treated prior to being released into the environment. The Oil in Water content was recorded at 715 MT in 2018, compared to 591 MT in 2017. This increase was due to operational maintenance activities.

#### Spill Prevention

We adopt preventive maintenance and routine programmes to prevent spills at source and to maintain the facilities' reliability. We recorded a total of seven hydrocarbon spills in 2018 with the total estimated volume of 22.6 m<sup>3</sup> compared to 18 spills (172.6 m<sup>3</sup>) in 2017.

Spill incidents due to land transportation accidents reduced significantly in 2018. Among the contributing factors were our road safety campaigns, increase in trained defensive drivers, structured processes for drivers, Work and Rest Hours (WRH) monitoring and management and enhanced Journey Management Plan (JMP). Drivers had monthly scorecards which were submitted to management for more efficient regulation of transporters.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

This year, we conducted four sessions of Annual Preparedness Review (APR) with Oil Spill Response Service Providers to gauge the site oil spill response preparedness against the risk exposure of oil spill. Alongside enhancing our procedures, two sessions were conducted to provide hands-on experience and enhance response strategies.

We contributed to the transformation of the Petroleum Industry of Malaysia Mutual Aid Group (PIMMAG), a non-profit organisation comprising members from key petroleum industry players committed to oil spills response and training. This includes enhancement of oil spill response preparedness and seamless response protocols with relevant stakeholders.

### Hydrocarbon fingerprinting system (HyFiS)

In 2018, we started a knowledge-sharing collaboration with the Department of Environment (DOE), where we offer our expertise to improve enforcement action over marine pollution in Malaysia. The HyFiS database contains hydrocarbon data from offshore fields in the exclusive economic zone in Malaysia. In a case of a spill, the cause of oil pollution can be identified.

### Air Emissions

We continue to evaluate risks and monitor air emissions from our facilities. This includes a commitment to invest in live data of emissions such as nitrogen oxides, sulphur oxides and carbon monoxide to expedite intervention. We work closely with relevant stakeholders to streamline an integrated air emissions management approach.

Sulphur oxides emissions in 2018 stood at 116,974 metric tonnes compared with 87,917 metric tonnes in 2017. The



increase in emissions value is mainly due to the improvement in reporting methods and an increase in our fleet activity.

Nitrogen oxides emissions in 2018 stood at 151,519 metric tonnes compared to 159,498 metric tonnes in 2017. The decrease in emissions value is due to operational improvements and a reduction in venting activities.

### Managing Waste

We govern performance of waste generation and waste minimisation. In 2018, we generated approximately 112,474 metric tonnes; as compared to 73,305 metric tonnes in 2017. This was due to turnaround and maintenance activities. Total of waste recycled/recovered was 77,786 metric tonnes constituting 69 per cent of total waste generated.

We continuously improve the management of hazardous waste generated from our activities. In 2018, we introduced a Waste Card Module as part of our centralised Stewardship, Health, Information & Environment Linked Database (SHIELD). It is a company-wide initiative to simplify waste characterisation process.

By better managing the large volume of materials procured across the group, PETRONAS Surplus Management minimises wastage by optimising project material surplus and non-moving inventory in 27 PETRONAS operating units and involving 24 contractors operating in Malaysia. We have invested RM1.1 billion in initiatives to reuse, sell and recycle. We will continue efforts here as it contributes to reducing our carbon footprint and enhances cost optimisation of materials procured.

## DECOMMISSIONING

It has been more than 100 years since Malaysia produced its first barrel of oil. Decommissioning activities are expected to intensify as considerable assets have been operating beyond their designed life cycle. This is in line with various worldwide forecasts, that suggest decommissioning will be a significant emerging area of business globally. PETRONAS addresses the process of decommissioning of all disused upstream installations that have ceased to produce, consistent with the national laws and international conventions.

In anticipation of the growth of decommissioning activity in Malaysia, PETRONAS has developed a structured gate review process that provides strategic guidelines and requirements for Abandonment or Decommissioning of upstream installations, both onshore and offshore.

### Innovative Engineering Solutions for Decommissioning

After an asset comes to the end of its life, the site needs to be decommissioned. This is often a complex and costly operation. Towards the end of December 2017, a wholly-owned subsidiary of PETRONAS International Corporation Ltd, PC Mauritania Pty Ltd (PCMPL), started the decommissioning of the Chinguetti field located about 80km west of the Mauritanian coast. The Chinguetti oil field became operational in 2006 but has reached the end of its economic life. Ongoing efforts are being carried out with regard to the abandonment and decommissioning (A&D) of the facilities serving the Chinguetti field to restore the field to a safe condition whilst minimising the environmental impact.

The A&D of Chinguetti complies with local and international laws and requirements and meets good industry practices whilst being cost effective. Emphasis is placed on minimising environmental impact – specifically protecting the seabed and marine environment, leaving it safe and free from pollution.

The key challenge in the management of the project is to optimise cost while delivering the project in line with good industry practices. Another challenge in a project of this type is managing various parties working simultaneously, for example, a rig for temporary wells suspension and Floating Production and a Storage and Offloading Unit (FPSO) Disconnection and Demobilisation (D&D) contractor.

The Chinguetti A&D execution is divided into two phases based on the facilities in the field. Phase 1 was completed in 2018 and Phase 2 will commence in 2019.

The key technical challenge in managing Phase 1 of the Chinguetti A&D execution was the management of Flow Assurance (FA) for pipelines and wells. Flow Assurance (FA) in decommissioning refers to ensuring continuous and efficient flow to prevent hydrate blockages that can occur when hydrocarbon mixes with water at cold temperatures in subsea conditions. Efficient FA prevents blockages which result in delays and higher expenses. With the successful execution, seamless integration and innovative engineering, the A&D Phase 1 successfully prevented hydrate blockages in the subsea system and 10 wells during shutdown and flushing, translating to cost avoidance of approximately USD11 million.

Another technical challenge was managing hazardous waste disposal involved in decommissioning and disconnection, particularly the handling of naturally-occurring radioactive materials (NORM) and complying with requirements on transboundary movement. To address this issue, we utilised a compact treatment unit, designed for treating produced water offshore. This attributed to reduction of waste to only 5 per cent for disposal onshore.

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

## CLIMATE CHANGE & ENVIRONMENTAL MANAGEMENT

# Biodiversity and Ecosystem Services

**Biodiversity and Ecosystem Services (BES) are the benefits that ecosystems contribute towards human well-being. Disruptions in areas we operate could potentially affect the quality and availability of BES to the local communities, as well as to PETRONAS' operations. We recognise the significance of managing our impact and address this concern through risk assessments and conservation efforts.**

In 2018, we completed three biodiversity and ecosystem services risk assessments focusing on different phases of PETRONAS' operations including seismic survey, construction and operations. The risk assessment complemented and improved the BES components of the Environmental Impact Assessments (EIA) that are required for project approval.

PETRONAS' efforts are also reinforced through conservation efforts via our corporate social responsibility initiatives such as coral reef rehabilitation, forest ecosystem conservation and environmental awareness programmes for communities.

PETRONAS carries out various major environmental conservation projects in Sarawak, including the RM12 million Biodiversity, Environmental and Conservation (BEACON) project at Similajau National Park in Bintulu, RM8 million PETRONAS-Sarawak Forestry eco-marine project at Sibuti, RM10 million Piasau Nature Reserve in Miri, RM35 million Miri Shoreline Protection project as well as the planting of 40 trees in 40 different locations by Malaysia LNG Sdn Bhd in conjunction with its 40<sup>th</sup> anniversary celebration.



### Marine habitat rehabilitation at Sibuti

The programme began in 2015 with the objective to protect and help regenerate coral reefs around the Sibuti Reef Complex at Miri-Sibuti Coral Reefs National Park, that had largely been destroyed by illegal fishing trawlers.

In 2018, 600 units of reef balls were deployed in September and another 600 units will be deployed in 2019. The areas where the reef balls are deployed are assessed to be of degraded reef.

The reef balls are deployed to encourage natural coral growth on the surface of the reef balls and for the reef to thrive again. Additionally, the reef balls function as passive enforcement tools to manage and prevent illegal trawling in the area. Honorary Wildlife Rangers appointed in 2017 will continue to monitor the area as part of the Conservation, Education, Promotion and Awareness (CEPA) Programme.



### Biodiversity, Environmental and Conservation (BEACON) Project

In 2013, Malaysia LNG Group of Companies (MLNG), a subsidiary of PETRONAS, and its partner Sarawak Forestry Corporation (SFC) embarked on a biodiversity conservation programme known as BEACON Project in Similajau National Park, Bintulu, Sarawak.

The eight-year project aims to protect, conserve and regenerate marine biodiversity, especially coral reefs, by using environmentally-friendly artificial reefs known as Reef Balls™. A total of 1,400 units have been placed in Similajau National Park waters to protect the marine turtle migratory route from illegal trawling activities. Another 100 units were placed in Patricia Shoal as an experimental plot for coral reef and marine life enhancements.

Annually, PETRONAS and related stakeholders will conduct reef ball monitoring and natural reef assessment to observe the progress of the project.

#### The project has recorded encouraging results:

- Nesting turtles have returned to Similajau National Park beaches after a seven-year absence.
- The reef balls are almost 100 per cent covered in various coral species, such as hard and soft corals, sponges and encrusting corals, as well as algae, barnacles and other marine species.
- Various fish species were observed inside and around the reef balls.

### Trees4Life to create new Green Lung in Bintulu

Through the Trees4Life project, Nyabau Hill in Bintulu will be turned into a new green lung. In this collaboration between PETRONAS Carigali Sarawak Gas (SK Gas), Bintulu Development Authority (BDA) and Universiti Putra Malaysia, Bintulu (UPM), 3,000 'Merawan Siput Jantan' (Hopea odorata) trees will be planted on a 3-hectare plot at the Nyabau Hill public park between 2018 and 2020.

### Sungai Latoh Mangrove Planting, Johor

PETRONAS Gas Berhad (PGB) launched an environmental community programme known as "Sayangi Sungai Latoh" in Kampung Sungai Latoh, located in Kongkong Laut, Johor where 2,300 mangrove samplings were planted. Among its objectives is to preserve the species that inhabits Sungai Latoh and to further strengthen ties with the community.

The new collaboration with Malaysian Nature Society (MNS), under a five-year partnership, is to preserve and restore the ecosystem and related species in the Sungai Latoh area, which is within proximity of our gas pipeline Right of Way.

Apart from promoting awareness on the importance of environmental education, it is also to foster and enhance our relationship with the authorities and communities within the area.



# PRODUCT STEWARDSHIP & SUPPLY CHAIN

**The innovative products and services that we deliver continue to empower customers to move towards being more energy efficient. At the same time, our established best practices help ensure that local suppliers wherever we operate embrace our robust standards for safety, technical, environmental and human rights expectations and requirements.**



## 2018 KEY HIGHLIGHTS:

- Enhanced Product Stewardship labelling consistency and efficiency with updated Product Stewardship modules through PETRONAS Stewardship, Health, Information & Environment Linked Database (SHIELD).
- Launched the improved Vendor Development Programme (VDPx), of which 18 organisations comprising six Petroleum Arrangement Contractors (PACs) and 12 Oil and Gas Service and Equipment (OGSE) companies will replicate PETRONAS' VDP programme, to reach out to more local vendors.

## MATERIAL FACTORS:

- Product Stewardship
- Supply Chain

## Product Stewardship

### What Governs Us

- PETRONAS Health, Safety and Environment Policy
- Health, Safety and Environment Management Standard, Mandatory Control Framework, including Technical Standards and Guidelines

Underlying our efforts in developing best-in-class chemicals, fuels and lubricants is adherence to the highest standards of product stewardship.

Product stewardship is the continuous identification, assessment as well as management of health, safety and environmental risks during the various stages of our products' life cycle. We ensure that our products are safe for their intended use and seek to protect the health and safety of our employees and the public, for example by closing data gaps so as to improve the accuracy of hazard classifications to enable better product risk management.

The PETRONAS Technical Standards (PTS) on Product Stewardship, Hazard Branding of Chemicals based on their Physico-Chemical, Health and Environmental Classifications and PETRONAS Product Safety Data Sheet Development and Update Process, provide the basis for the identification of potential hazards and risks related to products throughout their life cycle, mitigation of these risks and communicating these to key stakeholders and product users. We also ensure compliance through relevant product testing and adhere to regulations of different markets regarding manufacturing, selling and disposal of our products.

Our procedures are in line with the Strategic Approach to International Chemicals Management (SAICM) 2020 goals, as well as meeting the regulatory requirements in countries where we operate. We follow the Responsible Care® Global Charter and Product Safety Code Management Practices. The purpose of this voluntary scheme is to facilitate disclosure on risks and management of the identified risks. Through this scheme, the chemicals industry has made a global commitment to improve the environmental, health, safety and security performance of products and processes.

Product stewardship training and capacity-building for employees ensures that requirements and best practices are clearly communicated, correctly interpreted and applied throughout the products' life cycle. The training programmes are task-specific and dependent on an individual's job role, enhanced through peer learning. The Community of Practice (CoP) for Product Stewardship at PETRONAS was established in 2018, addressing the multidisciplinary nature of product stewardship and the involvement of multiple divisions within the company.

## Product Risk Management and Communication

We aim to manage our product safety beyond regulatory compliance. Product Risk Management measures are incorporated at different stages, from manufacturing and distribution to usage and disposal. It also includes aspects that concern human health and the environment.

The communication of risks is to provide consumers and the general public with information on our products and chemicals as we strive for transparency. High priority products' safety summaries are publicly available on the International Council of Chemical Associations (ICCA) portal.

We undertake a risk-based approach to product profiling, and our products undergo thorough assessment to ensure

their safety for the intended uses. Efforts are ongoing to strengthen our governance mechanisms in the discipline of product stewardship group-wide. Some of our efforts include:

### Centralised Safety Data Sheet (SDS) database

Product SDS are a key component of communicating information on hazards and risk management measures to customers. Our SDS are available in English as well as the respective country's local language(s) and are publicly available on PETRONAS SDS Portal, accessible on our corporate website. In 2018, we added more voluntary product safety information on the SDS portal, including Global Product Strategy Safety Summaries. The scope of the SDS portal increased in 2018 to include Engen products in addition to all domestic products.

- Supply chain mapping initiative as chemicals are sourced externally from a wide base of suppliers and are also exported by us for use in multiple industries globally.
- Digitalising information with in-house authoring of product safety data sheets through the Stewardship, Health, Information & Environment Linked Database (SHIELD).
- Regular implementation of regulatory content update packages in SHIELD and providing public access to product SDS.
- Publication of product safety summaries on the ICCA GPS portal and PETRONAS SDS portal.
- Global Label Management (GLM) system improves automated label management.

### The GLM system fulfils these objectives:

- Ensuring zero non-compliance on label design and information via strict adherence to product safety and dangerous goods regulations in countries of operation/sales.
- Centralising all labels into a single database for easy accessibility and traceability.
- Streamlining the overall label management process, thus reducing the likelihood of human error.

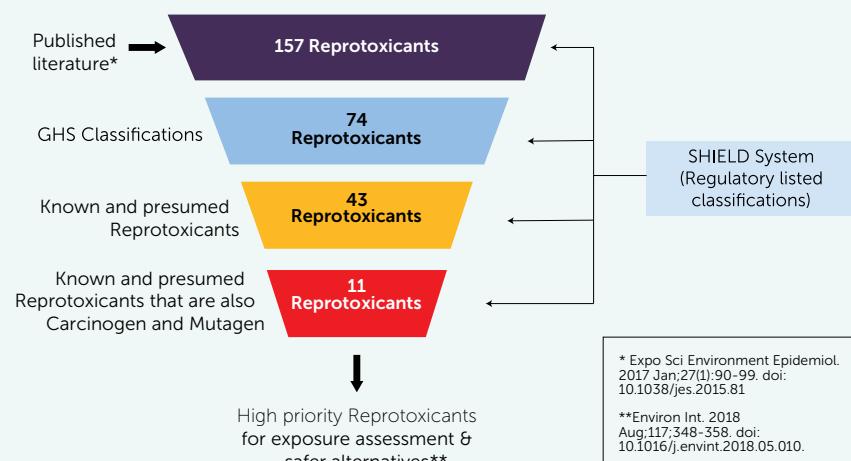
## PRODUCT STEWARDSHIP & SUPPLY CHAIN

In line with the PTS, we systematically assess all products using our regulatory compliance requirements database that comprises country-specific and sector-specific (product-use specific) regulations and requirements. The database is kept updated centrally with country-specific regulations. The scope of regulation now covers the EU product regulations in addition to Asia Pacific product regulations. A centralised regulation system for product stewardship ensures timely compliance with enforcement timelines for specific product safety regulations. We hope to be able to increase the coverage of the database to more countries that our products may reach.

We are working towards the Life Cycle Assessment (LCA) process for our products, to be able to better assess product sustainability performance with regard to their social, economic and ecological impact and to understand the trade-offs between the impacts and the different life cycle stages of the product.

### Risk Assessment for Human Health

We maintain our commitment to ensure human health safety including occupational and public health in the unconventional oil and gas (UOG) operations. Last year, our Product Stewardship and Toxicology team embarked on a collaborative research with Yale School of Public Health. The collaboration resulted in a 2018 publication documenting systematic evaluation of chemicals used in the UOG operations for reproductive toxicity. The approach used government regulatory agencies' databases and created a global list that would ease identification of reproductive toxicants for improving the management of chemicals at the workplace. The study looked at Globally Harmonized System (GHS) hazard classification lists by 11 regulatory agencies and discovered inconsistencies in classification across countries. As a result, a total of 74 out of the 157 chemicals evaluated were confirmed as reproductive toxicants. Of these, 43 known or presumed human reproductive toxicants were further identified as carcinogens or mutagens as part of the chemical prioritisation process. The study provides a novel approach in identifying high priority reproductive toxicants from the government agencies' lists, providing the basis for future exposure assessment and selection of safer alternatives. Our chemical prioritisation approach can be applied beyond the UOG industry, including for small-and medium-sized industries as part of reproductive health stewardship in support of the UN SDG Goal 3 and Goal 12 on Good Health and Well-being and Responsible Consumption and Production, respectively.



### Managing environmental risks to the marine environment from the chemicals we use

In 2018, we started a chemical prioritisation plan with the goal of upholding the accountability of third-party chemical data on the environmental performance of Upstream Operations service providers. With the first phase expected to be completed in 2019, we aim to prioritise oilfield chemical products to minimise the impact on the marine environment. The scope of the plan covers chemicals used in cementing, workover, completion and production processes.

#### The first phase of the initiative included:

- Environmental hazard and fate data gap assessment for 297 oilfield chemical products used in cementing and drilling operations. We will continue the assessment for new contracts in 2019.
- Updating PETRONAS Technical Standards (PTS) to support the prioritisation of hazardous chemicals based on their health, environmental and physical-chemical hazard profiles, to be completed in 2019.

### SHIELD: Centralising product stewardship data

SHIELD is a centralised data management system for group-wide health, safety and environment data covering all aspects of our products, processes, human and stakeholder well-being. SHIELD encourages standardisation in product risk assessment and product safety communication. At the same time, it also improves process efficiency and SDS for future products and is useful for the Research and Development department in understanding hazard profiles of potential new products.

#### 2018 Actions for SHIELD – Product Stewardship



Improvements in label management in 2018 included system automation and thus ensuring that the data used for both the product labels and SDS is synchronised. This minimises human error in the labelling system leading to an efficient process on-site and when dealing with customer enquiries and concerns over product labels. The GLM system was also enhanced to enable actual labels to be previewed and shared with customers prior to product shipment.

Product Safety team started an international collaboration for SHIELD and SDS portal integration where the Engen SDS was incorporated into the PETRONAS SDS portal.

Our online database now has environment, health and safety regulatory content for the Europe, Middle East and Africa (EMEA) region implemented, which effectively means SHIELD now has global SDS regulation coverage.

The internal SDS review and approval process has also been enhanced through an automated workflow system which enables more efficient overall SDS management.

## PRODUCT STEWARDSHIP & SUPPLY CHAIN

## PRODUCT STEWARDSHIP & SUPPLY CHAIN

### Leadership by PETRONAS Product Stewardship and Toxicology (PS&T)

PETRONAS' product safety and performance excellence are founded on our emphasis on PS&T. The PETRONAS PS&T section engages with internal and external stakeholders, shares our practices and receives feedback for further improvement.

PETRONAS PS&T leadership has been demonstrated on several fronts. In 2018, we hosted and facilitated a workshop on Product Stewardship and Regulatory Toxicology in the Oil and Gas Industry at the Congress of Toxicology in Developing Countries (CTDC) in Belgrade, Serbia.

The PETRONAS PS&T also chaired a task force for UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS) under IPIECA at the 36<sup>th</sup> meeting of the UN Sub-committee of Experts on GHS. The task force deliberated on the draft update of the

IPIECA Guidance on the Application of GHS Criteria to Petroleum Substances, with the aim to facilitate appropriate classification and labelling of petroleum substances within the Unknown or Variable Composition, Complex Reaction Products or Biological Materials (UVCB) group.

In Malaysia, the PETRONAS PS&T provided technical advice to DOSH Malaysia, which supports the decision process for Industry Code of Practice (ICOP) on chemical classification of certain substances.

Lastly, the PETRONAS PS&T participated as a trainer in the 2018 ASEAN Harmonization of Technical Guidelines for Pesticides Registration Management Phase II Workshop in Manila. PETRONAS PS&T has been recommended to conduct the Phase III Workshop on GHS in 2019.



## Innovation and Technology

PETRONAS' research and development (R&D) for products, processes and other aspects of our operations ensure we are the brand of choice and a leading oil and gas company. Our R&D efforts bring together our technical specialists from across the group. Implementing the right strategies to innovate technology solutions are a key aspect of our efforts.

### Improving fuel and lubricant technology

Our R&D has developed a new formulation for fuels to enhance fluids performance and to formulate the next generation of power fluids. The main purpose of our research efforts in fuel and lubricant technology is to develop high-performance and efficient fuel and lubricant for everyday use in conventional vehicles as well as for commercial and retail customers, including for motorsports.

### Innovation in motorsport fuel technology

Our Formula One partnership with Mercedes AMG allows us to transfer knowledge and skills learned in high-performance racing for the development of products for more conventional vehicles. As title and technical partner, PETRONAS works closely with the team to design efficient fuel, lubricants and functional fluids. Together with key partners, PETRONAS researchers and engineers developed and customised Fluid Technology Solutions™. These premium racing fuel and lubricant products, PRIMAX and SYNTIUM, have unleashed superior power and performance for our customers' vehicles.

### Developing class-leading everyday fuel of the future

PETRONAS' involvement in MAMGP has improved our fuel technology capability and innovation and has led to enhanced efficiency in our innovative products for the public. Applying our experiences at F1, we have introduced race lubricant SPRINTA for the PETRONAS YAMAHA SIC Racing Team. PETRONAS Research has also extended the technology collaboration beyond F1 with Daimler Automotive, into green projects towards low-carbon fuel and vehicle emissions control.

PDB's new Primax 95 with Pro Drive was extensively tested in 2018 in Malaysia and started selling in selected PETRONAS stations in 2019.



## PRODUCT STEWARDSHIP & SUPPLY CHAIN

## PRODUCT STEWARDSHIP & SUPPLY CHAIN

### Customer Experience

We are focused on delivering excellent service that makes our customers' lives better and more sustainable. Innovating to satisfy the changing needs of end-users is part of our efforts to improve customer satisfaction and nudge our customers towards a more smooth and energy-efficient lifestyle.

PETRONAS Dagangan Berhad (PDB) is responsible for marketing PETRONAS products to the domestic market. Through PDB, we have ongoing efforts towards maintaining customer engagement.

#### IMPROVING CUSTOMER EXPERIENCE

In 2018, PDB introduced SETEL, the first mobile payment solution for fuel purchases. The customised solution is designed to integrate directly with the fuel pumps – the first in Southeast Asia – enabling customers to purchase fuel with a few clicks from the comfort of their vehicles.

Since the beta launch in July 2018, we have had over 10,000 users and feedback has been positive. We also received an overwhelming response from visitors at the Kuala Lumpur

#### We engage our customers through:

- Customer Care Hotline – Mesralink
- Our corporate website – MyMesra (Safety Data Sheets as well as communication of our products and services are available on our website)
- Social media – @PETRONASBrands on YouTube, Facebook and Instagram

International Motor Show 2018 where it was first showcased to the public.

SETEL can now be used at more than 200 PETRONAS stations within the Klang Valley, reaching 600 sites across the nation by June 2019 and nationwide by the end of 2019. Beyond fuel purchase, customers can now use SETEL to buy items at the Mesra stores.

#### Collaborating with retailers

Our customers' needs are evolving. They want more than just affordable energy and choice. They also require control of their energy usage and the ability to use less. Ultimately, they want to reduce their carbon footprint.

Retailers and distributors are important partners in our effort to push for more sustainable consumption and they provide us with excellent platforms to inform consumers about sustainable products and encourage them to use these products in an environmentally responsible way.



## PRODUCT STEWARDSHIP & SUPPLY CHAIN

### CONSUMER BRAND OF CHOICE

PETRONAS remains the brand of choice among Malaysians, thanks to our continuous focus on product stewardship and innovative products.

In 2018, PETRONAS was named Putra Brand of the Year, chosen by Malaysian consumers. The Putra Brand Awards recognises brands that best demonstrate continuous brand building in the form of communication and product innovation, as well as exhibit a strong sense of corporate social responsibility.

In addition, PETRONAS Primax and PETRONAS Syntium were awarded the Putra Brand Gold Award in the Automotive Fuel, Lubricants and Accessories category. This is the ninth win for Primax fuel and the seventh win for Syntium lubricant.

Engen Petroleum Limited (Engen), has become the brand of choice for the youth in South Africa. It was voted the "Coolest Petroleum Brand" in the Sunday Times Generation Next Awards, for the ninth consecutive year.

The company is dedicated to engaging with youth and contributing to the self-sustainability of young South Africans. This is primarily done through the Engen Maths and Science Schools, Engen KlevaKidz Paraffin Safety and the Engen Knockout Challenge youth soccer development initiatives.

At the same time, Engen continues to have the largest service station footprint in South Africa and its advanced energy formula, Engen Primax Unleaded, provides superior performance and economy to motorists. The reformulated Engen Primax Unleaded provides motorists with technology that cleans the engine, enhances fuel combustion and improves drivability.

### Supply Chain

Supply chain management is critical for PETRONAS to function optimally in upstream petroleum exploration, development, production and abandonment activities, as well as in the downstream product manufacturing and distribution. By optimising our supply chain management, we can increase competitiveness and customer satisfaction and ultimately increase productivity and maximise profit margins.

The procurement of goods and services is key to PETRONAS' supply chain. In 2018, PETRONAS awarded more than RM40 billion worth of projects to more than 4,000 contractors of goods and services in Malaysia alone. We work to source goods and services from local contractors in areas where PETRONAS operates. For example, in Malaysia, 80 per cent of operations activities were awarded to local contractors.

In view of the nature of the oil and gas industry that also requires advanced technology to extract petroleum in challenging environments, the sourcing of foreign technologies and skills is still applicable.

We continuously conduct structured programmes to empower local contractors and ensure their sustainability towards moving into a more challenging digital and technological environment. By doing so, we strengthen the Oil and Gas Services and Equipment (OGSE) ecosystem and increase the competitiveness and capability of contractors.

In countries where PETRONAS operates, we support local host government requirements on procurement and local development.

## PRODUCT STEWARDSHIP & SUPPLY CHAIN



### Embracing Digital and Innovation for Efficiency and Competitiveness to Stay Relevant

While some organisations have adopted digital solutions in isolated parts of the value chain, PETRONAS with its vision of Digital Group Procurement (DGP) demonstrates industry leadership in harnessing the value of digital tools and technologies with an end-to-end procurement function. This requires not only upskilling our employees but also contractors and players in the industry.

DGP will improve efficiency, enhance customers' experience and provide a strategic thought partner to business, through the analytics of our areas of operations. It also transforms the way we work to DeeWoW, or Digitally enhanced and exciting Way of Working that instils innovation in the work culture.

This transformation journey has progressed well towards full implementation in 2020.

### Compliance with HSSE and Code of Conduct and Business Ethics (CoBE)

All PETRONAS contractors must meet our robust safety, technical, environmental and CoBE requirements for the licensing, bidding, contracting and execution stages. The performance of contractors is assessed and rated against HSSE and contract compliance. PETRONAS strives to work with contractors in meeting our expectations, and any contractor who does not fulfil those requirements may ultimately be subject to termination of contract.

### Special Vendor Development Programme

For PETRONAS, 2018 marked the silver jubilee of the implementation of our special vendor development programme (VDP). The programme has been in operation since 1993 and has produced 99 VDP vendors with a total contract value of about RM8.5 billion. Their successes include having a footprint in 30 countries, four VDP vendors have been publicly listed, nine have registered patents and five companies hold trademarks and ongoing R&D.

Following the success of VDP, an enhanced VDP scheme branded as VDPx was introduced in 2018, for industry players to voluntarily contribute in strengthening the oil and gas ecosystem by replicating the VDP programme to reach out to more local contractors for sustainable vendor development. 'x' denotes the multiplier effect of developing more VDP vendors by Petroleum Agreements Contractors (PACs) and big OGSE vendors.



### STRENGTHENING THE OGSE ECOSYSTEM

Following the oil price crash in late 2014, the sector was badly hit worldwide, including Malaysia. It was critical for OGSE players to remain resilient while the market recovered, and to ensure there was a ready pool of players and an ecosystem to support local growth.

However, the industry also suffered major structural issues and was in urgent need of reforms. PETRONAS, as a national oil company, saw this as an opportunity to strengthen the ecosystem and the players who were largely SMEs, as well as to remove structural issues that impede local development.

Clarity on future demand was required by vendors, particularly in upstream, to enable better resource planning. To address information asymmetry, PETRONAS' second Activity Outlook (PAO) 2019-2021 report shares our perspective on industry trends, demand outlook and activities planned in Malaysia for the next three years. The report, published to improve market information flow, is part of our

efforts to promote and encourage a more robust, resilient and competitive OGSE sector. This will support contractors in their investment decisions and effective management of their resources.

In assisting vendors to weather this challenging period, we intensified collaboration with industry players, including government agencies, business associations and financial institutions. One such initiative undertaken by PETRONAS was facilitating access to finance for small companies in our sector to improve their liquidity which will ensure the sustainability of their operations. A Memorandum of Understanding (MoU) was signed between PETRONAS and a local bank, which allocated funds totalling RM500 million for the SME Vendors Financing Programme. As at 31 January 2019, RM120 million worth of financing has been approved for vendors under this programme. PETRONAS is also working with several other local and foreign financial institutions to improve access to financing for mid-tier companies and large corporations (main contractors) and their respective subcontractors.

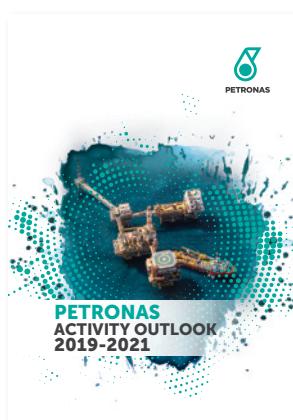
Since 2014, we have been consistent in our messaging towards industry consolidation, mainly to address severe overcapacity in several categories including Offshore Fabrications, Hook Up and Commissioning (HUC), Maintenance, Construction and Modification (MCM) and Offshore Supply Vessels (OSVs). Through contracting strategies, we have successfully promoted and influenced industry consolidation of economies of scale contracts with longer contracting tenure and a full suite of works. With improved capabilities and size, it is our hope that the industry players merge to become bigger and more resilient entities. This strategy has influenced the consolidation of 30-50 per cent of local players in these sectors.

A special programme named #BeyondHome encourages local contractors to expand beyond the Malaysian market.

## PRODUCT STEWARDSHIP & SUPPLY CHAIN

The first #BeyondHome: Myanmar Forum was attended by more than 120 contractors. In addition, #BeyondHome Brunei was rolled out with the launch of a market intelligence report complete with guidelines on how to register online with Brunei oil and gas operators and information on tender opportunities, shared with more than 4,000 licensed and registered vendors of PETRONAS.

In 2018, we embarked on a study to outline the Malaysia OGSE Talent Landscape. It covered PETRONAS vendors who play critical roles in core categories. The study identified talent shortages and excesses across the industry based on categories and skill sets to aid players in making key decisions to manage workforce planning, improve skill demand projection and highlight talent competency gaps. The results of this study will help create an optimum and competent workforce in the industry.



PETRONAS in collaboration with the Ministry of International Trade and Industry (MITI) and Malaysia External Trade Development Corporation (MATRADE) also released Malaysia Tax Incentives Compilation and Guide for OGSE Sector in September 2018 to help contractors navigate available tax incentives relevant to the oil and gas industry.



## PRODUCT STEWARDSHIP & SUPPLY CHAIN

### SURPLUS MANAGEMENT

PETRONAS recognise that good management of surplus materials is a part of our commitment towards sustainability and managing our carbon footprint. We have various surplus material management programmes, that include improving material visibility through digitalisation of master data and inventory, algorithmic inventory review, surplus promotion and sales via global marketplace, as well as improving the attractiveness of surplus materials via incentives for higher re-utilisation across our operators.

The programmes involve collaboration among all 27 subsidiaries, 24 operators, affiliates and both local and international vendors, and they have brought about positive results. We will continue to strive towards fundamental changes in the mindsets of all stakeholders in ensuring a more sustainable end-to-end inventory management and successful curbing of new surplus creation. This green endeavour is crucial in ensuring natural resources involved in our oil and gas activities are not only being used diligently but also managed prudently, at all stages of their life cycle from acquisition up to ultimate disposal.

### Pengerang Integrated Complex

The Pengerang Integrated Complex (PIC) in Johor is PETRONAS' largest downstream investment in Malaysia. The PIC will produce premium differentiated petrochemicals for domestic and export markets. It will be able to produce Euro 5 gasoline and diesel in line with the latest quality standards set by the Government.

PIC made significant progress in 2018. We met our project delivery timelines while maintaining good standards of work, in line with regulatory requirements and industry standards. PIC has advanced from 10 per cent project progress in mid-2015 to 97 per cent by December 2018 and is nearly ready for start-up.

As at December 2018, the workforce was over 40,000 from 66 different nationalities. An entirely new township had been developed for the workforce on-site, with the

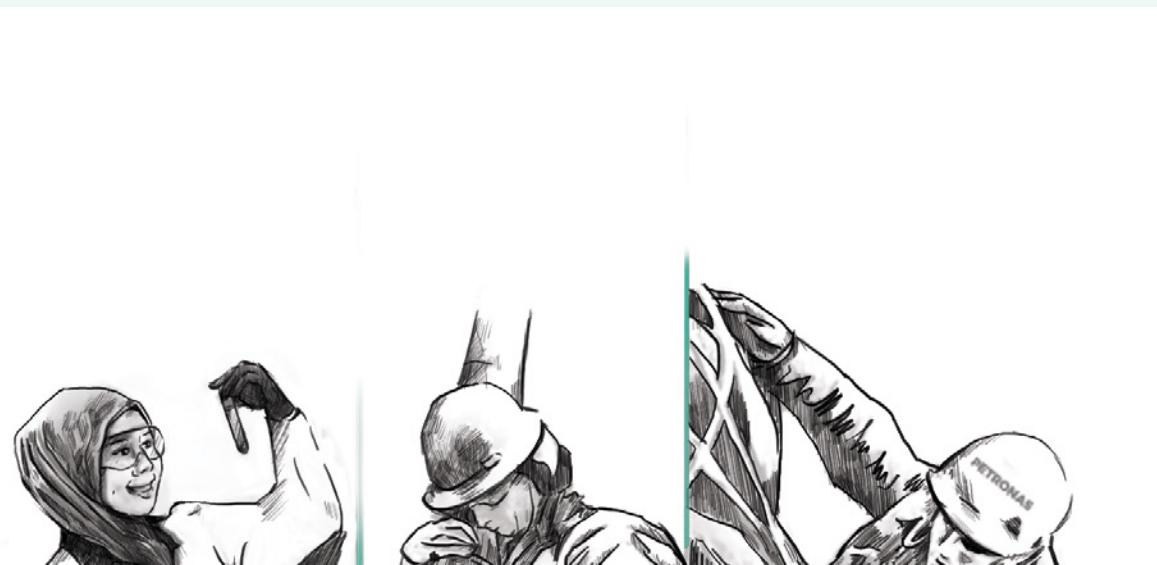
expanded temporary common facilities as well as public service, recreational and utility facilities.

### Health and Safety Performance in 2018

All partners at PIC continue to focus on safety compliance and stringent HSSE controls in line with PETRONAS HSSE standards.

The target for 2019 is Zero Fatality, Zero LTI, Zero Major Fire and Zero Major Loss of Primary Containment and no Major Security Incident.

PIC is getting ready for the commissioning and start-up phase, comprising over 50,000 distinct activities to be completed in precise sequence leading up to the start-up, involving about 1,200 operations staff that include over 100 specialists and experienced employees.



## HEALTH, WELLNESS & WORKPLACE

**We strive to offer a workplace with opportunities to learn and thrive, be healthy and stay healthy. Efforts to improve the health and well-being of our workforce ensure that they remain engaged and value their work with continued purpose and increased productivity.**



### 2018 KEY HIGHLIGHTS:

- Achieved Malaysia's Most Attractive Employer (Randstad Employer Brand Awards 2018) in recognition of our employee management and human resource practices.
- MESTIfit4health rollout for greater management and facilities of employees' health and wellness was greatly enhanced in 2018.

### MATERIAL FACTORS:

- Health and Wellness
- Human Capital

## Health and Wellness

### What Governs Us

- PETRONAS Health, Safety and Environment Policy
- Health, Safety and Environment Management Standard, Mandatory Control Framework, including Technical Standards and Guidelines on both Occupational Health and Industrial Hygiene.

We believe it is our duty to support our employees' well-being and health – both physical and mental. We have clear occupational health and industrial hygiene policies and run a multitude of well-being programmes for our workforce. Beyond our own workers, we also strive to provide a safe and healthy environment for contractors we work with. Identification and management of workplace occupational health risks are done in accordance with industry standards, laws and regulations and the PETRONAS Mandatory Control Framework (MCF) and technical standards.

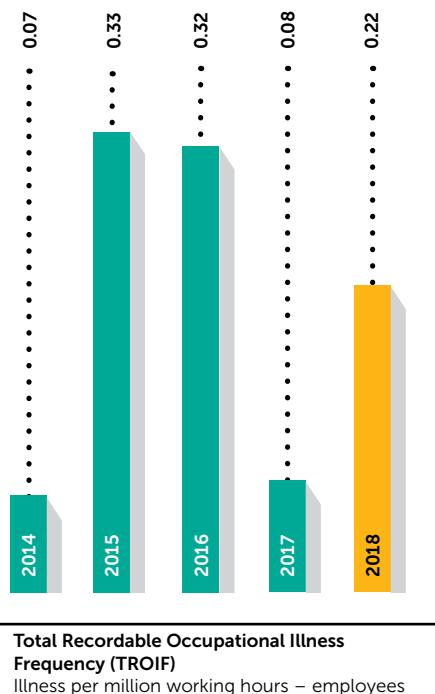
## HEALTH, WELLNESS & WORKPLACE

At PETRONAS, health and wellness covers both occupational health and industrial hygiene. All health and wellness matters are guided by PETRONAS Occupational Health and Industrial Hygiene strategy.

PETRONAS is committed to ensure that workers meet the health requirements for specific tasks and adequately anticipating and managing workplace health hazards as part of its Occupational Health and Industrial Hygiene practices. Together, these aspects of health and wellness aim to provide a safe and healthy working environment and ensure employees are fit to work and are protected from chemical, physical, biological, ergonomic and psychological hazards.

In 2018, for Occupational Health, we continued with ongoing efforts with added focus areas including the PETRONAS Group MESTIfit4health programme that promotes the health of employees and the development and rollout of Fatigue Management System. We also strengthened Food and Water Safety Management and enhanced the capability of occupational health service providers such as Approved Medical Examiners (AMEs).

For Industrial Hygiene in 2018, we continued to focus on three high-risk health hazards, namely hazardous chemicals, noise exposure and human-factors engineering/ergonomics as well as enhancement of digitalisation, contributing to a healthier work environment and ultimately, healthier and more productive workers.



TROIF, a lagging indicator of occupational health, was recorded at a rate of 0.22 in 2018. This is an increase from 2017 and is attributed to a single food poisoning incident involving a group of employees. The incident was promptly resolved and preventive measures were undertaken with the implementation of food poisoning interventions.

### CAPABILITY BUILDING FOR APPROVED MEDICAL EXAMINERS

Our Approved Medical Examiners (AMEs) are medical doctors trained in occupational health appointed by PETRONAS and Malaysia Petroleum Management (MPM) to perform health assessments for Fitness to Work for PETRONAS employees and contractors, in accordance with PETRONAS and MPM requirements.

In 2018, PETRONAS and MPM held a workshop for 85 AMEs. The objective of the Experiential Learning workshop was to provide AMEs with insight into the high-risk tasks and activities in our Upstream and Downstream operations and improve their understanding and capabilities in conducting Fitness To Work (FTW) assessments for employees. The participants had the opportunity to observe and participate in a firefighting exercise and confined space entry, working at height and rescue, as well as experiencing offshore and onshore facility walkabouts.

The practical approach gave the practitioners insight into and concrete information on the health and fitness requirements essential to employees in certain positions. The experience supports them in performing their task of assessing employees' fitness for work particularly in technical positions at PETRONAS.

## HEALTH, WELLNESS & WORKPLACE



### MESTIfit4health initiatives 2018

#### Move Right

An inter-operating unit walking challenge was conducted between August and October 2018. Participants tracked their daily steps with a fitness tracker or mobile phone and synchronised the results to an app. 8,500 employees (17 per cent of PETRONAS employees) took part in the challenge, and 24 per cent of the participants showed improvement in their physical activity levels by the end of the challenge.

#### Eat Right

We conducted a 12-week pilot of a Digital Healthy Lifestyle Coaching (DHLC) programme for 200 employees with significant risk factors or chronic illness. The coaching programme provided participants with access to a team of professional health coaches and specialists who guided employees to become healthier through a mobile app.

#### Sleep Right

We developed an e-module learning series on sleep to provide information on the importance of sleep, sleep hygiene and the effects of inadequate sleep. The module was added to the HSSE learning series.

#### Think Right

To provide employees with awareness and knowledge on building mental resilience, a Think Right e-learning module was developed and added to the learning series.

We promoted the Employee Assistance Programme (EAP), which has been used to support employees through issues ranging from family and interpersonal relationships to organisational change and relationships at work. We also extended the provision to include on-site face-to-face consultations in addition to the previously available telephone consultations.

#### Individual Right

A preventive health screening programme was attended by 2,000 employees (10 per cent of eligible employees for this screening). Initiatives to improve the utilisation of this health screening programme among eligible employees is planned for 2019.

### CENTRALISING OCCUPATIONAL HEALTH DATA

As part of our digitalisation efforts to centralise HSSE data, we enhanced most of the modules and components in our safety database, Stewardship, Health, Information & Environment Linked Database (SHIELD). For example, we improved the Occupational Health (OH) Module in SHIELD by:

1. Establishing an Occupational Health (OH) and Wellness dashboard that tracks key performance indicators (KPIs)

to enable efficient planning, implementation and monitoring of OH and Wellness initiatives. Among the KPIs are Fitness To Work status, hearing impairment status, health assessment completion and health risk status (BMI, cholesterol level, hypertension and diabetes status).

2. Establishing an e-Audiometry functionality for the evaluation of employees' hearing. Based on hearing tests conducted by PETRONAS Approved Medical Examiners (AMEs),

this functionality improves diagnosis and enables a timely submission to PETRONAS for investigation and reporting.

We also improved the product stewardship modules in the SHIELD system in 2018. More details can be found on page 63.



## HEALTH, WELLNESS & WORKPLACE

### HIV/AIDS at Workplace

We consider and manage HIV/AIDS in a similar manner to other chronic illnesses such as diabetes, hypertension and heart disease. The workplace policy is based on principles of non-discrimination, confidentiality and disclosure and it stipulates education and awareness, treatment and support provided for employees living with HIV/AIDS.

PETRONAS is a corporate advisor for the Malaysian Business Consortium on HIV-AIDS (MBCH), a platform for Malaysian companies to address HIV/AIDS. PETRONAS has taken the lead in becoming the first Malaysian company to establish a HIV/AIDS Workplace Policy and Implementation Guide.



### Implementation of the HIV/AIDS policy in PETRONAS

Principles	Implementation
<b>Non-discrimination</b>	<ul style="list-style-type: none"> <li>Managing HIV similar to other chronic illness, e.g., diabetes and hypertension</li> <li>HIV status alone will not be a factor in employment and any change in job status</li> <li>Prohibition of involuntary HIV testing. No pre-employment screening for HIV (except where required by local laws)</li> </ul>
<b>Confidentiality and disclosure</b>	<ul style="list-style-type: none"> <li>No obligation for employees to declare HIV status</li> <li>Strict confidentiality maintained in testing, treatment and support service</li> <li>Establishment of a secure IT-based health assessment and medical record</li> </ul>
<b>Education and awareness</b>	<ul style="list-style-type: none"> <li>Embedment of HIV awareness in group-wide Health and Wellness Programmes</li> </ul>
<b>Support</b>	<ul style="list-style-type: none"> <li>Entitlement to medical benefits</li> <li>Professional counselling provision – Employee Assistance Programme</li> </ul>

In 2018, PETRONAS was awarded the ASEAN Red Ribbon for Outstanding Workplace Award. The award was given as recognition of best practices in the management of HIV/AIDS at the workplace, including promotion of non-discriminatory policies and work environment and prevention programmes for employees. The biennial award is one of the initiatives of the ASEAN Occupational Safety and Health Network (ASEAN-OSHNET) Plan and Actions 2016-2020.

The award recognised PETRONAS' HIV/AIDS policy and implementation guide as a "best practice" initiative among Malaysian companies.

### Fatigue Management

PETRONAS has in place, a number of key controls that help us manage fatigue, such as the PETRONAS Technical Guidelines (PTG), site procedures at operating units, health promotion programmes and audit activities. In 2018, to further enhance the procedures, a standardised Fatigue Management System (FMS) was developed and rolled out. The system digitally tracks and monitors Hours of Service Limit (HSL) – working hours, days and rest periods based

on work groups. It had been implemented across 53 of our assets. In 2019, we aim to continue implementing it across our remaining assets.

We believe the system will become instrumental in reducing incidents at the workplace. To maximise the benefits of the system, it will be integrated with the other internal and external systems in 2019.

### Chemical Management

As part of our continued efforts to manage risks involving hazardous chemicals, we emphasised on enhancing awareness, knowledge and skills on the overall management of hazardous chemicals. The Health Risk Assessment technical standards were revised and skill levels of Chemical Health Risk assessors and reviewers were enhanced to align with the country's revised requirements (DOSH 3<sup>rd</sup> Edition Manual). The top 10 Chemicals of Very High Concern (CVHC), as well as where and how they are used, were identified to further explore less hazardous substitutes. In addition, the presence of asbestos-containing material continued to be tracked and managed within site plans by assigned focal persons. For comprehensive enhancement of awareness, especially for line operators, a 6-month iCARE Chemical Campaign was implemented and mirrored within different businesses. Information materials were developed

as part of the programme and disseminated throughout PETRONAS. Awareness on nano-engineered materials was also enhanced in conjunction with new country guidelines and framework regarding nanomaterial safety.

The efforts aim to reduce workers' exposure to hazardous chemicals, in hope of preventing short-term or long-term health effects.



### Ergonomics and Human Factors Engineering in Projects

On the heels of previous years' successful implementation of Office Ergonomics at the PETRONAS Twin Towers in Kuala Lumpur, this year saw the rollout of the programme across our downstream business. It included training of 140 ergonomic focal persons as well as the development of an e-learning module to ensure tracking and sustainability of the programme. Moving forward, we will develop online ergonomic assessment tools and action tracking, as well as ergonomics beyond the office.

To establish control at the design stage, we have revised and rolled out technical standards on Human Factors Engineering (HFE) in projects. With that, we plan to build our internal capability and ensure implementation across all PETRONAS projects.

## HEALTH, WELLNESS & WORKPLACE

### Noise Improvement on Controls and Engineering (NICE)

Since 2014, PETRONAS' exposure limit on noise has been below the country's requirement, and on par with international standards. To further reduce overexposure to excessive noise and lessen cases of workers' occupational hearing loss, PETRONAS established a Noise Improvement on Controls and Engineering (NICE) working group. This initiative is a direct result of:

- a) Reviewing 30 noise exposure monitoring reports indicating the need for a collaborative effort to reduce noise at source; and
- b) Comprehensive review of eight occupational hearing loss cases from 2016-2018.

As a result, noise engineering diagnostic studies were carried out at identified high-risk facilities, and noise was successfully reduced up to 99.9 per cent. To enhance internal capabilities, line engineers were trained in Noise Engineering Controls. We also engaged external service providers to improve reliability of noise exposure monitoring data.

Moving forward, we will focus on developing a noise control framework to guide the implementation of controls, including enhancement of communication and awareness, improving predictive capability from exposure and audiometry data, introduction of *Buy Quiet* programme and the operationalisation of noise engineering controls.

### DIGITISING PETRONAS HEALTH, SAFETY, SECURITY AND ENVIRONMENT (HSSE) DATA

We always strive to find ways to centralise data for multidivision use and for intra-company research – which are important building blocks for PETRONAS' HSSE culture. Some of our efforts to digitally improve our HSSE systems and processes and ultimately reduce HSSE incidents include:

Initiative	Progress
<b>SHIELD</b> The Stewardship, Health, Information & Environment Linked Database (SHIELD) is a single platform to manage PETRONAS HSSE database and performance reporting with the objective of process efficiency and reporting.  The database covers various aspects of HSSE that includes employees, contractors as well as customers.	<p><b>Facilitates increased process efficiency:</b></p> <ul style="list-style-type: none"> <li>• The time taken to produce health risk assessments was reduced from 3 months to 5 days.</li> <li>• 95 per cent reduction in time required for processing an employee's medical assessment by PETRONAS HSSE personnel.</li> </ul> <p><b>Safe, centralised and up-to-date database:</b></p> <ul style="list-style-type: none"> <li>• Data integrity, security and confidentiality are ensured.</li> <li>• Compliance with regulations ensured.</li> <li>• Enhanced Occupational Health (OH) Module, refer to page 73.</li> <li>• Enhanced Product Stewardship (PS) Module and Global Label Management (GLM) Module, refer to the Product Stewardship section.</li> </ul>
<b>HSSE Incident Management System</b> A standardised system for incident reporting and action tracking.	<ul style="list-style-type: none"> <li>• Provides a holistic overview of HSSE incidents recorded in PETRONAS history.</li> <li>• Identification of HSSE intervention requirements can be depicted from analysis.</li> </ul>
<b>Fatigue Management System</b> Hours of Service Limit (HSL) tracking and monitoring system for employees and contractors.	<ul style="list-style-type: none"> <li>• Strengthened compliance to PTG Fatigue Management requirements, refer to page 75.</li> </ul>
<b>Integrated Contractor Management System</b> A centralised system to manage the status of contractors.	<ul style="list-style-type: none"> <li>• Strengthened HSSE performance monitoring of contractors.</li> <li>• Enables cross-business contractor management.</li> <li>• Enhanced security measures to uphold operational excellence.</li> </ul>

More on PETRONAS Health and Safety can be found in the "Safety" section of this Sustainability Report.

## HEALTH, WELLNESS & WORKPLACE

### Human Capital

#### What Governs Us

- PETRONAS Code of Conduct and Business Ethics (CoBE)
- PETRONAS Global Talent Strategy

We are on course to develop a workforce that is empowered, enabled and agile in order to meet the demands of the energy transition. Our investment in human capital has resulted in a culture that today nurtures productivity and enables employees to thrive.

We are creating a workforce ready for the future by investing in our people's growth and providing opportunities that attract a diverse array of talents, experiences and backgrounds. Hence, we need to ensure we stay one step ahead, confirming that valued employees remain and future talent is available. To address workforce requirements, we need to maintain a talent management ecosystem which is dynamic, in both hiring and retaining the right talent.

#### PETRONAS GLOBAL TALENT STRATEGY

PETRONAS Global Talent Strategy was introduced in 2013 to facilitate a more robust approach to building and managing global talent. Three strategic thrusts were adopted to strengthen the connection between human capital and business strategies:



Reflects continuous efforts in building global talents to fuel PETRONAS' growth. The context of "right talent" carries the perspective of functional, technical and leadership competencies and the right mindset that generates creativity and innovation.



Creation and shaping of a work environment that promotes agility, resilience and distinctiveness of talent life cycle throughout the entire talent value chain, paving the opportunity for performance excellence as an impact from demonstrating the right core skills and competencies.



Develop credible and inspiring leaders with essential competencies, business acumen, change transformation and team dynamics and enable fostering a culture for sustainable performance excellence.

To deliver the strategic thrusts, our human capital **priorities** are:

- **SOURCE** – Attract global talent and a diverse talent pool through an effective sourcing framework and an appealing value proposition. Leverage industry-wide collaboration and relevant stakeholders to develop, deploy and create educational improvement impact.
- **DEVELOP** – Align with the different business segments' needs to ensure our workforce are agile and self-driven in acquiring the necessary skills and competencies to deliver high-quality outcomes.
- **PERFORM** – Provide an agile organisational ecosystem that is empowering and agile, to enable a high-performance excellence culture.

## HEALTH, WELLNESS & WORKPLACE

### Driving Change Today

The PETRONAS Global Talent Strategy (GTS) guides us in nurturing talent, developing leaders and providing a conducive environment. Our efforts are premised on the concept of lifelong learning and we invest heavily on knowledge, expertise and leadership.

We have adopted the PETRONAS 3P Leadership Model of Passion, People-Centric and Performance-Focused – standards that are anchored in our shared values and culture. As part of human capital strategy, we continue to incentivise employee performance: in the span of just three years, we have introduced almost 20 new or improved employee benefits.

### Progressing For Tomorrow

We are putting in place better frameworks to build technical, functional and leadership competencies. We will also be introducing flexible career paths to facilitate progression and resource deployment.

We are redefining talent experience through "emb.arc", an enterprise-level programme that aspires to create an empowered, agile and enabled (EM.A.N) talent management ecosystem. This will ensure that PETRONAS stays relevant in the future by delivering the right solution at the right time through the right channel for both talents and businesses.

### HUMAN CAPITAL AWARDS AND RECOGNITION 2018

The recognition and accolades awarded to PETRONAS are a strong testament to our continuous pursuit of excellence across the Group. Some of the important awards in 2018 were:

- Malaysia's Most Attractive Employer – Randstad Employer Brand Awards 2018.
- Top 3 Employer Brands of Choice for Undergraduates – Graduate Choice Award 2018.
- Top 5 Overall Ranking Awards – Malaysia's 100 Leading Graduate Employers Awards 2018.
- Bronze Award for Excellence in Customer Service – Shared Services and Outsourcing Network Excellence Awards.
- Gold Award: Best Unique or Innovative Learning and Development Programme and Best Use of Blended Learning – Brandon Hall Group HCM Excellence Award.

### Our Workforce

PETRONAS recognises that our people are the key to the Group's successful and rapid growth.

Our belief is that a good workplace is founded on equality and merit, irrespective of gender, age, nationality, ethnicity, educational background or religion. We acknowledge the need to dismantle preconceived or unconscious biases at the workplace and believe that diversity brings about high performance: bringing together different strengths and experiences will encourage talent and generate growth.

PETRONAS Leading Women Network (PLWN) is an initiative that offers leadership programmes for women. In 2018, PLWN organised various engagement sessions internally and externally. We also launched PLWN Reach Out mentoring programme, concentrating on women empowerment in more technical oil and gas career paths.

We practise equal opportunities in recruitment. Our recruitment, retention and general employment practices are benchmarked against the industry's best practices and aligned with the regulatory requirements of countries we operate in.

Our local hiring practices are guided by regulatory requirements and grounded on the principle of meritocracy. Targeted initiatives are pursued to groom local talents in technical skills and knowledge as part of effective talent development and talent retention.

## HEALTH, WELLNESS & WORKPLACE

### Employee Engagement

We have several avenues to promote multi-level communication across PETRONAS, such as top management engagement sessions, town hall meetings, surveys, digital applications, site visits and our whistleblowing channel. This is to promote open, transparent and constructive conversations across all levels of our workforce.

The PETRONAS Organisational Cultural Survey is carried out periodically.

### Building Capability

Achieving our business goals depends on the capability of our workforce. We seek to enrich the capabilities of our employees across the business. Talent development is accelerated through holistic leadership and learning strategies. We encourage leaders to leverage the experience, knowledge and creativity of their team members to build winning teams.

As part of our strategy to expand our core business and step out to meet the energy transition, we are expanding the capability of our talents. We recognise that our people will need to be adept at not only their primary job role, but also keep abreast of developments in market trends and technological innovations in the industry. We will be rethinking our approach in acquiring new talents and raising competency levels of experienced talents.

One of the key initiatives to improve competencies in 2018 was Project RESISCO which shifts the paradigm and the approach of developing competencies at PETRONAS. It helps us enhance competencies in particular job roles to develop empowered, enabled and agile talent in order to deliver business results. The framework helps talents to maximise their potential in technical competencies while performing their role.

We will be introducing flexible career paths and technical talent clusters to facilitate progression and resource deployment. We piloted the project with different technical functions, often called fraternities at PETRONAS, i.e., mechanical engineering and geoscience, as well as business fraternities, i.e., HR and strategic communications.

As part of our nation-building efforts, we offer a structured seven-month internship for over 1,500 undergraduates every year. Interns are exposed to the business and operations and gain valuable hands-on working experience. In addition to the internships, PETRONAS also offers placements for undergraduates in the Graduate Employability Enhancement Scheme (GEES). Around 150 GEES participants benefitted from this programme.

### Accelerating learning and development through PETRONAS Training Institute, INSTEP

PETRONAS INSTEP (Institut Teknologi Petroleum PETRONAS) was established in 1981 to accelerate human capital development to support the growth of PETRONAS as well as Malaysia's oil and gas industry in general. Currently, the training institute also serves international clients from more than 15 countries as part of its aspiration to be "A Leading Partner of Choice in Oil and Gas Technical Learning and Certification". A key feature of INSTEP is the Upstream Downstream Training Plant (UDTP). Its launch in 2014 transformed the learning experience: the UDTP can be used to simulate real plant scenarios. It offers learners hands-on training and experiential learning.



## HEALTH, WELLNESS & WORKPLACE

### Nurturing Technical Capability of our International Workforce

In 2018, 79 individuals from Iraq completed their 6-month training at INSTEP under the Production Operation Training. These trainees are the first from INSTEP to be granted BTEC Certification.

The training at INSTEP is the second part of a three-phase programme, that started with a three-month Technical Intensive English Programme at the Garraf Vocational Training Centre (GVTC) in Iraq. After completing the course, the participants will move on to on-the-job training in Garraf, Iraq.



### Leadership Development – Managerial Excellence Programme (ME)

The ME is one of our leadership development initiatives undertaken by PETRONAS Leadership Centre (PLC). The programme is designed to help middle managers embrace a mindset shift to the new way of leading and driving business impact through teams. Aimed particularly at transitioning managers, the programme offers PETRONAS workforce a 4-month leadership development journey through digital leadership experiences and business strategy simulations that drive innovation and collaboration. These learning experiences will equip them to successfully transition to an effective leadership culture when they return to their respective workplace.

The programme's blended learning approach includes virtual interactions with facilitators, peers and coaches as well as face-to-face workshops. In addition, the ME Learn portal supports ongoing socialisation of learning.

ME is a comprehensive learning programme that was designed with internal insight, incorporating elements of gamification and unconventional learning tools. Due to the programme's unique design, PETRONAS received the Brandon Hall Group HCM Excellence Gold Award for Best Unique or Innovative Learning and Development Programme and Best Use of Blended Learning. The provision of an innovative solution resonates with the organisation's aspiration to provide an impactful development space for PETRONAS Global Talent Strategy.

# SOCIAL RESPONSIBILITY

**We are focused on identifying and managing human rights risks and the impacts to our business. Our human rights approach applies to all employees and contractors and is embedded across our codes, policies, systems and practices. Supplementing our respect and advocacy for human rights are our voluntary actions to make positive contributions to the community as we continue to drive shared and sustainable prosperity by empowering various stakeholders through our social investments.**



#### 2018 KEY HIGHLIGHTS:

- Organised over 70 human rights-related training for staff and contractors.
- PETRONAS and Yayasan PETRONAS channelled more than RM325 million to corporate social responsibility programmes in the areas of education, community, well-being and environment.

#### MATERIAL FACTORS:

- Human Rights
- Corporate Social Responsibility

PETRONAS defines social performance as managing impacts arising from areas of our business while contributing to society in a responsible manner.

Social performance practices are governed by the PETRONAS Social Performance Framework which

consists of five key elements, namely, Health, Safety, Socio-economic and Cultural, Environment and Security. It entails robust social risk management, human rights due diligence, as well as adequate systems and processes aligned with industry best practices.

Leading our efforts is a dedicated pool of Social Performance practitioners, supported by multidisciplinary teams within businesses, operating and holding company units.

## SOCIAL RESPONSIBILITY

# Human Rights



### What Governs Us

- PETRONAS Code of Conduct and Business Ethics (CoBE)
- PETRONAS HSE Policy
- PETRONAS Social Performance Framework
- PETRONAS Human Rights Commitment
- PETRONAS Contractors Code of Conduct on Human Rights (CoCHR)
- PETRONAS Procedures and Guidelines for Upstream Activities
- PETRONAS Technical Standards and Guidelines

PETRONAS strives to create positive impacts on communities and other stakeholders where we operate, and we have measures in place to manage the social risks related to business activities. In 2018, we continued our efforts to further enhance social risk management to identify and mitigate risks in projects and operations across the globe.

PETRONAS is guided by our Human Rights Commitment, established in 2015, to respect internationally recognised human rights in areas where we operate. We respect the rights of the local communities, contracted partners in our supply chain, our staff and all other stakeholders which we may interact with across our operations. Our standards and guidelines are in line with the United Nations Guiding Principles on Business and Human Rights (UNGPs), focusing on four areas: labour and working conditions, responsible security, supply chain management and community well-being. We have also made mandatory the establishment of grievance mechanisms for projects and operating units (OPUs) to address HSE and social matters raised by affected stakeholders during the life cycle of our business activities. In 2018, we extended all these requirements to

our production-sharing contractors and other contractors through the PETRONAS Procedures and Guidelines for Upstream Activities (PPGUA).

While we have strengthened our social risk governance, we recognise there are priority areas to address.

In 2018, we focused on contractor management as part of our two-year programme to familiarise contractors with the PETRONAS Contractors Code of Conduct on Human Rights (CoCHR) and assessed contractors' ability to meet the requirements. We initiated the programme, which will be completed in 2019, to identify and mitigate issues related to a contractor's human rights performance. Our approach to contractor management is taken from a labour and working conditions lens, and was part of the company's overall effort to address adherence to HSE standards.

We also focused on the training of our staff, with awareness sessions on human rights conducted to ensure all staff are aware of the PETRONAS Human Rights Commitment and their respective responsibilities in fulfilling the expectations of the Commitment.

## Contractor Management

In 2018, a total of 11 domestic contractors were assessed on compliance with the PETRONAS Contractors Code of Conduct on Human Rights (CoCHR). The result of these assessments indicated that contractors are able to comply with the related national laws and PETRONAS' CoCHR, with areas for improvement in the formalisation of grievance mechanisms. Human rights elements were included as part of the mandatory HSE contractual requirement, contractor assurance

checklist and Supplier Tracking and Assessment Rating (STAR) as part of our efforts to integrate human rights effectively in the management of contractors.

PETRONAS also assisted its subsidiary, MISC by providing technical leadership and advisory services as part of a working group to develop the MISC Human Rights Policy, Modern Slavery statement and adoption of PETRONAS' CoCHR.

## SOCIAL RESPONSIBILITY

### Training and Capability Building

In 2018, we continued to provide in-house training to highlight the importance of human rights and integrate human rights elements across businesses, with 72 sessions conducted for more than 800 employees and 53 contractors throughout PETRONAS.

Human rights elements have been embedded as part of the mandatory module for 'In Service Training' for all PETRONAS Auxiliary Police (AP). The training is to ensure APs understand the importance of respecting human rights in carrying out their duties. A total of seven training programmes involving 210 APs were conducted in 2018.

### Moving Forward

PETRONAS is completing its assessment of all active contractors in Malaysia, as we continue our efforts to educate our contractors on human rights and how to create a safer

working environment for all who work on our premises. Internally, we will continue to intensify our communications across the Group through training programmes to ensure the expectations and requirements of the PETRONAS Human Rights Commitment is understood and abided by.



PETRONAS' as a sponsor of SUHAKAM Human Rights Day.

### PETRONAS participated in multiple leadership events in FY2018 to share the company's best practices in promoting human rights awareness in our industry and across the globe.

Sponsored and showcased our Human Rights Commitment to promote public awareness during the Human Rights Commission of Malaysia's (SUHAKAM) Human Rights Day. The event was attended by members of the public, government agencies, non-governmental organisations and representatives of the private sector.	Instilled human rights awareness in our Overseas Assignment Remuneration Package (OARP) programme. Over 34 sessions were held with a total of 200 colleagues trained.	Chaired and facilitated sessions on human rights management at World Gas Conference (WGC) organised by the International Gas Union (IGU) in Washington DC, United States of America.
Presented three papers at the International Association for Impact Assessment (IAIA) Conference sharing our best practices on social performance.	Presented PETRONAS' human rights practices at the seventh Responsible Business Forum, organised by the United Nations Development Programme (UNDP) and Global Initiatives in Singapore.	Jointly established the Social Performance Asia Pacific Circle (SPAC) with Shell, a first for the industry. The SPAC is a platform where social performance (SP) practitioners in the industry exchange ideas, discuss common SP issues, and advance SP implementation in the region. Members of SPAC include BP, ExxonMobil, Woodside and Repsol.

### SUPPORTING OUR CONTRACTORS' MILESTONE ACHIEVEMENTS

2016	2017	2018
To support the implementation of the PETRONAS Human Rights Commitment, 70 training sessions were conducted across PETRONAS to advocate and reinforce the importance of respecting human rights.	CoCHR established. Our Vendor Relationship Management platform was used to reach 1,368 registered and active contractors. The sessions, led by our internal SP experts, rolled out the expectations of the CoCHR, as well as the roles and responsibilities of the vendors in upholding our Human Rights Commitment.	Contractor assessment conducted to check compliance to CoCHR. Human rights elements included in Supplier Tracking Assessment and Rating (STAR) System, mandatory HSE contractual requirement and contractor assurance checklist.

## SOCIAL RESPONSIBILITY

# Corporate Social Responsibility

By building better communities, we increase the positive impact from our presence while contributing to the local economy. Our business thrives in diverse societies, each with its trajectory of interests and expectations for growth. While embracing local norms, we work towards forming mutually beneficial partnerships to share the value we generate and provide social investments that are consistent with the needs of local communities as part of our corporate social responsibility.

Our approach to create socio-economic progress centres around empowering local communities with the right knowledge, skills and capabilities. Our communities share

an aspiration for lasting and self-sustaining socio-economic development. We are guided by the PETRONAS Corporate Social Responsibility (CSR) Framework to realise our mission statement of contributing towards societal well-being. In 2018, we channelled slightly more than RM325 million in corporate social responsibility programmes.

Yayasan PETRONAS, launched in March 2019, is the corporate foundation of PETRONAS which streamlines our efforts towards creating a sustainable impact for the well-being of the community. The foundation continues to enhance the efforts of community programmes that have been ongoing since 1974.

### Yayasan PETRONAS - Focus and Programme Strategy

Focus Area	<b>Sentuhan Ilmu - Education</b> To increase the pool and skills of human capital and spur economic progress via Science, Technology, Engineering and Mathematics (STEM) education.	<b>Sentuhan Harapan - Community Well-being and Development</b> To improve the quality of life through social innovation.	<b>Sentuhan Alam - Environment</b> To create a sustainable environment through research and innovation.
Goals	Contribute towards 60:40 national STEM enrolment.	Sustainable economic growth.	Reduce year-on-year environmental impact.
Objectives	Improve education opportunities for underprivileged students to realise their lifelong potential through access to STEM education and generate human capital to foster future economic growth.	Improve standards of living for underprivileged communities and youth by creating pathways for sustainable livelihoods.	Protect the environment through conservation and carbon neutral programmes.

Yayasan PETRONAS shapes its programmes based on the four guiding principles: value creation, sustainable impact, effective partnership as well as, innovative solutions. Target groups of the programmes are youth and B40 communities (families whose median monthly household income do not exceed RM3,000).

Our multidimensional investment strategy created jobs, supported local capacity-building initiatives and funded a myriad of community development programmes.

## SOCIAL RESPONSIBILITY

### Education

PETRONAS believes that science and innovation are key drivers of economic progress.

Our goal is to support quality STEM education, through knowledge development and capability-building, accessible to all students, regardless of income level, gender, ethnicity or physical and mental abilities.

#### Malaysia: Program Sentuhan Ilmu PETRONAS (PSIP)

In collaboration with Petrosains and the Ministry of Education, we generate interest in science and mathematics through fun learning, problem-solving and critical thinking, targeting underprivileged primary students.

A series of STEM activities for students and teachers was conducted in 2018. Students also received PSIP 'Back to School' learning support and school necessities worth RM3.1 million benefitted 6,515 students throughout Malaysia.

The PSIP programme strives to nurture young minds to think critically and pursue learning opportunities and careers in STEM.

#### SOME OF OUR OTHER PROGRAMMES THAT REACH OUT TO DIFFERENT TARGET GROUPS:



This collaboration with Majlis Amanah Rakyat (MARA) provides sponsorships to selected students from underprivileged families studying at the three Maktab Rendah Sains Mara (MRSM) in Sabah and three MRSMs in Sarawak. In 2018, a total of 300 students benefitted from this programme.



Engen runs a bursary programme and skills development scheme. Currently, Engen supports nine maths and science schools across South Africa, including four in the areas around the refinery in South Durban.

In 2018, a total of 532 students from nine schools participated in Engen Petroleum's Educational Programme.



VISTA programme grooms individuals with technical and functional acumen to support the growth of Malaysia's energy sector. In 2018, we continued to collaborate with our stakeholders to extend support for selected courses on disciplines such as welding, gas pipe fitting, chargemen skills, building maintenance and several other industry-related engineering programmes across 17 selected institutions nationwide.

## SOCIAL RESPONSIBILITY



A learning institution established by PETRONAS to accelerate the development of Sabahans in building their capability in the oil and gas industry.

Managed by PETRONAS Technical Training Sdn. Bhd. (PTTSB), KTC aims to produce skilled workers with the necessary qualifications to contribute and benefit from the East Malaysia Development Plan under the Sabah-Sarawak Integrated Oil and Gas Project (SSIOGP).

Since its establishment in 2011, KTC has produced 122 Sabahan graduates (80 graduates for Sijil Kemahiran Malaysia and 42 graduates for Diploma Kemahiran Malaysia).



PETRONAS StreetSmart is one of our key corporate social responsibility programmes which started in 2001 with the aim of engaging and educating the public, especially the younger generation, on road safety issues through science. It also aims to nurture the youth to become responsible and caring road users.

Operated by Petrosains, this programme consists of four main components, namely the travelling exhibition, school programme, public programme and special programme.

In 2018, we reached out to 80,478 individuals in Terengganu and Perak, including school children and the general public.



Petrosains PlaySmart™ aims to connect and provide communities outside of the Klang Valley with easy access to quality educational science related activities and programmes. The objective is to extend the science centre experience to communities with limited access, providing them with similar offerings to the ones available at the discovery centre in KLCC but on a smaller scale.

Petrosains PlaySmart™ opened its first two centres at Butterworth-Kulim Expressway and Langkawi in 2003. Today, PlaySmart™ has scaled up in size and outreach. We now have four Petrosains PlaySmart™ centres (Johor Bahru, Kuantan, Kota Kinabalu and Kuching – Kuching to open in 2019) that run 26 programmes appealing to a wide audience.

In 2018, the four centres recorded a total of 648,336 visitors.

### PETRONAS Education Sponsorship Programme

We award sponsorships to eligible students pursuing tertiary education in fields related to oil and gas at reputable institutions of higher learning in Malaysia and internationally.

In 2018, 330 students were awarded sponsorships under PETRONAS Education Sponsorship Programme (PESP). Since its launch in 1975, PESP has benefitted more than 36,000 students.

Providing sponsorships to students from underprivileged families open doors to the pursuit of knowledge, self-enrichment and brighter futures. We continue to focus on nurturing the right talent who will ultimately contribute to the growth of our organisation, industry and nation.

#### Programme Highlight

At 15, Nur Hasyirah Hatta realised that her parents were struggling to support her education. Determined to change the fate of her family, Nur Hasyirah studied hard, gathered friends for study groups and mentored others. She obtained outstanding results for her SPM examination and received a scholarship under the PESP in 2018 to further her studies in chemical engineering.

## SOCIAL RESPONSIBILITY

### UNIVERSITI TEKNOLOGI PETRONAS – BUILDING INSTITUTIONAL CAPABILITIES

PETRONAS strives to provide world-class educational and training services through the various educational institutions under its umbrella. Supporting quality higher education is part of our contribution towards nation building, while focusing on teaching and, research and development.

Universiti Teknologi PETRONAS (UTP) has become one of Malaysia's leading institutions of higher learning, providing students with opportunities for the pursuit of knowledge, expertise and advancement in the fields of engineering, science and technology. UTP climbed to number 145 in the QS World University Rankings 2018 for engineering and technology – 88 places higher than the previous year.

#### Encouraging STEM uptake amongst Malaysian youth

UTP's annual Science and Engineering Design Exhibition (SEDEX) showcases inventions and innovations of UTP employees and students as well as students from primary and secondary schools and university students from the surrounding community. The event has evolved into a platform that encourages the young to take an interest in science.

Through this event, UTP strives to close the gap between students taking up STEM subjects and the pressing need for young talent within the industry. SEDEX also focuses on schools with less access to STEM resources, such as those in the rural native communities.

#### Supporting Human Capital Development in Sudan

Some 171 Sudanese undergraduate and postgraduate scholarship students have graduated from UTP to date. The scholarship programme supports Sudan's global talent strategy, focusing on cultivating the right talents, providing them with the right environment and ultimately developing the next generation of leaders.

## SOCIAL RESPONSIBILITY

### Community Well-being and Development

Yayasan PETRONAS believes that social progress should be inclusive and everyone can enjoy a better quality of life.

We strive to empower and improve the standard of living for local communities by providing support for basic needs, skills training and youth development programmes.

#### PLANTING TOMORROW

In collaboration with Yayasan Sejahtera, this community programme aims to improve the socio-economic well-being of identified rural communities. Launched in February 2017, the first phase of the programme assisted the communities to find solutions for alternative water supply. The second phase focuses on sustainable livelihood activities.

The programme's water supply solutions installed in 10 villages benefit approximately 700 villagers. Concurrently, 80 participants received support, agricultural implements and 200kg of ginger seeds each which led to 500kg of ginger grown and sold at Kota Marudu *tamu* in Sabah. We support the community by empowering them to increase their livelihood while contributing to the local economy. The aim is to not just improve the monthly income of villagers, but also to equip the community with the knowledge and skills needed for them to become self-reliant and to boost livelihood development.

Access to clean water means that people in these communities do not have to walk daily to fetch water – a task that can take up to four hours a day. They now have time to acquire new skills by attending agriculture training programmes and engaging in more productive activities, such as clearing their land for farming. This has resulted in increased household income, on average of RM150 a month.

#### Programme Highlight

- Justah Dahlan from Kampung Pulutan, Kota Marudu increased her income significantly with support from Planting Tomorrow. She used to grow vegetables for her own consumption and started growing ginger after joining a PETRONAS training programme on sustainable planting and farming management of ginger. With the provided ginger seeds and planting equipment, she is now able to harvest ginger on a large scale. The average monthly income from her ginger harvest is about RM1,600-3,300, compared to RM150-500 previously.
- Janting bin Madisa from Kampung Perupuk, Pitas used to plant various fruits for his own consumption and for small scale trading, earning RM150-500 a month. We provided him with training on sustainable banana planting and farming management. He received banana seedlings and planting equipment which helped him expand his banana farm. He is now earning a monthly income of RM1,300-2,200 from his banana harvest.

#### YOUTH PROGRAMME

The PETRONAS All About Youth (AAY), in its fourth year of implementation in 2017, reached more than 1,000 students from 50 schools located near our operational facilities. Through this programme, we want to play a more proactive role in equipping the youth with industry know-how so that they can easily transition to the working world. The programme, in the form of an annual competition, empowers youths to come up with creative solutions to address their respective community issues.

AAY is endorsed by the Ministry of Education in support of the National Education Philosophy. To date, more than 200 community projects have been executed with funding from PETRONAS and mentorship from 150 staff volunteers.

Also, in 2018, PETRONAS Dagangan Bhd (PDB) had signed a Memorandum of Understanding (MoU) with five local universities to develop students' capabilities and entrepreneurial skills, as well as to promote interest in start-up businesses among youth.

#### CANCER RESEARCH

PETRONAS is a founding donor of Cancer Research Malaysia (CRM) and funds the establishment and upkeep of laboratory facilities for Malaysian cancer research.

CRM strives to conduct impactful research and lead the fight in controlling cancer through early detection and scientific knowledge.

PETRONAS has been the main infrastructure sponsor since CRM's inception in 2001, donating RM11.5 million for laboratory equipment, computers and overheads for cancer research. This investment maintains CRM's laboratory and forms the foundation of the lifesaving research conducted in the country.

In 2018, PETRONAS disbursed RM1 million to CRM to cover its operating expenses and research work.

## SOCIAL RESPONSIBILITY

#### SENTUHAN KASIH PETRONAS

Sentuhan Kasih PETRONAS provides monthly food aid for a year for underprivileged communities across Malaysia. The families receive a monthly contribution of RM80, as well as an additional RM240 per family during festive seasons.

The contributions are administered and distributed through MyKasih Foundation from April 2018 to March 2019. The programme has benefitted 5,400 families across the country.

A total of RM7 million has been allocated for the programme in eight states. It is hoped that through the programme, PETRONAS will be able to reach out to more underprivileged communities and help them increase and sustain their income. By interlinking with our other programme, Planting Tomorrow, about 100 women attended a social enterprise session on building and marketing local businesses in Kuala Nerus, Terengganu.



#### Programme Highlight

- Before joining the programme, Che Noorfaezah Mat Nasir was earning RM100 a month doing odd jobs like cooking or cleaning at her neighbours' houses. During the programme, she realised the value of her skills in traditional massage – she had been taught since young by her father, a well-known masseuse in the area. Faezah printed business cards and promoted her business on social media and soon, the business grew. She achieved her RM700 income target within a month and has since increased her earnings to RM2,700 a month. She has expanded her services to care for mothers in confinement, and together with her father, she has started retailing her own massage oil.
- Faridah Ibrahim @CheDah started her food business with an investment of RM200. Through the Planting Tomorrow programme, she learned entrepreneurship and marketing skills. This led her to create a new dish (*Nasi Khaumok*, also known as *Nasi Beriani Siam*) which boosted her restaurant's popularity. Today, she sells at least 40 packs of *Nasi Khaumok* a day (in addition to other dishes). She also takes orders through Facebook and WhatsApp.

#### CONTRIBUTION TO SARAWAK NGOS FOR WELFARE PROGRAMMES

We recognise the value of the services provided by NGOs in welfare programmes in Sarawak and the contribution their volunteers provide for the communities. We have a long-standing partnership with society and local authorities in the state and continue to support grassroots development programmes.

Our support has been used to build community centres, construct a Penan pre-school, set up of a Petrosains PlaySmart™ centre and provide disaster relief and mobile corporate social responsibility programmes.

In 2015, we committed to support the Sarawak Government by providing RM10 million in funding for NGOs in the state from 2015-2019. To date, a total of RM6 million has been disbursed.

## SOCIAL RESPONSIBILITY

### Environment

We support research and innovative solutions that help protect the environment.



#### IMBAK CANYON CONSERVATION AND RESEARCH

The Imbak Canyon is one of the last frontiers of contiguous lowland forest with scenic views and an abundance of medicinal plants, with communities living near the reserve. The area has the potential for bio-prospecting initiatives.

PETRONAS supports the Imbak Canyon Studies Centre (ICSC) – a research hub for biodiversity conservation – and the Imbak Canyon Conservation Area (ICCA).

ICSC covers an area of 27 hectares and has a range of facilities including accommodation for staff, researchers and visitors, a café, laboratory, library, mini-theatre, conference rooms, nature gallery and an environmental education complex. ICSC aims to become a hub for learning in biodiversity conservation and sustainable use of natural resources. It will also set up a gene

bank conservation project as well as spur scientific discoveries from nature for pharmaceutical and biotechnological applications.

#### PHASE 1: 2010-2013

PETRONAS' contribution of RM6 million went towards environmental education, public awareness, community outreach, research, ethno-forestry study and documentation, capacity building, formulation of the ICCA Strategic Management Plan and initial works for ICSC.

#### PHASE 2: 2014- 2017

PETRONAS contributed RM77 million for the construction of ICSC and related facilities, including the construction of the Ulu Kinabatangan Information Centre and the Ulu Kinabatangan Jetty, located in Kampung Imbak; as well as the establishment of the Porters and Guides Association.

Yayasan PETRONAS is working on this programme in partnership with Yayasan Sabah, PETRONAS Research Sdn. Bhd. (PRSB), PETRONAS Group HSSE and PETRONAS Group Corporate Strategy. Our combined collaborative efforts in this cross-divisional initiative are aimed at conserving and protecting biodiversity, while promoting and fostering innovation to address climate change.

#### FOREST CONSERVATION PROGRAMME IN SAYANG HUTAN

In collaboration with the Sabah Forestry Department (SFD), we re-forested the 1,551-hectare forest reserve in Kampung Tanaki, 23 km from Papar town.

- Planted 1,000 trees at the Kawang Forest Reserve.
- A one-day programme with 150 participants, including representatives from PETRONAS, SFD, state authorities and the local community.
- Planted timber species such as Kapur Paji, Gagil and Seraya Majau.

## SOCIAL RESPONSIBILITY

#### WATER FOR LIFE

The Water For Life programme, an initiative by PETRONAS Dagangan Berhad (PDB), has benefitted more than 14,000 residents across Malaysia since it was introduced in 2013.

The programme is part of our efforts to ensure communities have access to a consistent supply of clean water. The areas and villages facing clean water problems are identified together with the Malaysian Nature Society. To date, the programme has involved 14 areas across the country and a RM1.4 million investment.

Water For Life 2018 was officiated in Kampung Lubuk Machang, Chuping. During the programme, two wells and four large tanks with the capacity of 1,000 gallons were provided, complete with a filtration system to ensure the water would be safe for daily consumption by the villagers.



#### PCG BE GREEN

In 2018, PETRONAS Chemicals Group (PCG) launched a programme called PCG Be Green, to showcase our commitment towards community well-being and environmental conservation. Aligned with the New Plastic Economy, PCG Be Green marks our journey toward rethinking the future of plastics and advocating a circular economy where plastics are reused to avoid becoming waste.

The programme supports the government's efforts to promote 3R, cleanliness and the reduction of 40 per cent in terms of emission intensity by 2020 against the baseline level of 2005. Held in collaboration with the Malaysian Plastics Manufacturers Association (MPMA), PCG Be Green aims to increase awareness on the benefits and correct usage of plastics, their impact on the environment and best waste management practices.



#### ECOCARE

ecoCare, PCG's environmental conservation initiative programme which was established 13 years ago in collaboration with the Malaysian Nature Society (MNS), aims to promote awareness and understanding of the conservation and preservation of mangrove and coastal ecosystems. ecoCare is a unique programme which encourages volunteers from local communities living within our operational footprint to work together towards environmental conservation. Volunteers include our own staff members, who work with the community in mangrove replanting and seedling activities, to help preserve the rich biodiversity of mangrove swamps in the areas of our plant operations.

In 2013, we set up the ecoCare Environmental Education Centre (EEC), the first environmental centre on the east coast of Peninsular Malaysia. It features displays, exhibits and information relating to the Kerteh River ecosystem, its unique coastal terrain and biodiversity. It also serves as a resource centre with facilities to promote awareness and education on environmental conservation amongst schoolchildren, teachers and the community. The centre has become a popular venue for researchers as well as university students undergoing internship.

In 2018, the number of researchers and visitors to EEC increased compared to the previous year, as a result of more programmes organised. It is a good indication that EEC has established itself as a research and education centre.

The same year, ecoCare continued to focus on promoting volunteerism amongst PETRONAS staff and the local community by organising the ecoCare Nature Hunt. The event was also an avenue to showcase and appreciate staff and local communities for their contributions to ecoCare throughout the years.

# FIVE-YEAR SUSTAINABILITY DATA/PERFORMANCE DATA

<b>SAFETY</b>	2014	2015	2016	2017	<b>2018</b>
Number of fatalities (total)	10	4	13	4	<b>6</b>
Employees	3	0	2	0	<b>0</b>
Contractors	7	4	11	4	<b>6</b>
Fatal Accident Rate (FAR) Reportable fatalities per 100 million man-hours	3.03	1.02	3.53	0.93	<b>1.29</b>
Lost Time Injury Frequency (LTIF) Number of cases per million man-hours	0.19	0.20	0.26	0.17	<b>0.09</b>
Total Reportable Case Frequency (TRCF) Number of cases per million man-hours	0.64	0.63	0.57	0.53	<b>0.38</b>
Number of Tier 1 Process Safety Events	7	15	12	12	<b>8</b>
Total Recordable Occupational Illness Frequency (TROI) Illness per million working hours – employees	0.07	0.33	0.32	0.08	<b>0.22</b>

<b>ENVIRONMENT</b>	2014	2015	2016	2017	<b>2018</b>
<b>Total Greenhouse Gas Emissions (GHG Emissions (million tCO<sub>2e</sub>))</b>	48.89	50.45	52.34	56.50	<b>49.30</b>
Upstream – Domestic	28.36	28.31	31.74	34.82	<b>28.38</b>
Upstream – International	2.35	2.29	1.52	1.27	<b>0.59</b>
Downstream – Domestic	13.59	14.41	13.55	15.33	<b>15.29</b>
Downstream – International	0.01	0.99	0.97	0.99	<b>0.88</b>
MISC	4.58	4.45	4.56	4.09	<b>4.16</b>
Total Amount of Energy Generated from PETRONAS Solar PV Installations (MWh)	15,050.00	15,201.00	14,449.00	13,627.00	<b>14,039.36</b>
Total freshwater withdrawal (million cubic metres per year)	50.47	52.26	56.5	56.00	<b>59.18</b>
Upstream	2.93	3.71	3.1	2.72	<b>3.47</b>
Downstream	47.54	48.55	50.8	50.97	<b>53.45</b>
MISC and Others (selected non-oil and gas related operations)	-	-	2.58	2.31	<b>2.26</b>
Discharges to water (metric tonnes of hydrocarbon)	992	680	534	591	<b>715</b>
Number of hydrocarbon spills to the environment over one barrel (bbl) (one barrel is equivalent to 159 litres)	25	25	27	18	<b>7</b>
Total sulphur oxides emissions (metric tonnes)	61,698	86,814	72,134	87,917	<b>116,974</b>
Total nitrogen oxides emissions (metric tonnes)	100,915	154,128	168,954	159,498	<b>151,519</b>
Total hazardous waste disposed (metric tonnes)	26,974	29,280	32,355	19,755	<b>34,688</b>

<b>OUR WORKFORCE</b>	2014	2015	2016	2017	<b>2018</b>
Total number of employees	50,949	53,149	51,034	49,911	<b>48,001</b>
<b>Breakdown of employees by region (%)</b>					
Africa					8.2
Asia					85.1
Australia & New Zealand					0.1
Commonwealth of Independent State					1.3
Europe					2.3
Middle East					1.8
North & South America					1.2
<b>Breakdown of employees (%)</b>					
Malaysia	79	80	80	80	<b>80</b>
Other Nationalities	21	20	20	20	<b>20</b>
<b>Employment type (%)</b>					
Permanent	85	83	85	85	<b>87</b>
Contract	15	17	15	15	<b>13</b>
<b>Gender distribution (%)</b>					
Male	72	72	72	72	<b>73</b>
Female	28	28	28	28	<b>27</b>
<b>Number of group-wide technical expertise</b>					
Technical Authorities (TA)	276	499	325	499	<b>577</b>
Technical Professionals (TP)	736	825	815	860	<b>941</b>
Technical Trade Specialists (TTS)	144	297	198	206	<b>225</b>
<b>Employees above and below age of 35 (%)</b>					
Above 35	46	47	46	46	<b>49</b>
Below 35	54	53	54	54	<b>51</b>
<b>Total number of new hires (core businesses in Malaysia)</b>	3,541	4,078	2,932	2,409	<b>2,512</b>
Malaysia	3,198	3,781	2,667	1,982	<b>2,098</b>
Other Nationalities	343	297	265	427	<b>414</b>
Women in technical positions (%)	14	14	12	14	<b>13</b>
<b>Attrition rate (%)</b>					
Male	5.7	5.9	7.3	5.8	<b>6.5</b>
Female	5.3	5.5	7.1	5.4	<b>6.2</b>
	6.7	7	8	6.8	<b>7.3</b>
Number of unionised employees	8,954	9,651	8,616	8,796	<b>9,949</b>
<b>Number of PETRONAS scholars graduated (available for recruitment)</b>	250	351	365	337	<b>262</b>
Recruited by PETRONAS (%)	47	51	50	48	<b>63</b>
Recruited by others (%)	53	49	50	52	<b>37</b>
<b>Number of scholarships awarded to Malaysians</b>	337	326	375	387	<b>329</b>
International Universities (%)	44	42	38	45	<b>49</b>
Malaysian Universities (%)	56	58	62	55	<b>51</b>
Number of sponsored students (Multinationals) Universiti Teknologi PETRONAS (UTP), Malaysia	257	191	147	118	<b>88</b>

## About This Report

This Sustainability Report 2018 (SR2018) is the 11<sup>th</sup> edition of PETRONAS' voluntary reporting of non-financial issues. We are committed to upholding transparency and we have expanded the depth of our disclosure further this year.

Themed '**Energising Growth**', SR2018 covers our sustainability efforts between 1 January and 31 December 2018. Data is provided for the identified material factors and the nine areas of our Corporate Sustainability Framework, outlining key actions taken either to improve or leverage an opportunity, including the mitigation of identified environmental, social and governance-related risks.

This report is compiled by a team at the Group level, in collaboration with multidisciplinary teams across our various Businesses, Operating and Holding Company Units. The team is also tasked to oversee all non-financial disclosure related activities for PETRONAS Group of Companies.

The SR2018 complements PETRONAS Group Annual Report 2018. Both are accessible on our corporate website at [www.petronas.com](http://www.petronas.com).

### REPORTING STANDARDS

PETRONAS refers to the Global Oil and Gas Association for Environmental and Social Issues framework, known as IPIECA's third edition of the "Oil and gas industry guidance on voluntary sustainability reporting" (2015). The IPIECA Climate Change Reporting Framework and Global Reporting Initiative (GRI) Sustainability Reporting Standards are referenced where applicable.

PETRONAS also takes into consideration the disclosure requirements of the FTSE Environmental, Social and Governance (ESG) assessment indicators as an additional base of expanding our disclosure.

### SCOPE

Information in this report covers entities for which PETRONAS holds operational control across our businesses of oil and gas production in Malaysia and internationally, unless otherwise stated. This approach provides a holistic representation of our business and is in line with the industry's good practices.

We have also included information on business segments beyond our operational control and influence, where necessary for tracking purposes. The information is, however, subject to restricted distribution given underlying contractual obligations on confidentiality. The scope may vary annually, based on investments and divestments in the year under review.

### OUR DATA

Quantitative data presented in this report is collated using a centralised, web-based system. An enhanced digital module was first implemented in 2017 to streamline gathering of data on Health, Safety, Security and Environment. Data from preceding years was also reviewed to ensure the integrity of reporting historical performance. However, data variance relative in levels reported previously is likely following reclassification of certain types of data, restated where necessary.

Data integrity is part of our continuous efforts towards a more robust annual reporting process. In 2018:

- Safety and health data are reported for operations where PETRONAS has more than 50 per cent of operational control.
- Environmental data covers all subsidiaries and joint ventures where we have operational control.
- Workforce data encompasses permanent and contract staff.
- Data also covers the sustainability performance of our public listed companies.

### STAKEHOLDER ENGAGEMENT

Mutually beneficial partnerships and fostering trust are important elements in the way we do business. The concerns, expectations and interests of our various stakeholders are obtained via various formal and informal channels and are used to inform our business strategies and plans.

Stakeholder engagement is carried out group-wide, ranging from providing timely project insights to sourcing feedback on our growth strategies and providing regular updates on development plans. The frequency of engagements varies, and dialogues are largely led by representatives from multidisciplinary teams. The engagement methods are in line with the applicable norms in countries of operations.

Our stakeholders and why they matter.

<b>Business Partners, Suppliers and Service Providers</b>	<b>Customers and Consumers</b>	<b>Employees and Trade Unions</b>	<b>Host Governments and Regulatory Authorities</b>
Collaboratively execute our growth strategies	End-users of our energy products	The pillar of our success	Develop and implement policies
<b>Industry Associations and Non-Governmental Organisations</b> Collaboratively elevate the standards of oil and gas industry	<b>Local Communities</b> Endorsers of our social license to operate	<b>Media</b> Provide a fair and balanced view of us	<b>Shareholders, Financial Institutions, Bond Holders and Investors</b> Capital contributors to drive our growth strategies

### NARRATIVE STATEMENTS

The viewpoints and insights presented in this Report are premised upon internal evaluations which may vary from other analysis, as well as trending reports available on the various disciplines relevant to our industry. Every possible effort is made to achieve the highest level of accuracy. The context in which we operate is fluid, and the statements as such are not guaranteed to represent the real-time landscape of our business. PETRONAS thus strongly encourages reader discretion and assessment, will not be liable for any losses or damages suffered as a result of any party's reliance on the content of this Report.

### FEEDBACK

We value your comments and queries on our sustainability disclosure and practices.

Write to us:

**HSSE Reporting (previously known as PETRONAS Sustainability Reporting)**

Group Health, Safety, Security and Environment

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