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Petroleum Nasional Berhad (PETRONAS) • Sustainability Report 2017



MOVING FORWARD TOGETHER

Energy is an essential commodity for growth - a significant resource to fuel progress and contribute towards a better quality of life. In this equation, the access to an uninterrupted supply of energy, cleaner and more affordable, echoes aspirations of the current era where low-carbon economy has set a precedence for change.

Our evolution along with the world's energy landscape calls for robust sustainability practices to address the needs and demands of the market, society and environment. It is an ongoing pursuit where we continuously solidify our governance and elevate our business practices. As we venture across various continents and foray diverse horizons to unlock value, contributing towards the wider progress of society resonates with our very own establishment for over four decades running.

The journey which began in 1974 has taken us far beyond Malaysia, driven by an unwavering commitment to maximise energy resources for the betterment of coming generations. Sustainability to us is about fulfilling the quest for advancement by making decisions that count today, for tomorrow's prosperity.

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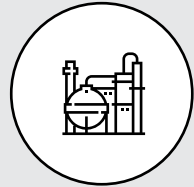
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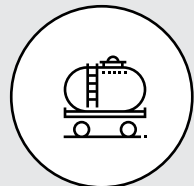
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PETRONAS AT A GLANCE

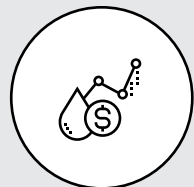
UPSTREAM



Total LNG sales volume of **30.72** million metric tonnes



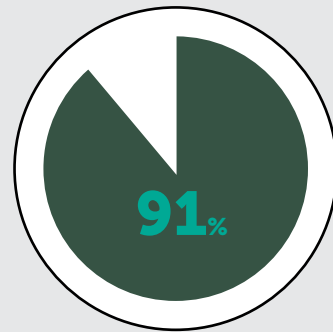
443 BCE LNG loadable delivered from the PETRONAS LNG Complex in Bintulu, Sarawak



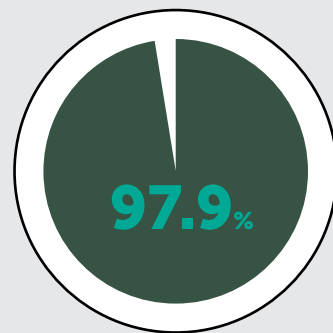
Average production **2,320** kboe/d

DOWNSTREAM

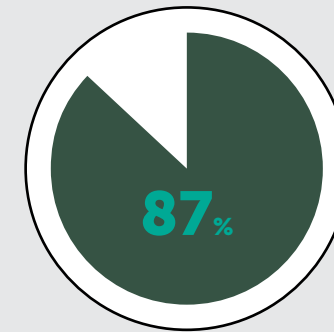
Plant Utilisation



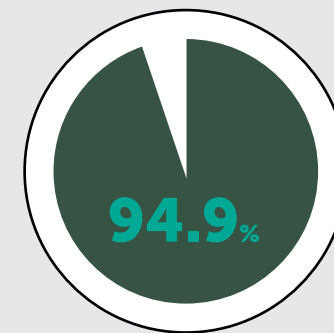
Reliability



Pengerang Integrated Complex Completion*



Overall Equipment Effectiveness (OEE)



* Status as at March 2018

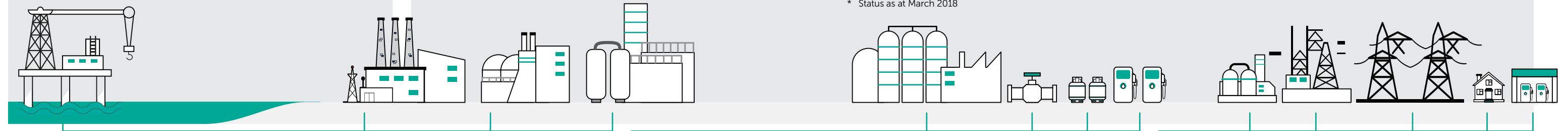
Downstream recorded 227 million manhours, **60% higher compared to last year**

PETRONAS' Retail business recorded **the highest unit margin in 5 years**, contributed by higher fuel volume and convenience income

Expanded availability of **the new PETRONAS Dynamic Diesel Euro 5** across Peninsular Malaysia and Sarawak

PETRONAS Chemicals Fertiliser Sabah Sdn Bhd (SAMUR) **began commercial operations in May 2017**

4-Time Consecutive World Constructors' Champion in Formula One™



>> **Petroleum Nasional Berhad (PETRONAS) is Malaysia's national oil company and is on track towards becoming a leading oil and gas multinational of choice, ranked amongst the largest corporations in the world.**

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.

Note: Please refer to the PETRONAS Group Annual Report 2017 for more information, accessible at www.petronas.com

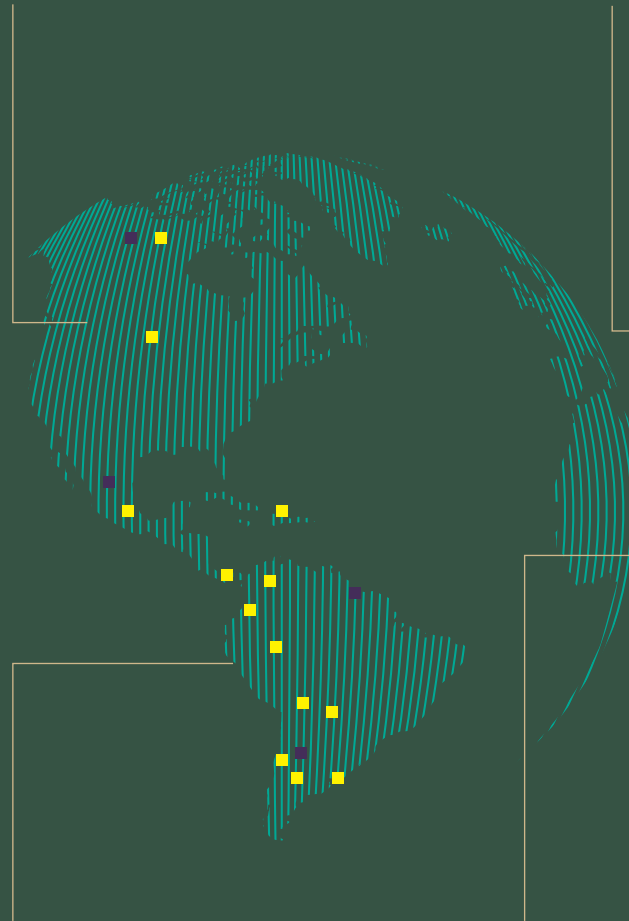


PETRONAS AROUND

NORTH AMERICA

UPSTREAM • Canada – (Unconventional) Development & Production
• Mexico – Exploration

DOWNSTREAM • Canada – Lubricants
• Guatemala – Lubricants
• Mexico – Lubricants • Honduras – Lubricants
• El Salvador – Lubricants • Costa Rica – Lubricants
• Dominican Republic – Lubricants
• United States of America – Petrochemicals, Lubricants



LATIN AMERICA

UPSTREAM • Suriname – Exploration • Argentina – (Unconventional) Development & Exploration

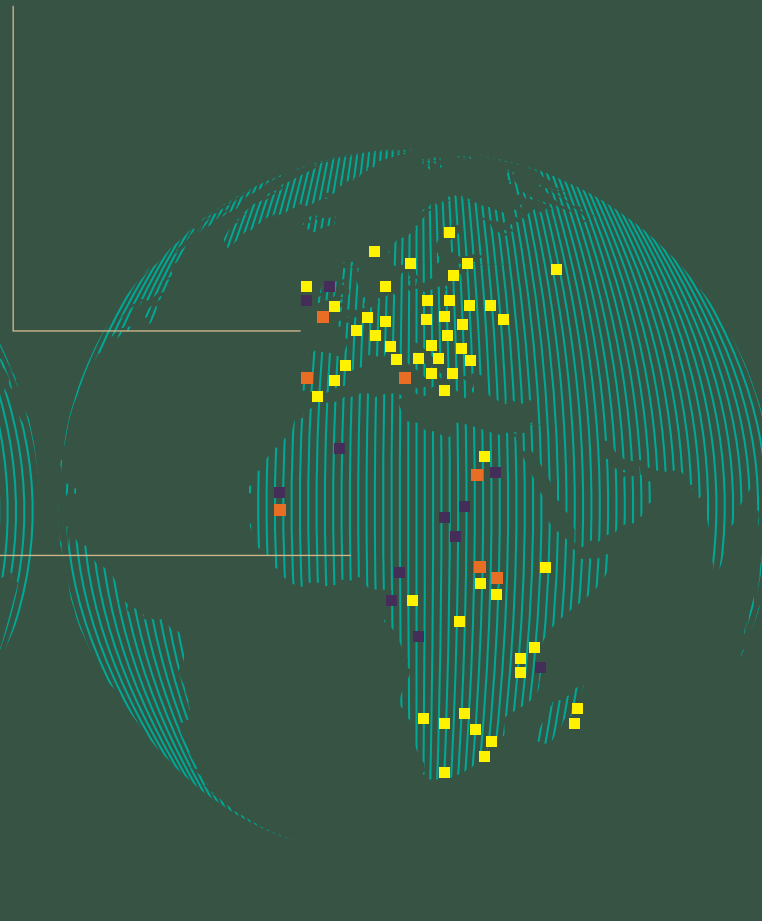
DOWNSTREAM • Argentina – Lubricants
• Bolivia – Lubricants • Brazil – Lubricants
• Chile – Lubricants • Colombia – Lubricants
• Ecuador – Lubricants • Guyana – Lubricants
• Paraguay – Lubricants • Peru – Lubricants
• Suriname – Lubricants • Uruguay – Lubricants

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 – Lubricants • Norway – Lubricants • Poland – Lubricants
• Portugal – Lubricants • Romania – Lubricants • Russia – Lubricants • Slovakia – Lubricants
• Slovenia – Lubricants • Spain – Lubricants • Sweden – Lubricants
• Switzerland – Lubricants • United Kingdom – Lubricants • Netherlands – Lubricants

PROJECT DELIVERY & TECHNOLOGY • Italy • Spain • United Kingdom



AFRICA

UPSTREAM • Algeria – Production • Angola – Exploration • Chad – Production
• Egypt – Development, Production & LNG • Gabon – Exploration
• Republic of Sudan – Development & Production
• Republic of South Sudan – Development & Production

DOWNSTREAM • Cote D'Ivoire – Lubricants • Algeria – Lubricants • Angola – Lubricants
• Botswana – Retail, Lubricants • Burundi – Lubricants • Cameroon – Lubricants
• Democratic Republic of the Congo – Retail, Lubricants • Gabon – Retail, Lubricants
• Ghana – Retail, Lubricants • Kenya – Retail • Lesotho – Retail, Lubricants
• Lesotho – Retail • Malawi – Retail, Lubricants • Mali – Lubricants • Mauritania – Lubricants
• Mauritius – Retail • Morocco – Lubricants • Mozambique – Retail, Lubricants
• Namibia – Retail, Lubricants • Reunion – Retail, Lubricants • Rwanda – Retail, Lubricants
• South Africa – Refinery, Retail, Lubricants • Swaziland – Retail
• Tanzania – Retail, Lubricants • Togo – Lubricants • Tunisia – Lubricants
• Zambia – Retail, Lubricants • Zimbabwe – Retail

^{**}In Nov 2017, Vivo Energy agreed to enter into a share transaction with Engen

PROJECT DELIVERY & TECHNOLOGY • Egypt • Mauritania • Republic of South Sudan
• Republic of Sudan

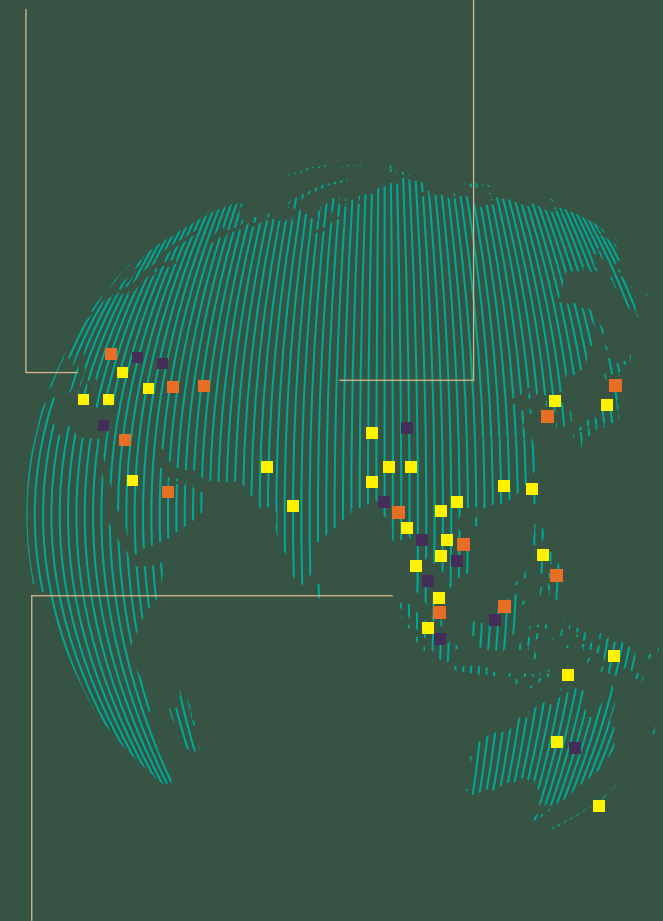
THE WORLD

MIDDLE EAST

UPSTREAM • Iraq – Development & Production

DOWNSTREAM • Egypt – Lubricants
• Iraq – Lubricants • Jordan – Lubricants
• Saudi Arabia – Lubricants
• United Arab Emirates – Lubricants
• Iran – Lubricants

PROJECT DELIVERY & TECHNOLOGY
• Iraq • United Arab Emirates



CENTRAL ASIA

UPSTREAM • Azerbaijan – Development & Production • Turkmenistan – Development & Production

DOWNSTREAM • Turkey – Lubricants
• Turkey – Lubricants

PROJECT DELIVERY & TECHNOLOGY
• Azerbaijan • Turkmenistan

ASIA PACIFIC

UPSTREAM • Australia – Exploration, Development, Production & LNG
• Brunei – Exploration & Development • Indonesia – Exploration, Development & Production
• Japan – LNG Marketing • Malaysia – Exploration, Development, Production & LNG
• Malaysia–Thailand Joint Development Area – Exploration, Development & Production
• Myanmar – Exploration, Development & Production • Vietnam – Production

DOWNSTREAM • Australia – Petrochemicals, Lubricants • Bangladesh – Lubricants
• Cambodia – Lubricants • China – Petrochemicals, Lubricants
• India – Petrochemicals, Lubricants • Indonesia – Petrochemicals, Lubricants
• Japan – Petrochemicals, Lubricants • Malaysia – Petrochemicals, Retail, Refinery, Lubricants
• Myanmar – Lubricants • Nepal – Lubricants • New Zealand – Petrochemicals, Lubricants
• Pakistan – Lubricants • Philippines – Petrochemicals • Sri Lanka – Lubricants
• Singapore – Petrochemicals, Lubricants • South Korea – Petrochemicals
• Taiwan – Petrochemicals • Thailand – Petrochemicals, Lubricants
• Vietnam – Petrochemicals, Lubricants

PROJECT DELIVERY & TECHNOLOGY • Brunei • China • India • Indonesia • Japan
• Malaysia • Myanmar • Philippines • South Korea • Vietnam

OUR WORKFORCE



PETRONAS Employees by Region

Africa	8.2%
Asia	85.1%
Australia & New Zealand	0.1%
Commonwealth of Independent States	1.3%
Europe	2.3%
Middle East	1.8%
North & South America	1.2%

Total Employees	49,911
Within Malaysia	82.0%
Outside Malaysia	18.0%

Legend

- UPSTREAM
- DOWNSTREAM
- PROJECT DELIVERY & TECHNOLOGY

OUR PROFILE

VISION

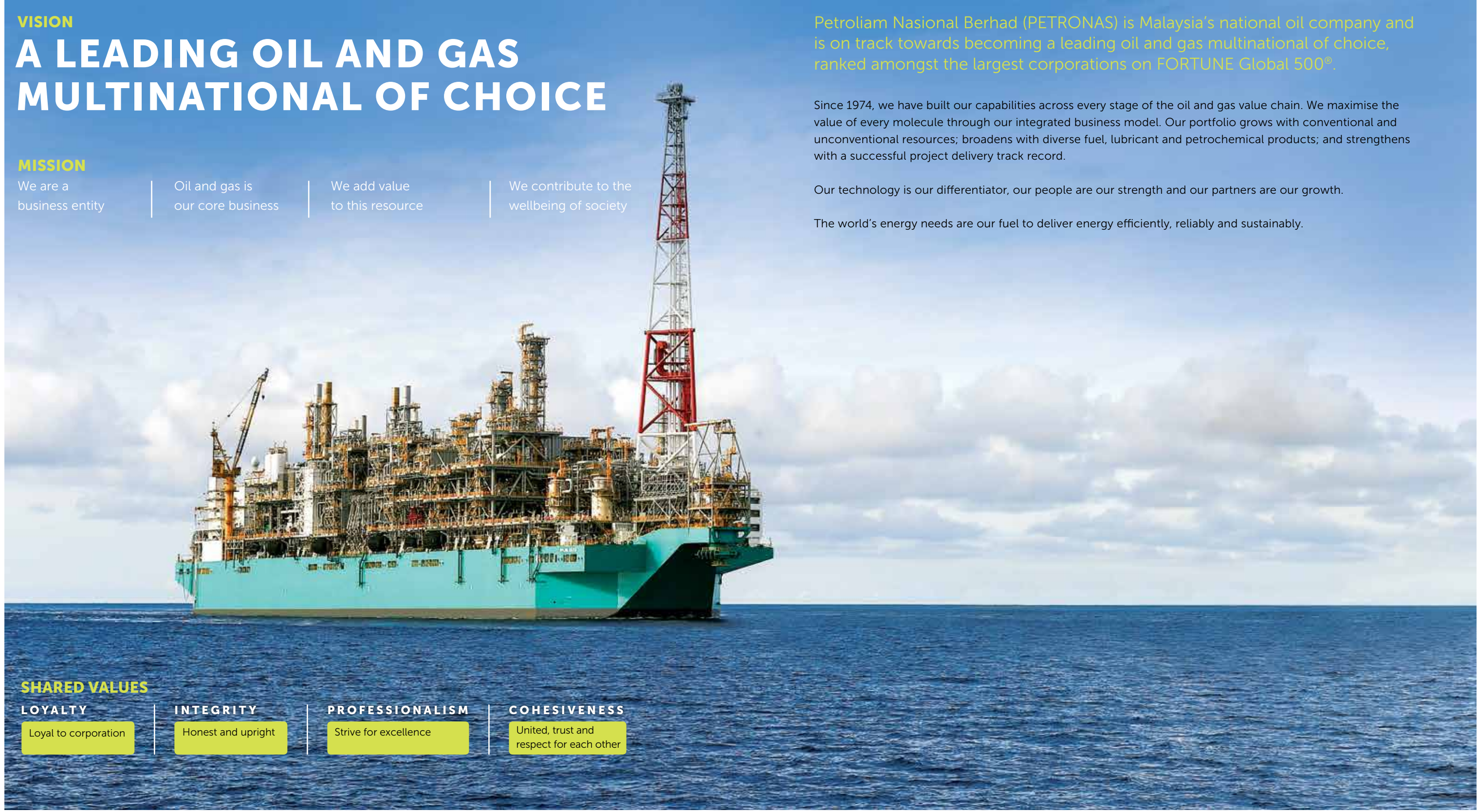
A LEADING OIL AND GAS MULTINATIONAL OF CHOICE

MISSION

We are a business entity	Oil and gas is our core business	We add value to this resource	We contribute to the wellbeing of society
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SHARED VALUES

LOYALTY Loyal to corporation	INTEGRITY Honest and upright	PROFESSIONALISM Strive for excellence	COHESIVENESS United, trust and respect for each other
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Petroleum Nasional Berhad (PETRONAS) is Malaysia's national oil company and is on track towards becoming a leading oil and gas multinational of choice, 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 maximise the value of every molecule through our integrated business model. Our portfolio grows with conventional and unconventional resources; broadens with diverse fuel, lubricant and petrochemical products; and strengthens with a successful project delivery track record.

Our technology is our differentiator, our people are our strength and our partners are our growth.

The world's energy needs are our fuel to deliver energy efficiently, reliably and sustainably.

PETRONAS' FIVE-YEAR KEY FINANCIAL INDICATORS

In RM billion



Financial Ratios	FY2013	FY2014	FY2015*	FY2016*	FY2017
PAT Margin	20.7%	14.5%	8.8%	12.2%	20.3%
Return on Total Assets (ROTA)	17.5%	14.1%	5.8%	5.4%	10.7%
Return on Average Capital Employed (ROACE)	17.4%	11.9%	5.1%	5.4%	9.8%
Debt/Assets Ratio	0.08x	0.07x	0.10x	0.11x	0.11x
Gearing Ratio	14.3%	12.6%	16.0%	17.4%	16.1%
Dividend Payout Ratio	54.1%	53.6%	70.2%	>100%	93.0%

* 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.

LETTER FROM THE PRESIDENT AND GROUP CHIEF EXECUTIVE OFFICER

>> OUR STAND IS CLEAR AS WE TRANSITION TOWARDS A SUSTAINABLE FUTURE. WE ARE COMMITTED TO SAFELY AND RELIABLY MEET OUR CUSTOMERS' NEEDS FOR ENERGY AMIDST DISRUPTIONS.



TAN SRI WAN ZULKIFLEE WAN ARIFFIN
 >> President and Group Chief Executive Officer

The external landscape in 2017 was challenging, characterised by unprecedented volatilities and cyclical uncertainties surrounding the price of commodities. Whilst our agility was tested, a refined business strategy integrating a stronger focus on sustainability propelled PETRONAS towards greater progress. This Report summarises our strategic priorities in delivering PETRONAS' sustainability aspirations, drawing upon the successes and learning in 2017.

Today, PETRONAS is sturdier to weather the uncertainties of time. The relentless commitment of our workforce was instrumental in strengthening our resilience, what more the support of their families. Thank you all for being with PETRONAS, as we prospered towards our wider socio-economic and environmental aspirations.

Our stand is clear as we transition towards a sustainable future. We are committed to safely and reliably meet our customers' needs for energy amid disruptions. As market forces change, generating lasting value creation in realising our Corporate Sustainability Framework is vital to us.

Low-Carbon Economy

PETRONAS is committed to managing climate change across our business value chain. We recorded greenhouse gas (GHG) reductions of over eight million tonnes of carbon dioxide equivalent, cumulatively over a five-year period between 2013 and 2017. Taking on from which, we are committed to a further cutback in GHG emissions below business as usual, partly supporting our home country's ambition towards the Paris Agreement.

Accelerating towards a low-carbon economy, our Carbon Commitments were enhanced to draw on opportunities such as Renewable Energy, including Carbon Pricing and Offset. Collectively, these complement our existing measures on attaining zero continuous venting and flaring, where economically feasible. Simultaneously, amplifying our strong position in the global liquefied natural gas sector, in addition to which, we advocate gas as a cleaner choice of energy. Investments into innovative technological solutions further fortified our competitive edge in monetising gas fields containing high levels of carbon dioxide.

Works are presently ongoing towards establishing a New Energy Unit, tasked to unfold investment opportunities in the area of renewables. Concurrently, to explore the possibilities of designing innovative energy solutions. In essence, these will enhance the agility of our current energy portfolio.

Safe and Sound

Safeguarding people, the environment, and communities residing in close proximity to our operational vicinity is a top priority. We recorded better safety performance compared to 2016, especially in Fatal Accident Rate and Loss Time Injury Frequency, marking a 74 per cent and 35 per cent improvement, respectively. A heavier focus on Loss of Primary Containment management was encouraging as cited by a sharp decline in the number of process safety related incidents across the Group. Whilst it was a year of achievements, we lost the lives of four of our contractors which is not acceptable to us. Promptly, effectiveness of our safety systems, mechanisms and procedures in the areas of land transportation and project HSSE were thoroughly scrutinised.

A stronger emphasis on safety excellence solidified HSSE leadership across all levels. Safety to us is a shared responsibility, amongst our staff and contractors, making every person accountable in sustaining a culture of zero harm, at all times. The goal is forthright, and that is for every person serving at PETRONAS to go home *safe, healthy and motivated*.

The goal is forthright, and that is for every person serving at PETRONAS going home safe, healthy and motivated.

Social Value Creation

Nurturing an empowered and self-driven workforce is premised upon our philosophy of life-long learning. In 2017, we continued to invest into developing the right competencies of our human capital. The PETRONAS 3P (People, Performance and Passion) Leadership Model was a holistic approach formalised to empower and grow our people amidst a fluid business environment.

Establishment of the PETRONAS Contractors Code of Conduct on Human Rights (CoCHR) in 2017 magnified the reach of our best practices across our business value chain. As we deepen our foothold across the global energy sector, management of social risks, essentially, respect for human rights is a prerequisite.

We are also mindful of our stakeholders' mutual aspirations for progress. In 2017, we channelled close to RM230 million in corporate social investments. Our multi-dimensional investment strategy created jobs, supported local capacity building and promoted a myriad of community development causes. I am happy that the people of PETRONAS, our ambassadors, collectively contributed their time and energy in reaching out to the local communities in areas of our operations.

The Road Ahead

The global urgency to shift into an era defined by lower emissions and cheaper energy is fast-paced. This is thus spurring investment into state-of-the-art energy infrastructure and next-generation technologies. In a nutshell, the conventional energy sector is embracing progressive solutions to remain viable. The continual and systematic sharpening of our competitive edge is imperative to remain a partner of choice. Decisions we make going forward will be key to address the changing dynamics of our world, whilst staying conscious of our stakeholders and customers' evolving expectations.

To this end, I would like to share that PETRONAS is presently working alongside the Malaysian Government to define a fit-for-purpose energy model for the country, including policies to facilitate its realisation.

I believe by capitalising on our profound business acumen, leadership and experience, PETRONAS is driven to maximise value creation despite the turbulences ahead. We are geared to do all it takes to excel, whilst subscribing to our Shared Values and Cultural Beliefs as we shape the pathway for PETRONAS, our industry and the global energy sector. Parallel to our stand on voluntary reporting, we will continue to communicate our progress on driving sustainability in an open and transparent manner.

Thank you.

I am happy that the people of PETRONAS, our ambassadors, collectively contributed their time and energy in reaching out to the local communities in areas of our operations.

MATERIAL FACTORS

The content of our Sustainability Report is guided by an internal materiality assessment process to sufficiently address the interest of our stakeholders alongside PETRONAS' growth aspirations. The material factors derived from an annual materiality assessment ensure the information provided is timely, meaningful and comparable.

A total of 10 material factors were clustered under three key sections, namely, Environment, Social and Governance (ESG), with each comprising a subset of specific focus areas. The material factors are largely constant from year to year relative to the larger ESG landscape, unless otherwise stated.

Disclosure on Management Approach was defined for each material factor, supported by performance data and insights on specific initiatives undertaken in the year. The information provided is tailored to the requirements of applicable sustainability reporting guidelines.

Section	Material Factor	Perspective	Focus Area	Boundary	Relevance to the SDGs	Page(s)
Environment	Climate Change	<ul style="list-style-type: none"> Supporting a low-carbon economy 	<ul style="list-style-type: none"> GHG Emissions Energy Efficiency Flaring and Venting Renewables 	Groupwide	Yes	26-31
	Environmental Management	<ul style="list-style-type: none"> Implementing measures to protect the environment Ensuring resource efficiency 	<ul style="list-style-type: none"> Freshwater Withdrawal Dischargers to Water Spills Air Emissions Waste Management Biodiversity and Ecosystem Services Decommissioning 	Groupwide	Yes	32-37
Social	Safety	<ul style="list-style-type: none"> Sustaining operational excellence and integrity 	<ul style="list-style-type: none"> Occupational Safety Process Safety Emergency Preparedness and Crisis Management 	Groupwide	Yes	40-43
	Health, Wellness and Exposure Management	<ul style="list-style-type: none"> Achieving optimum health levels Safe handling of exposures at the workplace 	<ul style="list-style-type: none"> Healthy Lifestyle Fatigue Management Contractor Health Chemical Management Ergonomics Noise Management 	Groupwide	Yes	44-47

Note: SDGs stand for Sustainable Development Goals

Section	Material Factor	Perspective	Focus Area	Boundary	Relevance to the SDGs	Page(s)
Environment	Product Stewardship	<ul style="list-style-type: none"> Producing safe and reliable products that are environmentally-friendly 	<ul style="list-style-type: none"> Product Risk Assessments Product Safety Data Sheets Product Communication and Compliance 	Downstream	Yes	48-50
	Security	<ul style="list-style-type: none"> Ensuring a safe workplace 	<ul style="list-style-type: none"> Security Management Maritime Security Cybersecurity 	Groupwide	Yes	51-52
	Human Rights	<ul style="list-style-type: none"> Grievance management and due diligence 	<ul style="list-style-type: none"> Human Rights Training on Human Rights Social Risk Assessments 	Groupwide	Yes	53-54
	Human Capital	<ul style="list-style-type: none"> Nurturing a diverse and talented workforce 	<ul style="list-style-type: none"> Talents as Investors Holistic Capability Development Diversity and Inclusion Collective Bargaining and Freedom of Association Workforce Engagement 	Groupwide	Yes	55-56
Governance	Social Responsibility	<ul style="list-style-type: none"> Creating lasting value creation and progress 	<ul style="list-style-type: none"> Corporate Social Investment Community Engagement Local Procurement Local Talent 	Groupwide	Yes	57-63
	Business Ethics and Compliance	<ul style="list-style-type: none"> Promoting a culture of compliance 	<ul style="list-style-type: none"> Code of Conduct and Business Ethics Anti Bribery and Corruption Manual Whistleblowing Policy and Procedures 	Groupwide	Yes	66-67

Note: SDGs stand for Sustainable Development Goals

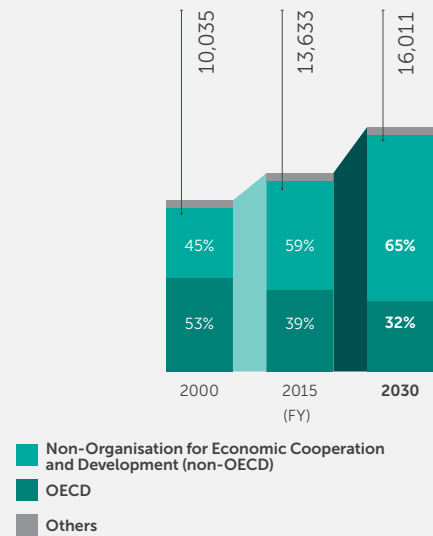
ENERGY TRANSITION

Global energy demand will continue to grow by 18 per cent to 2030, driven by a rising population and sustained economic momentum in emerging markets. China, India, South East Asia, Africa, Latin America and the Middle East will drive this growth, increasing the non-OECD share of global total primary energy demand (TPED) from 59 to 65 per cent. This trend is reversed in the OECD nations, where energy efficiency, digitalisation and the shift from manufacturing to services primarily in North America, Europe, Japan and others will collectively see a decline in TPED from 39 to 32 per cent by 2030.

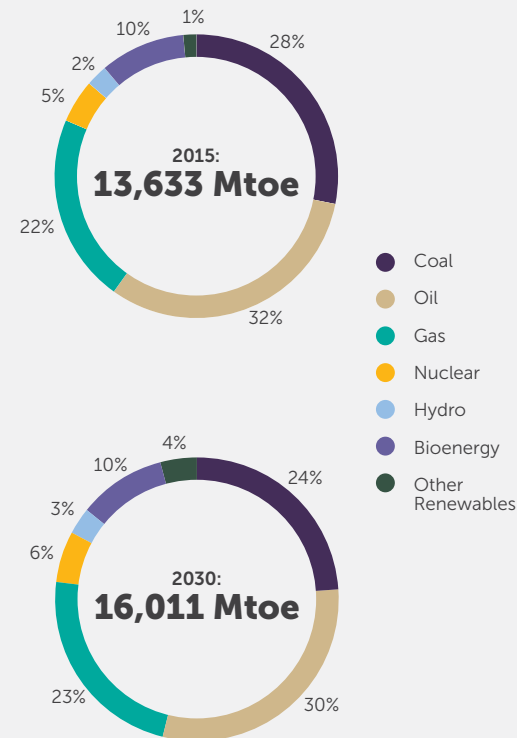
This growth sees an ongoing emphasis on providing access to clean, reliable and affordable energy for driving economic progress, especially in less-developed nations. This is to fundamentally address the *energy trilemma* – the challenge of balancing energy security, energy affordability and environmental sustainability.

Technological development, regulatory support and business innovation have enabled a revolutionary leap in bringing down the cost of renewable energy in recent years. Whilst the pace of growth has been fast, the overall volume of renewable energy including hydro, bioenergy, solar, wind and others remains relatively small at 13 per cent in 2015. Presently, coal, oil and natural gas make up 82 per cent of the world's primary energy mix, and will continue to be dominant up to 2030. The overall share of renewables will increase from 13 to 17 per cent despite tremendous growth in solar photovoltaic and wind power.

Global Total Primary Energy Demand (TPED) Mtoe



Global TPED by Fuel Mtoe



Source: IEA World Energy Outlook 2017

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 range from 17 to 18 per cent, compared to a combined-cycle gas turbine which exceeds 50 per cent efficiency today. Natural gas use is thus expected to increase in power generation. Gas-fired power plants can be turned on and off much more quickly than other power plants to help address the challenge of seasonal and daily output variability of wind and solar energy. Natural gas also emits about 50 per cent less carbon dioxide (CO₂) per kilowatt-hour compared to coal, prompting a switch away from coal and decreasing its share in the primary energy mix.

Meanwhile, global oil demand will grow by another 10 per cent between 2015 and 2030, although its share decreases from 32 to 30 per cent in the primary energy mix. Fuel efficiency policies and the growing fleet of electric passenger vehicles will have a downward pressure on demand, but on the balance, heavy vehicles, planes and ships continue to rely on the unrivalled energy density of refined oil products. The growth in oil and gas consumption will also come from the petrochemical sector as the rising population sees more demand for plastics, detergents, solvents and many other derivatives used as building blocks for everyday consumables.

Whilst fossil fuel will remain core to the global energy mix, we promote natural gas and LNG as lower carbon fuel. 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. To ensure a sustainable supply, we work with the Government to create a more competitive gas market, supported by ongoing gas advocacy efforts. A competitive gas market will also result in better prices and service for the end-user.

Supplying the world's energy needs is an ongoing challenge requiring ingenuity in solutions, including technological developments. On the supply side, solutions like energy storage, hydrogen fuel cells, next-generation nuclear systems and biofuels are being developed whilst on the demand side, innovations to energy systems and business models continue to optimise energy production, delivery and use.

Over the years, PETRONAS has invested in technology development to maximise hydrocarbon resources whilst reducing environmental footprint, for example through CO₂ management. There are also investments made into emerging technologies through collaborations with academia and corporations. We embarked on a digital transformation in 2016 to deliver new value and change the way we work through advanced analytics and machine learning. In 2017, greater emphasis was placed on non-oil and gas solutions with the establishment of our PETRONAS New Energy Business.

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

CLIMATE CHALLENGE

The energy sector's fundamentals are shifting following impending evolvments in the areas below, arising from a stronger emphasis on climate change:

- Financial investments
- Stakeholder confidence
- Climate legislation
- Extreme weather
- Disruptive technology

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 for Groupwide implementation.

Paving the Path Towards a Low-Carbon Economy

Investing in Low-Carbon Solutions

Driving Operational Excellence

Building Resilience

For more information on our Climate Change initiatives, please refer to pages 26 to 31 of this Report.

SUSTAINABLE DEVELOPMENT IN PETRONAS

Energy underscores progress as it spurs growth across multiple industries and is an essential component for shaping the quality of one's life. The opportunities for development are far-reaching in view of a growing global population and in tandem, rising urbanisation rate. These factors amplify the quest for energy, with conventional oil and gas resources constituting a large proportion of the global energy mix. Nevertheless, the changing dynamics of the social and environmental landscape intensify the need for more affordable and cleaner energy resources.

Sustainability to us is a business prerequisite for long-term growth. It encompasses carrying out business in a socially responsible and holistic manner to ensure continued growth as well as success for the benefit of present and future generations where we operate. Our aim is to create lasting social benefits; safeguard the health and safety of employees, contractors and neighbours;

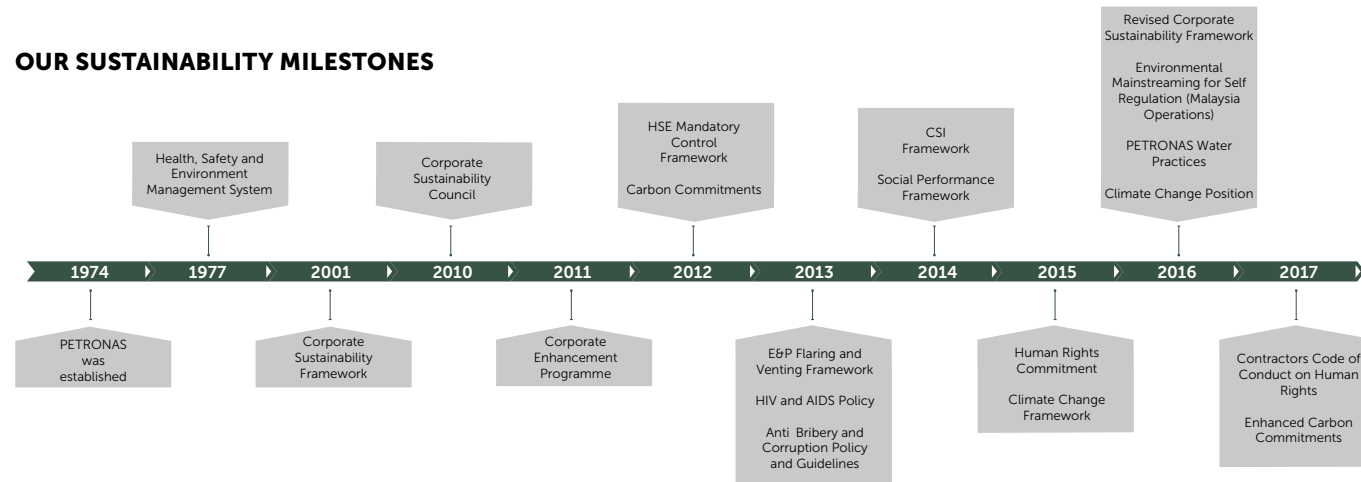
minimise disruptions to the community; lower emissions; minimise impact on ecosystems and biodiversity; and use energy, water and other resources efficiently. In a nutshell, sustainability cuts across our integrated business value chain, ranging from the products we develop to our operational practices and how we heed the expectations of our various stakeholders.

Note: Governance mechanisms relevant to each of the identified material factors are listed in the subsequent sections of this Report, applicable to the PETRONAS Group which includes our Public Listed Companies. The list is non-exhaustive.

What Governs Us:

- PETRONAS Vision, Mission and Shared Values
- PETRONAS Code of Conduct and Business Ethics (CoBE)
- PETRONAS Corporate Sustainability Framework
- PETRONAS Enterprise Risk Management Framework
- PETRONAS Policies, Standards, Commitments, Guidelines and Technical Standards
- Regulations on Environmental and Social Requirements in Countries of Operations

OUR SUSTAINABILITY MILESTONES



Integrating sustainability in PETRONAS takes a systematic method, namely by institutionalising:

- **Systems and Processes:** Govern business decision-making and streamline our practices in managing sustainability Groupwide.
- **Organisational Structure:** Oversee the implementation of sustainability plans in adherence to existing procedures and processes.
- **Capability Development:** Hone staff with evolving knowledge and skills to effectively leverage upon sustainability risks as well as opportunities.

SUSTAINABILITY FOCUS AREAS

The PETRONAS Corporate Sustainability Framework (CSF) was enhanced in 2016, taking into view our business aspirations, relative to global movements such as the Paris Agreement and Sustainable Development Goals. The CSF constitutes nine areas that are applicable to all aspects of our operations, Groupwide. This includes our Public Listed Companies, where the CSF may be adopted or localised to suit the unique business characteristics.

Our interpretation of sustainability risks and opportunities is aligned with the PETRONAS CSF, guiding overall decision-making. The nine CSF areas represent the minimum elements of consideration, subject to trends facing the larger oil and gas industry.

THE PETRONAS CORPORATE SUSTAINABILITY FRAMEWORK

- SHAREHOLDER VALUE**
 Fulfilling our responsibility as a business entity to deliver returns to our shareholders through long-term creation of economic value.
- NATURAL RESOURCE USE**
 Promoting optimum use of hydrocarbons and water in our operations through efficient processes and the application of technology.
- CLIMATE CHANGE**
 Recognising our corporate responsibility as a key player in the global energy sector to balance the issue of climate change with the challenge of sustainably producing affordable and reliable energy.
- BIODIVERSITY AND ECOSYSTEM SERVICES**
 Ensuring projects and operations do not have a significant impact on biodiversity and local ecosystems.
- HEALTH, SAFETY AND ENVIRONMENT**
 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 wellbeing of our employees, contractors, communities and the local environment.
- GOVERNANCE AND BUSINESS ETHICS**
 Safeguarding the organisation's integrity and trustworthiness in delivering value through strong governance mechanisms and ethical business practices.
- HUMAN RIGHTS**
 Respecting internationally-recognised human rights in our areas of operations, complying with our Code of Conduct and Business Ethics, and all relevant legal requirements.
- CORPORATE SOCIAL INVESTMENT**
 Investing in sustainable initiatives as a socially responsible company in line with our mission to contribute to the wellbeing of society.
- WORKFORCE DEVELOPMENT**
 Equipping our workforce with the skills and mindset to deliver sustained high performance.

BUSINESS AND SUSTAINABILITY CONSIDERATIONS

PETRONAS' corporate purpose is aligned with our Vision and Mission, ultimately to produce and supply energy in a responsible manner whilst contributing towards the wider societal development. An emphasis on sustainable value creation is thus parallel to our business aspirations, going beyond traditional risk spheres to analyse ESG aspects essential for robust long-term growth.



SUSTAINABILITY RISKS AND OPPORTUNITIES

In the period under review, developments unfolding across the ESG fronts continued to exert varying degrees of consequences on growth from the perspective of cost, business plans and operational practices. The evolving external landscape however allowed for optimisation efforts to further sharpen our business agility and innovation. Some of the realities facing the larger energy sector in 2017 were:

- Buoyant energy prices
- High operating cost
- Stringent climate legislation
- Demand for renewables
- Change in climate patterns
- Water availability
- Interest on human rights
- Asset integrity and reliability
- Geopolitical shifts
- Transparency and ethics
- Digital literacy and competency

DRIVING SUSTAINABILITY IN PETRONAS

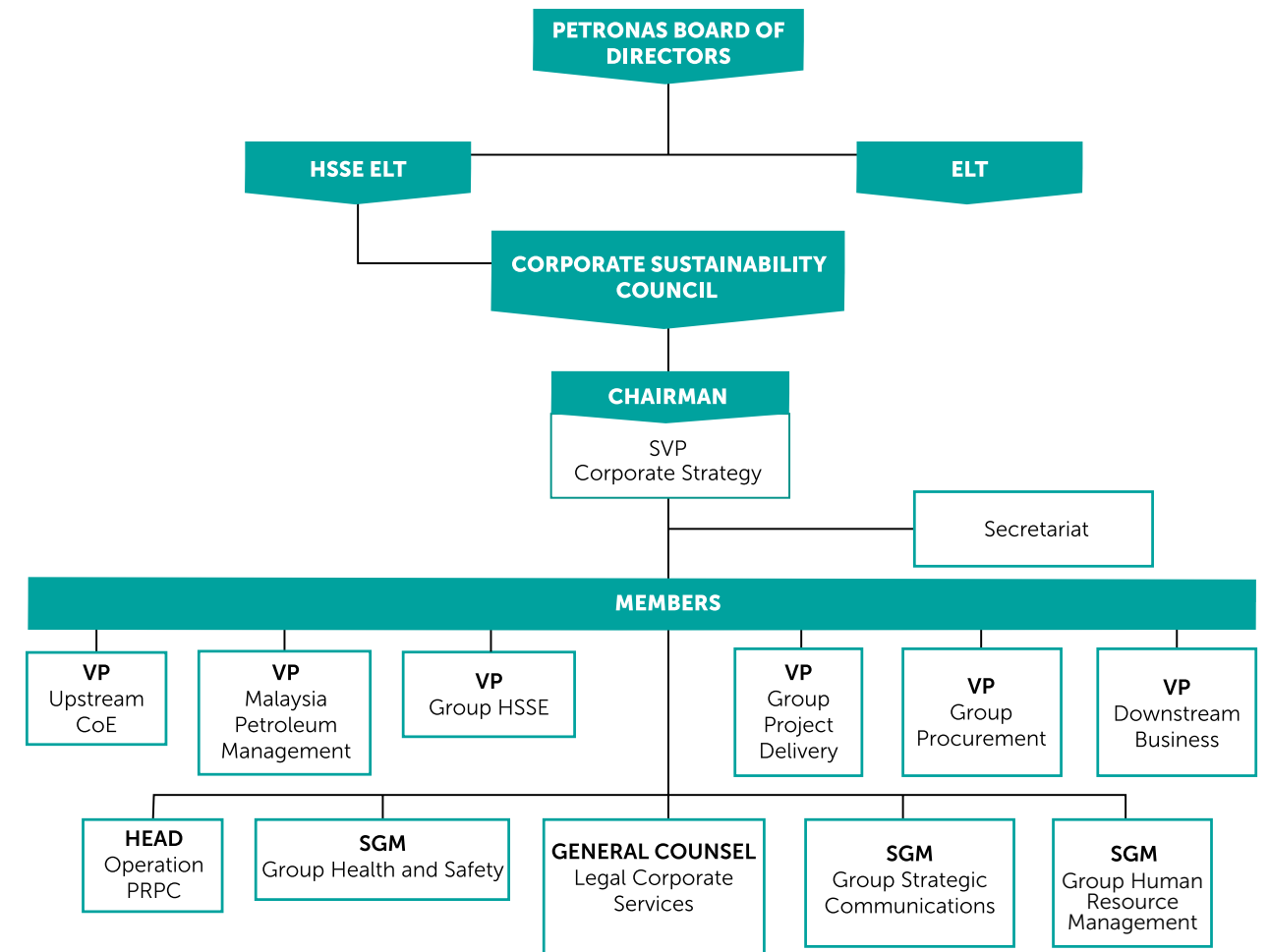
The Corporate Sustainability Council (the Council) is an advisory body to oversee the integration of sustainability in PETRONAS. This includes all Businesses, Operating and Holding Company Units. The Council's composition is made up of management personnel representing our integrated business value chain, who possess vast experience and expertise of the wider oil and gas sector. The Council undergoes timely review to ensure a fair representation of PETRONAS, in view of the external ESG landscape.

THE COUNCIL'S ROLE IN ADDING VALUE

- Drive the development of relevant policies and related governance mechanisms on sustainability.
- Report and make recommendations to the PETRONAS Executive Leadership Team (ELT) and Health, Safety, Security and Environment (HSSE) ELT, both of which are chaired by the PETRONAS President and Group Chief Executive Officer (CEO).
- Establish sustainability scorecard, targets and key performance indicators for PETRONAS.
- Deliberate on sustainability strategies and oversee their implementation.
- Embed the culture of sustainability as part of organisational and behavioural norms.
- Align the strategies of our Public Listed Companies with PETRONAS' sustainability actions.

The membership of the Council was revamped in 2017. A new Council Chairman (Senior Vice President (SVP), Corporate Strategy) was appointed with the consent of PETRONAS' President and Group CEO. Key deliverables in the year included the Council's dominant contributions towards institutionalising the enhanced Carbon Commitments and Contractors Code of Conduct on Human Rights, including guidance for the successful execution of our Inaugural Sustainability Exchange.

THE COUNCIL



Notes:
 SGM - Senior General Manager
 CoE - Centre of Excellence
 PRPC - PETRONAS Refinery and Petrochemical Corporation Sdn Bhd
 Secretariat to the Council is SGM, Group Environment and Social Performance

Sustainability Exchange

PETRONAS' inaugural Sustainability Exchange, themed *Staying Relevant*, was a timely forum held in Kuala Lumpur, Malaysia to deepen conversations on social and environmental topics such as climate change and human rights in a fast changing business environment. The event participated by management personnel from PETRONAS stressed on the importance of sustainability as a prerequisite for staying competitive over a long-term horizon in an integrated business environment. The discourse centered on the role of sustainability in enhancing business profiling and viability by citing real examples as well as the industry's good practices. A line-up of renowned Malaysian and international speakers led the sharing on global evolvments in the discipline of sustainability and expectations of corporations in addressing stakeholders' expectations. This included the United Nation's SDGs and revised Malaysia Companies Act 2016. The event resulted in greater collaborations across multidisciplinary teams to spearhead the realisation of PETRONAS' sustainability aspirations.

INTEGRATED OPERATIONAL GOVERNANCE

The PETRONAS Health, Safety and Environment (HSE) Policy and Security Policy respectively, set out our commitment towards conducting our business in a responsible and reliable manner. The implementation of these policies are supported by the PETRONAS HSE Management System, HSE Mandatory Control Framework (HSE MCF), PETRONAS Security Management System (SeMS), Mandatory Minimum Security Standards (M2S2), CSF as well as the CoBE. These governance mechanisms in essence outline clear requirements to facilitate consistent and effective implementation of sustainability practices Groupwide.

The PETRONAS HSSE ELT is entrusted to spearhead the development of relevant HSSE policies and strategies relative to business priorities. Regular HSSE and Security performance updates are presented to the PETRONAS Board as well as HSSE ELT on a periodic basis. Identified HSSE key performance indicators are also incorporated into the scorecard of our HSSE ELT members.

The HSSE ELT meets periodically to deliberate and provide oversight on the Group's HSSE and sustainability performance, amongst others, including technical as well as operational matters. In the period under review, Loss of Primary Containment was amongst the priority which will continue in 2018.

The HSSE ELT is supported by several sub-committees, namely:

- Group HSSE Leadership Team: oversees the implementation of HSSE interventions and assesses the robustness of control measures, as well as governance mechanisms.
- Security Risk Oversight Committee: ensures conformance to the SeMS and M2S2.
- PETRONAS HSSE Technical Council: streamlines technical leadership on HSSE best practices, standards and governance Groupwide.
- Corporate Sustainability Council: deliberates ESG related matters; which include emerging trends, risks, opportunities, governance mechanisms and strategic objectives.

Assurance Activities

HSE and Security audits are carried out regularly to test the resilience of our control measures and ascertain if identified gaps are addressed in a timely manner. The underlying aim is to continuously strengthen our operational and technical integrity standards. The audit findings are deliberated by our HSSE ELT and Audit Committee at the PETRONAS Board Level. In the period under review, a total of 10 Tier-3 assurance exercises were conducted.

In 2017, PETRONAS formalised an Integrated Assurance Project team to streamline and optimise assurance activities Groupwide. The IAP is tasked to maximise resources, simplify existing processes and standardise audit reviews across the Group to elevate existing levels of compliance with relevant internal and external requirements, including regulations.



PROMOTING INDUSTRY GROWTH

Sustainability to PETRONAS also encompasses contributing towards the development of the larger oil and gas sector. Our multipronged approach entails:

- Participating in memberships, associations, events or working groups in Malaysia and internationally.
- Collaborating in joint-initiatives aimed at addressing HSSE and sustainability risks as well as opportunities.
- Leading global events to promote knowledge growth for addressing current and emerging trends.
- Cascading insights amongst internal Community of Practice (CoP) on the various HSSE and sustainability disciplines.

Association and Membership	Event
<ul style="list-style-type: none"> • Certified Professional of Industrial Hygiene Board • International Association of Oil and Gas Production • International Council of Chemical Associations • International Gas Union • International Union of Toxicology • Malaysian Gas Association • Malaysian Industrial Hygiene Association • Malaysia Oil and Gas Services Council • Petroleum Industry of Malaysia Mutual Aid Group • Society of Petroleum Engineers • Oil Spill Response Limited • The Global Oil and Gas Association for Environmental and Social Issues (IPIECA) • The Institution of Chemical Engineers • The National Institute for Occupational Safety and Health 	<ul style="list-style-type: none"> • Environmental Quality Council – Department of Environment, Malaysia • Industrial Hygiene Technical Working Group, Department of Standards, Malaysia • Joint Food and Agriculture Organization/World Health Organization Meeting on Pesticide Residue Expert Panel • Asia Oil and Gas Conference 2017 • Society of Petroleum Engineers Asia Pacific Health, Safety, Security, Environment and Social Responsibility (HSSE-SR) Conference • 3rd Malaysian Congress of Toxicology 2017

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ENVIRONMENT

[26](#) [Climate Change](#)

[32](#) [Environmental Management](#)

PETRONAS recognises and respects our existence as part of a wider ecosystem by putting in place robust, reliable and responsible business practices as well as processes to protect the environment. Our holistic approach incorporates working continuously to elevate operational excellence in all that we do. Besides reducing emissions, water footprint and waste, the prudent use of natural resources also bears importance to us.



CLIMATE CHANGE

The Paris Agreement calls for an international commitment to minimise greenhouse gas (GHG) emissions to keep the average global temperature rise below two-degree Celsius by the end of the century. Transitioning the energy industry towards a low-carbon economy offers growth opportunities for the larger oil and gas sector. Operational excellence is central to PETRONAS' endeavours in accelerating value creation through our business activities, which would ultimately reduce our carbon footprint. Technological development and an expansion of the renewable energy portfolio are key in designing a commercially resilient business. Presently, a significant proportion of our carbon footprint resides in Malaysia.

We take a holistic approach in managing climate change across our business value chain as we move towards a low carbon economy.

PETRONAS is pursuing several initiatives in the area of monetising flared and vented hydrocarbon resources to prolong our gas reserves. We are also exploring commercially viable energy efficient technologies such as expanding our cogeneration capacity to minimise operational cost. Collectively, these initiatives are aimed at reducing our carbon footprint. The application of an internal carbon price paves the way towards better managing our business portfolio amidst a tightening legislative landscape driven by the Paris Agreement.

To date, we continue to amplify our gas portfolio by promoting natural gas as a low-carbon fuel. To this end, we also pursue gas advocacy alongside our various stakeholders for creating awareness on the environmental benefits of natural gas and its role in facilitating energy transition. This includes promoting the use of natural gas in the power and transportation sectors. Our position as a leading producer of Liquefied Natural Gas (LNG) and our success in building the world's first floating LNG facility is a testament to our continuous efforts in generating greater value from stranded gas fields which were otherwise uneconomical to develop or monetise.

In 2017, PETRONAS' Carbon Commitments were enhanced to include new elements such as Carbon Pricing and Offsets, Renewables as well as Carbon Capture, Utilisation and Storage (CCUS) and a carbon dioxide (CO₂) emission allowance to manage the development of high CO₂ fields. Overall, this drives our ongoing efforts in upholding our position on climate change.



What Governs Us:

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

PETRONAS Climate Change Position

We duly recognise our corporate responsibility 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 work closely with our various stakeholders globally through discussions and participation in initiatives on climate change. This includes our membership on the IPECA Climate Change Working Group and International Gas Union. Closer to home, we engage various Malaysian regulatory bodies to shape the country's move towards realising its pledge under the Paris Agreement. Notable achievements in 2017 included our leading role in collaboratively defining the desired long-term end-state of Malaysia's Oil and Gas, Energy and Environment (OGEE) sector and our strong support for the Malaysian Pavilion at Conference of the Parties' session 23.

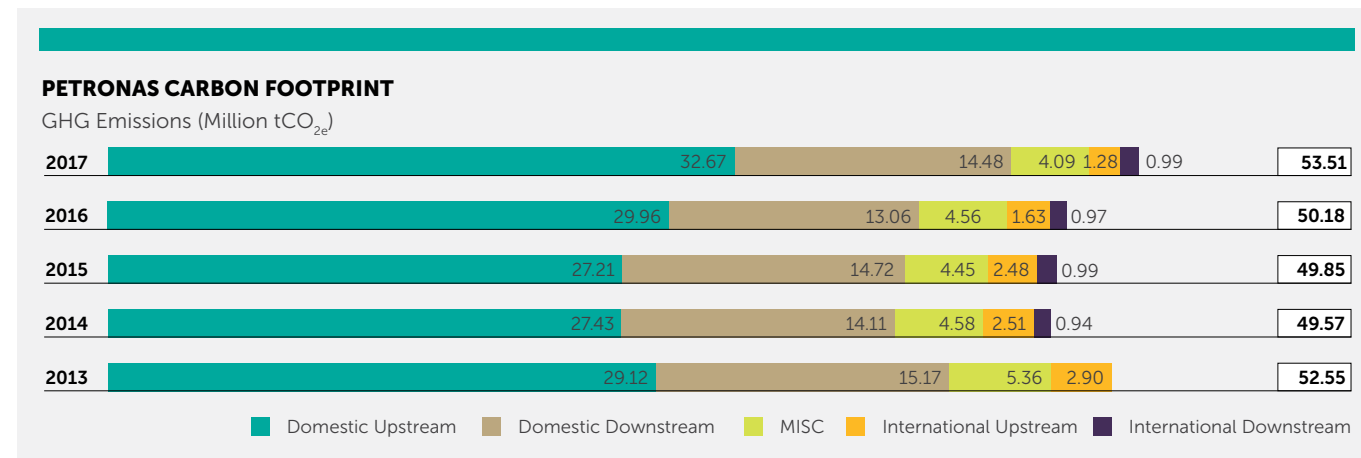
CLIMATE ACTIONS

We work towards solidifying our resilience in managing climate change, whilst keeping abreast of the changing external landscape. To date, we have embarked on several initiatives, from climate mitigation to adaptation and GHG emission reduction. These initiatives are aimed at strengthening our competitive edge to deliver greater operational excellence, namely:

Promote natural gas as a low-carbon fuel	<ul style="list-style-type: none"> • Leveraging our strong foothold in the global LNG business to propel natural gas as a preferred energy source of the future.
Reduce methane emissions	<ul style="list-style-type: none"> • Achieving zero continuous venting at assets, where economically feasible. • Undertaking a vent-to-flare conversion project at an oil field in Sarawak, Malaysia and achieved a reduction of approximately 500,000 tCO_{2e}. • Improving compressor reliability reduced vented gas to the atmosphere at an oil field in Sarawak, Malaysia and decreased approximately 660,000 tCO_{2e}. • Pursuing enhanced leak detection and repair programmes in our businesses, concurrently achieving a reduction in fugitive methane emissions.
Improve energy efficiency	<ul style="list-style-type: none"> • Deploying the PETRONAS ELMS to improve energy utilisation and subsequently reducing GHG emissions in the Downstream business. • Producing steam and electricity through cogeneration plants in Malaysia, with a total installed capacity of approximately 2,973 MW. A highlight in 2017 was the newly commissioned cogeneration plant at Pengerang Integrated Complex (PIC) in Johor. • Supplying chilled water to several buildings in Malaysia from our Gas District Cooling (GDC) with a total licensed capacity of 117 MW. This includes landmark buildings located in Kuala Lumpur and Putrajaya. The GDC minimises the use of electricity for air-conditioning purpose, thus resulting in lower GHG emissions.
Minimise flaring where feasible	<ul style="list-style-type: none"> • Designing all new facilities to achieve zero continuous flaring. • Undertaking a new flaring reduction initiative at an oil field in Sarawak, Malaysia for the recovery of condensate by removing heavy hydrocarbons from the flare system, thus reducing annual GHG emissions by approximately 30,000 tCO_{2e}.
Deliver fuel efficiency in products	<ul style="list-style-type: none"> • Making available fuel saving products which improve efficiency such as the PETRONAS Dynamic Diesel Euro 5, PETRONAS Syntium with °CoolTech™ and PETRONAS Primax 97. • Formulating fuel which enhances engine performance with a lower emission rate. In 2017, PETRONAS launched the Dynamic Diesel Euro 5 with Pro-Drive, a new generation of sulphur-free diesel fuel which delivers superior fuel economy.

Low-carbon solutions	<ul style="list-style-type: none"> Investing in research and development for lasting growth such as in the area of CCUS to spur and manage the development of high CO₂ fields.
Renewable energy	<ul style="list-style-type: none"> Mobilising solar photovoltaic (PV) technology in Malaysia and internationally, with our largest undertaking to date, namely the 10 MW solar PV Independent Power Producer (IPP) project in Gebeng, Pahang. Exploring the possibility of installing solar PVs across our retail station network in Malaysia to reduce our Scope Two emissions.
Carbon pricing	<ul style="list-style-type: none"> Applying an internal carbon price ranging between USD20 to 40 / tCO_{2e} in project economics to assess investment feasibility and deliver optimum design for operations as well as projects. The carbon price differs based on the country of operations, given the disparity in financial risk associated with carbon tax and pricing mechanisms in developed, compared to developing nations.
Climate change adaptation	<ul style="list-style-type: none"> Conducting a pilot vulnerability assessment of our adaptive capacity based on climate data gathered to formulate strategies for sustaining business resilience.
Innovative solutions	<ul style="list-style-type: none"> Making available electric vehicle (EV) charging facilities at selected retail stations, contributing towards the realisation of Malaysia's National Electric Mobility Blueprint. In 2017, an additional 52 retail stations in Malaysia were equipped with EV charging stations, bringing the total number to 55.
Forest conservation	<ul style="list-style-type: none"> Continuing our partnership for the Imbak Canyon Conservation Area (ICCA), a Class-1 forest reserve in Sabah, Malaysia, contributing RM83 million to date. The ICCA covering 30,000 hectares has the capacity to sequester approximately 110,000 tonnes of CO₂ annually. The surrounding buffer zones could contribute to an additional five million tonnes of CO₂ sequestration, facilitated by robust forest management practices.

GREENHOUSE GAS PERFORMANCE



Note: GHG data for the years prior to 2016 was revised following ongoing efforts aimed at streamlining our accounting practices.

Our total GHG emissions for the Group in 2017 stood at approximately 54 million metric tonnes of carbon dioxide equivalent (million tCO_{2e}), an approximate seven per cent increase from 2016. The rise was largely attributed to an increase in operational activities. Overall, Scope One emissions contributed more than 99 per cent of our total GHG emissions and the remaining from Scope Two.

- The Domestic Upstream business' GHG emissions rose by approximately nine per cent compared to 2016 given increased production from our Malaysian LNG assets, the commissioning of PETRONAS Floating LNG Satu (PFLNG SATU) as well as process upsets. International assets encompassing Carigali-operated blocks recorded an approximately 21 per cent reduction primarily due to the

cessation of operations in Mauritania and Vietnam as well as flaring reduction in Indonesia.

- Downstream operations reported an approximately 10 per cent increase compared to 2016, mainly due to greater petrochemical production in Malaysia, as well as the commissioning of PC Fertiliser Sabah in early 2017.
- MISC Berhad, our subsidiary for international shipping, exhibited an approximately 10 per cent reduction compared to 2016, resulted from ongoing initiatives such as the installation of energy saving devices including propeller boss cap fins, application of advanced low friction anti-fouling paints and supported by International Organization for Standardization (ISO) 50001 certification of marine vessels.

Our carbon footprint is reported on an operational control basis, including international assets:

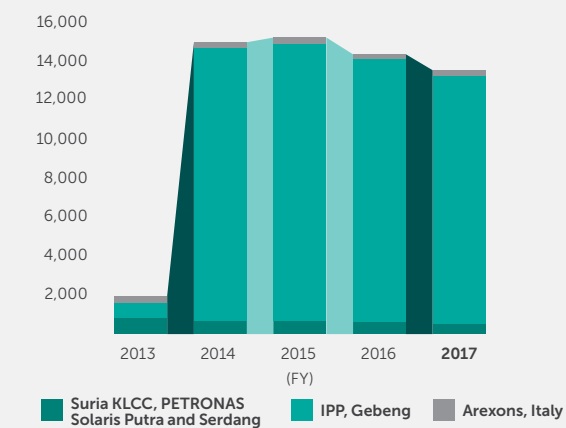
- Upstream business - Indonesia, Myanmar and Turkmenistan.
- Downstream business - Argentina, Belgium, Brazil, China, Italy, South Africa and Spain.

No new international operations were commissioned in 2017.

RENEWABLE ENERGY

In 2017, we continued to produce solar energy from our existing solar PV investment projects in Malaysia and internationally, totalling to approximately 13,628 MWh, thereby resulting in GHG emission reduction of some 9,261 tCO_{2e}. A proportion of the solar energy generated in Malaysia was sold as low-carbon electricity to the national grid.

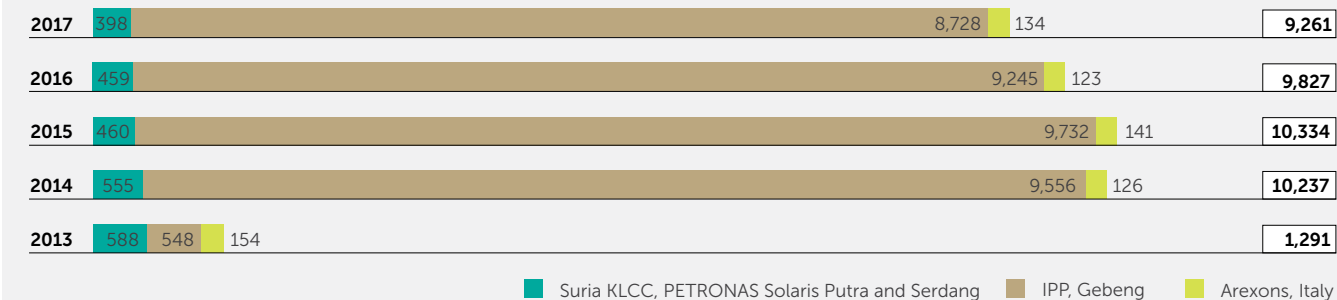
PETRONAS Solar Energy Generated Electricity (MWh)



Note: The Solar IPP project was in operations for a two-month period in 2013.

PETRONAS SOLAR ENERGY

Total GHG Reductions (Tonne CO_{2e})

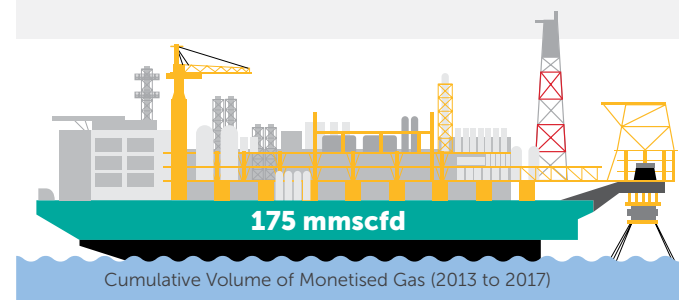
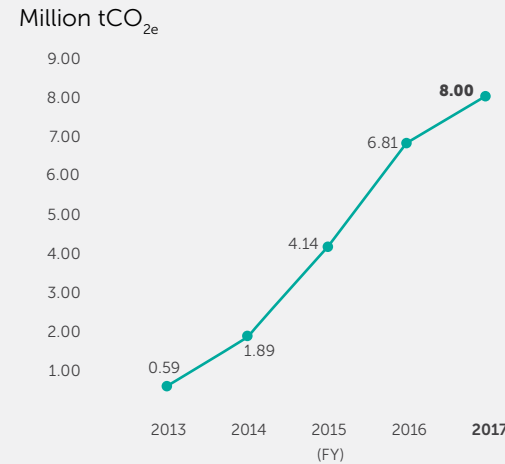


CLIMATE CHANGE MANAGEMENT

We developed the PETRONAS Carbon Commitments in 2012 which effectively managed our GHG emissions between 2013 and 2017. To this end, we undertook several projects such as flare reduction, vent-to-flare conversion, vent reduction and in enhancing energy efficiency across our operational facilities. The Carbon Commitments successfully exceeded the intended target and resulted in a reduction of approximately eight million tCO_{2e} in GHG emissions and recorded gas monetisation of 175 MMscfd.

PETRONAS enhanced the existing Carbon Commitments in 2017 to capitalise on new growth dimensions for steering towards a low-carbon economy. The enhanced PETRONAS Carbon Commitments will drive our actions and actively contribute towards the realisation of host countries' Nationally Determined Contribution (NDC) ambitions to the Paris Agreement. PETRONAS aspires to further reduce our GHG emissions.

PETRONAS' Cumulative GHG Emission Reductions (2013 to 2017)



PETRONAS Carbon Commitments (2017)

PLANNING AND PROJECTS

- Zero continuous flaring and venting of hydrocarbon shall be incorporated in the design philosophy of new Upstream and Downstream facilities and projects.
- Malaysia Petroleum Management (MPM) shall apply a country level CO₂ emission allowance in the planning process for High CO₂ field development.
- High CO₂ field development in Upstream shall incorporate 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.

PETRONAS' Commitment Towards Malaysia's Future Energy Landscape

The world is evolving, responding to a number of trends and shifts such as urbanisation, increased technological advancements, diminishing natural resources and changing consumer requirements which will drive a change in the energy landscape. PETRONAS is assisting the Government to develop a report on Malaysia's Future Energy Landscape in defining the desired long-term end-state of the Oil & Gas, Energy and Environment sector post-2020, and the corresponding key interventions and policies to facilitate its realisation. A multi-agency team comprising various regulatory authorities, ministries and the public and private sectors has collaborated to develop the report which will be submitted to the Malaysian government by June 2018. The long-term plan will provide a good basis for PETRONAS in devising strategies to plan the country's oil and gas development in a sustainable manner.

High Carbon Dioxide Management

PETRONAS embarked on the Research and Development (R&D) of CCUS-related technologies to spur monetisation of high CO₂ gas fields from several perspectives, namely, commercial, technical as well as environmental. This encompassed exploring options to convert contaminants into valuable products. To date, Malaysia has proven gas reserves of 40 trillion cubic feet, translating into an untapped revenue of USD1.5 trillion in cleaner energy resources.

We have been awarded several Malaysian and international accolades for our efforts in spurring the development of fields with high CO₂ content such as the following:

- Membrane Contactor for Acid Gas Removal Award - iChemE Malaysia.
- Membrane Contactor for Acid Gas Removal Award - iChemE Global.
- Supercopp V2 , first high CO₂ corrosion prediction software globally, for the Projects, Facilities and Construction category - SPE Regional Awards

Cogeneration Plant

Pengerang Integrated Complex (PIC) marked a milestone achievement following the commercialisation of Pengerang Cogeneration Plant (PCP), late 2017. In the year under review, PCP supplied some 400 MW of electricity to the national grid in Peninsular Malaysia under a Power Purchase Agreement (PPA), and moving to about 600 MW of electricity from 2019 onwards. PCP will also supply power and steam to PIC.

PCP is one of the largest cogeneration plants across South East Asia and amongst the most efficient power plants in Malaysia. PCP will contribute towards reducing GHG emissions in our operations, concurrently providing a cleaner energy resource for domestic use in Malaysia.



ENVIRONMENTAL MANAGEMENT

We closely interact with our surroundings as our operations form an integral component of the wider environment. The extent differs across our integrated business value chain, given the varying business activities happening offshore and onshore. We are also subjected to diverse regulations and requirements on environmental management following our international presence.

We adopt effective measures to protect the environment through compliance with our internal governance mechanisms. This includes clear stipulations on aspects such as air emissions, wastewater, hazardous waste, soil and groundwater as well as natural resource use. Our environmental management practices cut across a project's lifecycle – from planning, development and operations to decommissioning and site closure. Guided by robust risk management practices, targeted interventions and controls are put in place as required, and where necessary, project designs are altered.

Water Use

Water facilitates numerous daily activities being a key commodity for socio-economic development and a host of industries, including the energy sector. Its availability is underlined by the growing scarcity of this natural resource, resulting from, amongst others, rapidly changing weather patterns. The prudent use of this commodity and maintaining its quality level are thus vital, as water availability varies in countries where we operate. Water is essential to our operations, especially in the Downstream segment. We focus on optimising the use of water in operations including in the area of wastewater management. Our multipronged approach entails robust water management system and procedures, institutionalising efficient processes and pursuing continual improvement of our freshwater as well as effluent management practices.

What Governs

Us:

- PETRONAS HSE Policy
- PETRONAS MCF – Air Emission, Environmentally Hazardous Substances, Waste Management, Soil and Groundwater, Project Environmental Impact Assessment, and Wastewater Management
- PETRONAS Technical Standards and Guidelines corresponding to the PETRONAS MCF.
- PPMS
- PPGUA



ENVIRONMENTAL PERFORMANCE

Freshwater Withdrawal

Total freshwater withdrawn from our Malaysian and international operations stood at 55.91 Mm³ in 2017, comparable with 2016. A significant portion was attributable to our Downstream business at 50.92 Mm³ namely, covering gas processing, petrochemical as well as refining plants. The Upstream business and non-process facilities collectively consumed 4.99 Mm³ of freshwater.

Wastewater Discharge

Wastewater from our operations are treated prior to being released to the environment. The Oil in Water content was recorded at 591 MT in 2017, compared to 534 MT in 2016. This increase was due to higher production levels and ongoing efforts to enhance our data accounting practices.

PETRONAS Water Practices (WAPS)

The PETRONAS WAPS is a set of guidelines for onshore water system installation to optimise the performance and the reliability of water and wastewater systems. It entails diligent performance monitoring at all levels against targets, supported by timely management review. WAPS then subsequently enables reduction in freshwater withdrawal, chemical consumption, energy, emission and wastewater discharge.

In 2017, WAPS was adopted by our subsidiary, Malaysian Refining Company Sdn Bhd. It has enabled faster decision-making, predicted systemic upsets for immediate rectification whilst promoting resource optimisation. Its implementation in cooling water and boiler systems enabled savings of approximately RM200,000 annually in chemical consumption.

Spills to the Environment

We adopt a planned maintenance method to prevent spills at source. This upholds asset integrity via regular monitoring to proactively prevent, manage and reduce spills. We recorded a total of 18 spills in 2017, with the total estimated volume of hydrocarbon spills at 172.6 m³, down from the 174 m³ in 2016.

In 2017, we enhanced our oil spill response capability. We conducted 10 oil spill response assessments and exercises at identified operational facilities in collaboration with stakeholders such as local authorities and communities, including neighbouring industries.

Air Emissions

We evaluate risks arising from air emissions to mitigate potential consequences through the availability of relevant controls. In the period under review, we worked alongside several stakeholders in Malaysia to design a consolidated air emission management approach.

Sulphur oxides (SO_x) and nitrogen oxides (NO_x) emissions from our global operations stood at 87,917 metric tonnes and 159,498 metric tonnes in 2017, respectively. The increase of 22 per cent in SO_x from 2016 was resulted by the commissioning of new operations in Malaysia. The NO_x emissions decreased by six per cent from 2016.

Hazardous Waste

We aim to minimise the amount of waste generated from our operations, wherever practicable. In 2017, total hazardous waste disposed was 19,755 MT, a reduction of 40 per cent from 2016. Total waste recycled/recovered was 57,222 MT, constituting 74 per cent of total waste generated. Overall, the improvement was a resultant of operational improvements, given no major turnaround activities.

Hazardous Waste Management in Iraq

We ensure our operational facilities adhere to the industry's good practices and regulatory requirements wherever we operate. Our subsidiary, PETRONAS Carigali Iraq Holding BV inked an agreement with Iraq's Ministry of Science and Technology (MoST) to formalise a feasible solution in managing hazardous waste. Following which, waste generated from Garraf Contract Area has been progressively disposed in a safe manner.

The joint effort alongside the Iraqi Government will contribute significantly towards establishing a more reliable, safe and systematic hazardous waste management system, upon completion. The initiative which is aligned with our five-year Garraf Environmental blueprint in respect of Iraq's national aspirations will minimise the use of natural resources, amongst others.

The development and operationalisation phases of the current and proposed infrastructure will also promote long-term socio-economic advancement. This includes spurring job creation, nurturing local expertise in the discipline of hazardous waste management and providing an additional stream of income for greater national growth.

In the period under review, PETRONAS was commended by the host government authority for being the sole international energy multinational to embark on a hazardous waste management contract with Iraq's MoST.



Environmental Consciousness

Guided by the theme *Value Our Natural Resources, Less is More*, we continued to enhance our efforts to inculcate a stronger environmentally conscious culture, in addition to mandating the need for prudent natural resource management. In 2017, environmental experts from PETRONAS collaboratively promoted innovation the following four areas of operations:



WASTE REDUCTION



ENERGY CONSERVATION



WATER CONSERVATION



VIRTUAL COMMUNICATION

environment campaign SEASON 2

56

Entries Groupwide

Estimated Cost Savings of **RM103** million

Note: This is a cumulative figure over a two-year period, from 2016 to 2017

Flushed Water Recycling

Flushed water from acid gas removal units (AGRU) produced during maintenance works is classified as hazardous waste, thus requiring proper disposal procedures. To improve operational excellence, our subsidiary, Malaysia LNG (MLNG), explored the feasibility of recovering solvents from flushed water for reuse as make-up water in the AGRU. The initiative which entailed enhancements of operating conditions resulted in cost savings of RM7 million, thereby significantly reducing hazardous waste generation and chemical consumption, including minimising the use of feed water by approximately 80 per cent.

Eye in the Sky (EITS)

EITS, an unmanned aerial vehicle or drone, captures aerial videos and photographs to facilitate environmental surveillance of PIC, which occupies 6,239 acres of land in Johor, Malaysia. EITS is deployed for the monitoring of erosion and sedimentation control, dust plume, as well as waste management, namely, illegal dumping activities and open burning.

The real-time information aids in timely decision-making and allows for early detection of pollutant trajectory. We aim to expand the use of EITS given its wide reach and accessibility to logistically remote areas. This encompasses areas such as environmental audit and monitoring, post incident investigation, air quality inspection including black smoke as well as weather review and scanning.

Mercury Management

PETRONAS Hycapure™ Hg, the first of its kind in-house mercury removal adsorbent, was formulated using the cutting-edge Ionic Liquid Technology to treat natural gas streams under different process conditions. Post rigorous laboratory and on-site testing, Hycapure™ Hg, demonstrated consistent results in achieving outlet specification and on-stream reliability beyond the typical commercial life span, indirectly reducing health and safety risks via effective contaminant removal.

The Hycapure™ Hg is presently deployed at several Malaysian operating facilities to improve operational excellence, namely, PETRONAS' Gas Processing Plants, PETRONAS Chemical Ammonia Sdn Bhd, PETRONAS Chemical Ethylene Sdn Bhd and MLNG, recording a total adsorbent loading of 145 metric tons to 13 vessels.

Plans are in the pipeline to develop different variants of Hycapure™ Hg for treating other streams.



Biodiversity and Ecosystem Services

We continued to undertake initiatives aimed at elevating awareness on biodiversity management through several conservation projects. Biodiversity and Ecosystem Services Risk Assessment (BESRA) is conducted as required to obtain comprehensive situational analysis as well as baseline data from areas surrounding our operations.

Eco-Marine Conservation Project

PETRONAS collaboratively embarked on a five-year project to protect and help regenerate coral reefs around the Sibuti Reef Complex at Miri-Sibuti Coral Reefs National Park. Under the conservation project which kicked off in 2015, a total of 550 Reef Balls™ were deployed at three selected sites in Sibuti-Bungai waters as of 2017.

In addition, under the Conservation, Education, Promotion and Awareness (CEPA) programme, Honorary Wildlife Rangers for Miri-Sibuti Coral Reefs National Park were appointed in 2017. The aim being to encourage the local community's involvement in the managing this national park.

The project's second phase will tentatively take place in 2018, with a once-off deployment of 1,200 reef ball units. This will help spur further regeneration of coral reefs and deter illegal fishing activities whilst creating alternative fishing grounds for local fishermen. Upon completion, the project is expected to help diversify the sources of income for local fishermen and support several planned initiatives under the CEPA programme to boost eco-tourism in Sarawak. In turn, this would promote additional economic spin-off activities for local communities in Miri and Sibuti.

This project complements PETRONAS' other ongoing conservation activities in Sarawak such as the PETRONAS Biodiversity, Environmental and Conservation (BEACON) project at Similajau National Park (SNP) in Bintulu and the Piasau Nature Reserve conservation initiative in Miri.

Note: Additional insights on BEACON Project are on page 60 of this Report.

Rig to Reef

Decommissioning an Upstream business asset is undertaken in the safest and most cost effective manner when hydrocarbon production ceases. Our approach varies based on several factors consistent with PETRONAS' requirements, taking into view international conventions, national laws and contractual obligations.

The Decommissioning Options Assessment (DOA) evaluates feasible options in reusing the facility's durable and stable material to support growth of marine life and provide protection from illegal trawling activities. This entails detailed social and economic analysis on refurbishing retired oil and gas structures into artificial reefs, amongst others.

PETRONAS' conversion of Baram-8 jacket into Kenyalang Reef, offshore Sarawak in Malaysia, has shown encouraging results. Based on the findings gathered, the rig-to-reef project executed in 2004 was a sustainable approach for managing end-of-life platforms in Malaysia. Kenyalang Reef, a popular diving spot, is presently a thriving breeding ground for commercial fish species and has also witnessed tremendous marine life growth.

In 2017, PETRONAS and the Malaysian Department of Fisheries (DOF) inked a Memorandum of Understanding (MoU) to pave the way for deploying more decommissioned structures into artificial reefs, following the success of the Baram-8 project. This includes selected structures offshore Terengganu and Sarawak, post the DOA.

Moving forward, similar rig-to-reef projects will be pursued subject to structural and site suitability.



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SOCIAL

40	Safety
44	Health, Wellness and Exposure Management
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51	Security
53	Human Rights
55	Human Capital
57	Social Responsibility

The energy sector is technically and operationally sophisticated, requiring an unprecedented commitment to operational integrity. Safe, responsible and reliable practices aligned with acceptable business norms and the industry's benchmarks are core to how we discharge our obligations. In doing so, PETRONAS equips individuals with the necessary capabilities to realise their truest potential in nurturing lasting socio-economic growth.



SAFETY

Safety is always a priority, regardless of business cycles and externalities. The nature of safety is changing in an ever-evolving energy industry, for us particularly as we move from Brown to Greenfield developments. Furthermore, our operational processes across the integrated business value chain vary significantly, with some being more intensive than others. This, coupled with the different safety cultures and standards in multiple jurisdictions intensify the race to strengthen a fit-for-all purpose safety mindset.

The unparalleled focus on safety is dominant at both operational and non-operational facilities. *Everyone goes home safely* echoes our commitment to uphold reliable and efficient operations in delivering an uninterrupted supply of energy. Going beyond our people and assets, the wellbeing of the wider environment as well as communities living in the vicinity of our operational facilities bears equal significance. Our stringent HSSE standards are driven by multidisciplinary teams across PETRONAS, concurrently emphasising on an equal single-minded focus from third-party service providers through contractual agreements, amongst others.

The availability of robust governance mechanisms streamline our HSSE practices Groupwide, stipulating clear requirements and expectations of every person to collectively uphold safety. We employ periodically enhanced HSSE risk management practices to test the adequacy, durability and effectiveness of control measures. The intent is to minimise, if not eliminate risks of potential accidents and incidents.

Our holistic approach to addressing safety encompasses:

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

The PETRONAS Zero Tolerance (ZeTo) Rules, applicable to everyone serving at any of our assets, fortifies safety behaviour and accountability Groupwide. This in turn tightens consequence management practices.

PETRONAS continuously elevates our HSSE excellence in line with the expectations of our various stakeholders. The regular management walkabouts, engagement sessions, as well as learning from incidents occurring within and externally of our industry collectively allow for enhanced appreciation of our safety prerequisites. To date, heightened on-the-ground presence of top management is instrumental in spurring a stronger safety culture amongst internal and external constituents. Furthermore, timely discussions on matters of mutual interest led to improved HSSE compliance level. In 2017, more than 150 site engagements were conducted.

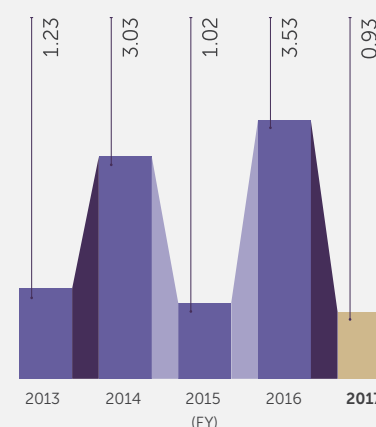
We work towards honing the knowledge, skills, capabilities and experience of personnel in the HSSE discipline through targeted capacity development programmes as well as assessments. These include trainings, on-the-job exposure at our various operational facilities and the establishment of Community of Practice (CoP) on various HSSE disciplines. Where appropriate, we leverage on our various educational institutions to equip our employees, including third-party service providers, with targeted technical acumen. Our subject matter experts also support in designing specific HSSE-related modules for the Universiti Teknologi PETRONAS.

What Governs Us:

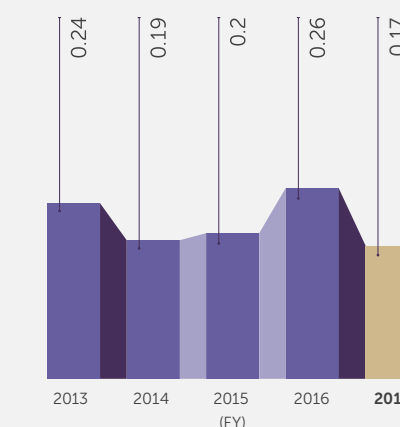
- PETRONAS HSE Policy
- HSE Management Standard, Mandatory Control Framework, including Technical Standards and Guidelines

HSSE PERFORMANCE IN 2017

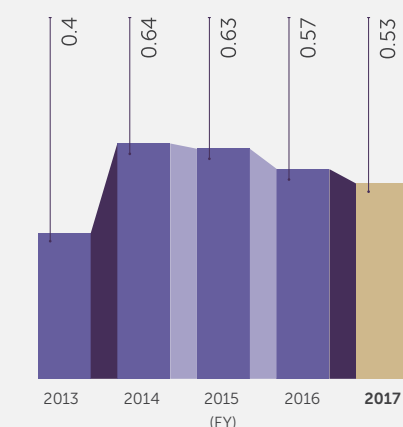
Fatal Accident Rate (FAR)
Reportable fatalities per 100 million manhours



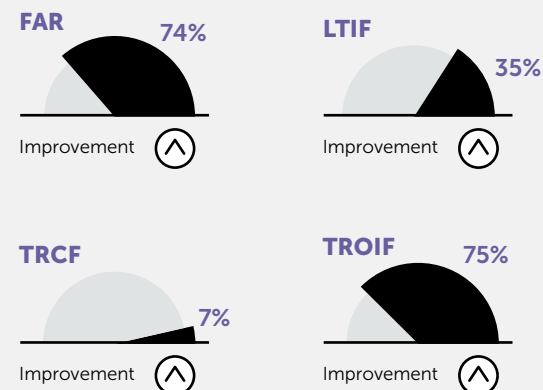
Lost Time Injury Frequency (LTIF)
Number of cases per million manhours



Total Reportable Case Frequency (TRCF)
Number of cases per million manhours



Achieving sustainable HSSE performance defines our focus on upholding safety excellence. In the period under review, we recorded the following performance levels in comparison to 2016:



Tier 1 Process Safety Events: status-quo

Note: TROIF stands for Total Recordable Occupational Illness Frequency. For more details, please refer to page 81 of this Report.

SAFETY INTERVENTIONS

Tailored programmes were executed to further improve our safety performance in Malaysia and internationally. The programmes were designed to address specific risks and ensure the availability of effective controls for preventing future occurrences. Some of the key initiatives carried out in 2017 centred on:

Land Transportation: In the period under review, land transportation significantly contributed to the loss of primary containments (LOPC). Our fleets, comprising both Company and contractor-owned vehicles, traverse about 70 million kilometres annually, carrying fuel sources across 20 countries in the vast African region. Several efforts were undertaken to strengthen our existing road safety controls, targeting staff and third-party service providers with higher risk exposure. The focus is to review, renew and reinstate stringent road safety compliance practices through behaviour observation system, defensive driving training, in-vehicle monitoring system and journey management plan. The efforts aimed for completion in 2018 are expected to bring together our land transportation experts from multidisciplinary teams across PETRONAS for ensuring effective and efficient roll-out of the devised controls.

Fire Prevention: We rolled out a Fire Prevention and Mitigation Framework in 2017, supporting our Technical Standards on the Management of Fire Protective Systems. The framework was developed based on findings gathered from several Fire Safety Assessments conducted at selected operating facilities globally. It intends to standardise the technique for reviewing the adequacy of our fire protective systems.

Working at Height: Fall prevention is a priority area especially at our construction sites. We pursued a range of targeted interventions to ensure work activities were effectively planned and carried out under tighter site supervision. Promotional campaigns, periodic engagements with personnel at construction sites and the tightening of our internal controls as well as standards on working at height were additional initiatives pursued in the year. Investments were also made to equip our personnel with the desired competencies to proactively address risks of working at height.

Safety Culture: The Rakan HSE, our frontline supervisor programme, is a targeted initiative to improve the communication and supervisory skills of identified personnel Groupwide. The overarching aim is to integrate HSE consciousness in all aspects of decision-making to fortify a culture of compliance.

PROCESS SAFETY

The design, technical and operational integrity of assets is amongst our key priorities, whereby we adopt internationally accepted codes and standards on process safety. In 2017, we recorded an improvement in our process safety related incidents, attributable to the stronger safety leadership and programmes aimed at upholding asset integrity. This included the implementation of the Process Safety LOPC Reduction Framework which emphasises on *design, operate and maintain it right*. The stronger focus was on enhancing operating procedures in the identified areas of loading and unloading activities related to our Downstream business. In addition, works are ongoing to enhance the inspection, testing and preventive maintenance for underground facilities.

Works are also ongoing to improve our current barrier management practices. This entails assessing the physical conditions of our assets and processes to ascertain the need for plant rejuvenation, amongst others.

Intensive monitoring activities of the expanded process safety leading indicators was continued in the period under review, resulting in improved HSSE risk management practices. This included strengthening governance mechanism based on findings from the review of MCF, Safety Critical Element (SCE) analysis and Engineering Management of Change (EMOC), aligned with the prevention of Critical Operating Parameters Never Exceed Limit (COPNEL) excursions.

Several Safety Leadership Workshops were held for identified participants from the Group to instil stronger operational discipline. This resulted in enhanced early identification of SCEs for better management foresight. At the same time, it equipped leaders with the tacit knowledge on advanced engineering solutions and fortified safety leadership characteristics.



EMERGENCY PREPAREDNESS AND CRISIS MANAGEMENT

PETRONAS aims for optimum readiness to effectively and efficiently address potential impacts arising from incidents or accidents, immaterial of size. This is to contain the extent of exposure as quickly as possible, with the primary intent of saving lives and protecting the environment.

Efforts in 2017 centred on uplifting the reliability of our resources and the capabilities of our response teams in countries of operations. We institutionalised the PETRONAS Global Crisis Response Team (PGCRT) consisting subject matter experts from multidisciplinary teams across the Group.

Our readiness strategies were tested by undertaking several emergency drills and exercises emulating scenarios critical to business growth across global operational sites. This entailed working alongside stakeholders such as local government agencies, host country authorities, business partners, third-party service providers and local community members. As a result, we further aligned our emergency evacuation plans and processes. Additionally, we achieved a swifter turnaround time, with improved clarity on the parties' respective roles and responsibilities.

In 2017, four of the Tier-3 Emergency Exercises executed included the Ex-Siaga 4 drill, a large-scale evacuation and business continuity exercise carried out at the PETRONAS Headquarters in Kuala Lumpur, Malaysia. Ex-Siaga 4 was conducted in a timely manner prior to the 2017 Southeast Asia (SEA) Games, which were held across various locations, including Kuala Lumpur. Overall, the exercise was a cornerstone for sourcing extensive behavioural data insights to analyse the robustness of our existing evacuation strategies.

Concurrently, this tested the effectiveness of our alternative working sites and strength of our response capabilities for the timely resumption of critical business functions. Identified control measures are currently being put in place, as required.

We also strengthened our existing risk reduction strategies by enhancing the PETRONAS Contingency Planning Standard (PCPS), supported by the continuous review of Country Contingency Plans covering identified operational facilities in Asia, the Middle East, South America and Southern Africa. Targeted preparedness programmes and trainings, as well as the establishment of operational tools are ongoing.

In the area of digitalisation, a Crisis Management Information System was designed and institutionalised following a rigorous internal benchmarking exercise. The single-source mechanism inputs conventional emergency and crisis management risks arising across our various operational sites internationally. The integrated approach also facilitates real-time communication, allowing the implementation of proactive measures.

Other highlights in the year were timely engagements with our various stakeholders, infrastructure inspection, equipment cataloguing and capability assessment exercises.



HEALTH, WELLNESS AND EXPOSURE MANAGEMENT

We undertake business activities across multiple geographical locations, the unique characteristics of which result in varying degrees of health and exposure risks. A healthy workforce is imperative, whether in offshore environments or at our onshore facilities, including project sites. Sustaining the optimal health level of our employees is a principal requisite for facilitating the timely delivery of business growth priorities. This entails proactive anticipation, recognition, evaluation, prevention and control of health risks arising from our business activities.

We work towards preventing work-related diseases and controlling exposure to various substances for sustaining the wellbeing of our employees, including third-party service providers. This is carried out by adhering to our robust health standards and guidelines which are aligned with the industry's good practices. It also entails timely health risk identification and profiling to ascertain the availability as well as effectiveness of control measures. Initiatives such as health surveillance, assessment of fitness for work, fatigue management and communicable diseases are carried out as part of our larger health strategies. The implementation and monitoring of health measures are led by various Businesses, including projects, subsequently providing timely updates to the Group.

Overall, our health plans are designed in view of evolving internal and external trends, as well as our business aspirations. In 2017, we continued to execute the PETRONAS Occupational Health strategy, which was into its third year of implementation. The specific focus was on non-communicable disease and fatigue management. For industrial hygiene, the preliminary focus was on chemical management, noise control and ergonomics. Multidisciplinary teams from PETRONAS collaborated to ensure the availability and streamlined implementation of relevant controls Groupwide.

What Governs Us:

- PETRONAS HSE Policy
- HSE MS, MCF, Technical Standards and Guidelines on both Occupational Health as well as Industrial Hygiene.

Ongoing efforts included:

- Medical emergencies: improving our existing response capabilities.
- Healthy lifestyle: spurring promotional activities to elevate an active health culture.
- Digitised medical record system: expediting processing time, streamlined practices and more robust analysis of occupational health data.
- Digitised industrial hygiene risk assessment: developing comprehensive findings report in a shorter span of time.
- Health advisories: disseminating information on health epidemics and supporting business travellers via platforms such as the Global Travel Health, Safety and Security portal, a 24-hour integrated offering.

HEALTHY LIFESTYLE

The PETRONAS Health and Wellness programme, MESTIfit4health, was endorsed in the period under review to effectively manage risk factors that contribute towards non-communicable diseases. The programme encompasses five elements, namely, Move Right, Eat Right, Sleep Right, Think Right and Individual Right. This signature initiative, developed based on the principle of designing a healthy lifestyle, was implemented across our various operations which streamlined existing health-related actions and tools. A comprehensive implementation plan was centrally developed by the Group and cascaded to our various Businesses, including Operating Units. The long-term programme will be continuously enhanced to sustain the optimum health level of our employees. Primarily, by proactively addressing health risks such as physical inactivity, unhealthy diet and addictive habits such as smoking. This also includes associated lifestyle related diseases namely, cardiovascular diseases, diabetes, hypertension and high cholesterol. Similarly, a series of awareness programmes using various available platforms will be continued, centred around topics such as health and wellness, mental health as well as lifestyle management.

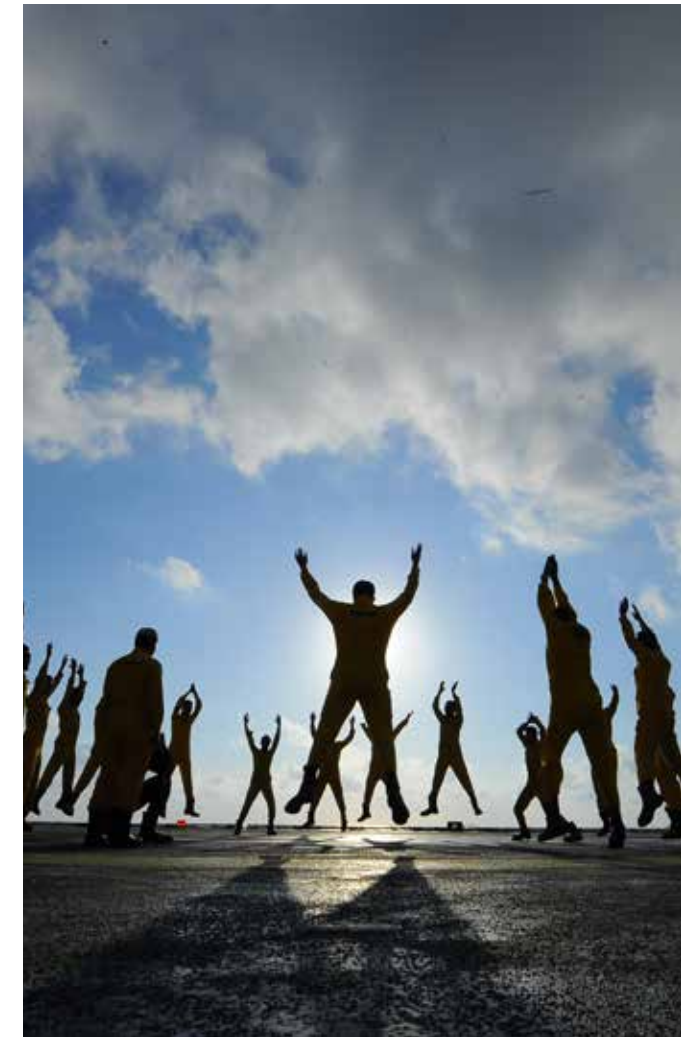
Relative to the roll-out of MESTIfit4health, the preventive health screening eligibility was expanded in 2017 to include all employees above the age of 30. The scope of the preventive health screening investigations was aligned further with recommended clinical practice guidelines. This allowed for early identification of potential health conditions amongst our employees, thus enabling effective health interventions on the back of improved awareness levels.



- MOVE RIGHT!** Getting off the chair is the first step in overcoming lifestyle-related illnesses. People need to get up more. Move around more. Even within the workplace. How about make the next meeting a standing meeting?
- EAT RIGHT!** We are what we eat. So let's be wise with what we eat. Let's choose to eat healthy and balanced meals.
- SLEEP RIGHT!** A well-rested mind is a safe and productive mind. We are human, not machines. We need good sleeping habits and good rest to address fatigue-related issues at the workplace.
- THINK RIGHT!** Mental resilience is the key to managing stress at the workplace. Stress isn't all bad. It just needs to be managed well.
- INDIVIDUAL RIGHT!** Despite the four elements above, healthy living ultimately is a personal choice. Let's all make responsible choices in managing our individual health risks and those that may affect people around us.

Employee Assistance Programme (EAP) - Friends

In 2017, we introduced a Groupwide EAP-Friends, as part of the larger MESTIfit4health programme, namely, element T which stands for Think Right. The EAP offers our employees with professional and confidential support on stress management, with the broader aim of uplifting employees' wellbeing. This initiative which enhances emotional intelligence proactively upholds mental wellness, whilst providing employees with a caring workplace. The service accessible to all PETRONAS employees is an avenue to seek advice on professional as well as personal matters, consequently, spurring greater workplace productivity.



FATIGUE MANAGEMENT (FM)

In 2017, efforts were undertaken to fortify available controls for more effective fatigue management across our business value chain. This encompassed developing additional controls to ensure a stronger compliance with PETRONAS Technical Guidelines on Fatigue Management at the Work Place, also applicable to our contractors. Additionally, modules on FM were enhanced further, whilst ensuring consistency in messaging across various communication channels via standardised promotional, induction and tool box materials.

Works are presently ongoing to establish an integrated Fatigue Management System for enabling effective digital surveillance of fatigue at our worksites including contractors' adherence to our requirements on FM.

Collectively, these initiatives are being spearheaded by our FM Taskforce comprising multidisciplinary teams from the Group.

CONTRACTOR HEALTH

We encourage personnel working on our behalf to place a similar emphasis on health and wellness, as us. Our Businesses actively lead annual engagement sessions with contractors on numerous HSSE topics, including health. For example, contractor HSSE management forums in 2017 included awareness on health and wellness as well as food hygiene.

HIV/AIDS Leadership

PETRONAS strives to provide our employees with a healthy and safe environment. This is aimed at preventing the transmission of HIV, whilst subscribing to non-discriminatory practices on HIV/AIDS management at the workplace, amongst others. In 2017, PETRONAS was appointed as a Corporate Advisor to the Malaysian Business Consortium on HIV/AIDS (MBCH). Some of our initiatives in the year included:

Malaysian Business Consortium for HIV/AIDS Annual Forum 2017:

Themed *Impact of HIV/AIDS on Businesses*, the forum urged companies in Malaysia to support the MBCH by providing a healthy and safe work environment for employees, irrespective of one's HIV status. PETRONAS was recognised at the event for our leading role and foresight in driving the implementation of our HIV/AIDS policy Groupwide.

3rd Meeting of ASEAN-Business Coalition for HIV/AIDS (ABCA):

Held in Malaysia, the event was an avenue for sharing our best practices and experiences in managing HIV/AIDS at the workplace. The event was attended by representatives from ASEAN countries namely Cambodia, Indonesia, Lao PDR, the Philippines and Thailand. Moving forward, PETRONAS is committed to participating in similar events discussing the discipline of HIV/AIDS management at the workplace.

CHEMICAL MANAGEMENT

Our efforts in the period under review focused on stronger risk management via a cataloguing exercise which allowed for thorough mapping and ranking of critical chemicals. This led to sounder chemical exposure analysis and the development of adequate measures to manage chemical-related hazards, in addition to exploring the feasibility of alternative lower risk chemicals. As part of our chemical management practices, our suppliers were required to make an asbestos-free declaration to eliminate the use of the substance in our operations. Remediation plans were developed for identified operating facilities, with a dedicated focal person assigned to oversee asbestos management. Training sessions were organised to upskill the focal persons with desired knowledge and capability to analyse and mitigate asbestos related risks, amongst others.

ERGONOMICS

We work towards mitigating injuries at the workplace by managing the nature and design of a task, tool as well as equipment aids. In 2017, we extended the reach of our office ergonomics programmes beyond the PETRONAS Headquarters in Kuala Lumpur, Malaysia to several operational facilities across the country. Additionally, our team of internal experts led a total of 15 training sessions for creating awareness on ergonomics management, reaching out to more than 1,200 employees. The topics of discussion included work environment design adequacy, ergonomics inspection and individual practices. Furthermore, some 4,000 employees completed a self-assessment checklist, the results of which were mapped against previous trends of musculoskeletal disorder findings. Timely recommendations facilitated effective patient recovery and encouraged the prevention of similar occurrences. To date, 286 staff Groupwide are trained as office ergonomics specialists. Moving forward, e-learning modules on office ergonomics will be made available for all our employees.

Furthermore, requirements on ergonomics were included into the designing phase of PETRONAS' Workplace for Tomorrow. This was in parallel to our transformation initiative of providing a thriving work environment.

NOISE MANAGEMENT

We spearheaded a noise control and compliance review exercise at more than 30 operational facilities across the Upstream and Downstream businesses in Malaysia. The identification of high noise areas aimed to ascertain potential improvements and facilitate the development of specific noise engineering controls which is part of our larger noise reduction intervention programme. This is to curtail noise exposure and reduce the reliance on hearing protection device by enhancing the design requirements of our work environment. This included the strengthening of comprehensive noise control terms and requirements in contracts and projects.

Confined Space Entry Work

Multidisciplinary teams looked into enhancing existing mechanisms on confined space entry, particularly in the area of gas testing and ventilation. Primarily, by tightening current technical standards and spurring capability development in this niche discipline. Identified personnel underwent relevant training programmes on the management of ventilation in close environments. Similar trainings are also planned for 2018, targeting employees who have a higher risk of exposure to confine workspaces.



PRODUCT STEWARDSHIP

The use of chemicals is essential to our daily operations, some of which are sourced externally from a wide base of suppliers. PETRONAS also produces a suite of chemicals for multiple industries globally. Additionally, we formulate fuel and lubricants for consumers' everyday use which are marketed in several continents. Strict adherence to our Product Stewardship requirements is thus mandated on our business value chain, including suppliers.

PETRONAS' product stewardship practices are centred on the principle of achieving sustainable and sound chemical management. Our practices are aligned with the Strategic Approach to International Chemicals Management (SAICM) 2020 goals and Sustainable Development Goals (SDGs), whilst meeting the regulatory requirements in countries of operations. We undertake a risk-based approach to profile and prioritise chemicals, where identified products undergo thorough testing to ensure their safety for the intended uses. Furthermore, we develop best-in-class chemicals, fuel and lubricants through the application of innovative technological solutions. Concurrently, efforts are ongoing to strengthen our governance mechanisms in the discipline of product stewardship Groupwide.



PRODUCT RISK ASSESSMENTS

Our subsidiary, PETRONAS Chemicals Group Berhad (PCG), continued to conduct product risk assessments for the development of Global Product Strategy (GPS) safety summaries for example on Butanol, Diethylene Glycol, Tergitol™ and Triethanolamine. To date, PCG's product summaries are available on the International Council of Chemical Associations' (ICCA) portal. The exercise, which aligns with the Responsible Care® (RC) initiative, facilitates disclosure on risks and their management, respectively. PETRONAS is currently a Malaysian signatory to the RC Global Charter via PCG.

PRODUCT SAFETY DATA SHEETS (SDS)

Our internal product stewardship practitioners embarked on an exercise to review and streamline product safety data in 2017 as part of ongoing efforts to continuously improve our SDS. Our SDS are available in English and Malay languages, and accessible on our corporate website at www.petronas.com. In 2017, we developed 218 SDS in adherence to 12 export markets' respective requirements, such as Australasia, the Middle East and the Far East Asia.

What Governs Us:

- PETRONAS HSE Policy
- HSE MS, MCF
- PETRONAS Technical Guidelines and Standards.

Product Environmental Properties Improvements

Our toxicologists, alongside a multidisciplinary team from our subsidiaries PETRONAS Trading Corporation and the Malaysian Refining Company further improved the environmental profile of our drilling fluid, MG3DF™. The initiative, aligned with the SDGs strategies, will be vital in a competitive drilling fluid market. Additionally, it supports the market expansion and international regulatory status of MG3DF™.

Property	Test Protocol	Before Improvement	After Improvement
Biodegradation*			
Aerobic (marine water)	Marine BODIS (a) OECD 306 (b)	40% after 28d (a)	56% after 28 d (b)
Water column toxicity*			
Invertebrate <i>Acartia tonsa</i>	ISO 14669	48h EC50: 1 – 100 mg/L	48h EC50: > 1,000 m/L
Alga <i>Skeletonema costatum</i>	ISO 10253	72h EC50: > 1,000 mg/L	72h EC50: > 1,000 mg/L
Fish <i>Scophthalmus maximus</i> (c) and <i>Cyprinodon variegatus</i> (d)	OECD 203 OSPAR/PARCOM	96h LL50: > 5 mg/L (c)	96h LL50: > 1,000 mg/L (d)
Invertebrate <i>Mysidopsis bahia</i>	US EPA 2001 40 CFR 435 (EPA Method 1619)	N/A	96h LC50: > 240,000 mg/L SPP
Sediment organism toxicity*			
Amphipod <i>Corophium volutator</i>	OSPAR/PARCOM 2005	10d EC50: 1 – 100 mg/kg	10d EC50: > 100 mg/kg
Bioaccumulation potential			
Octanol-water partition coefficient	N/A	Log Kow > 4	Log Kow > 4

Notes:
 •*Higher result values in this property indicate a better environmental profile.
 •h= hours and d=days

PRODUCT COMMUNICATION AND COMPLIANCE

PETRONAS seeks to protect the health and safety of our employees, the wider public and the environment. To this end, a HSSE and Social Performance Regulatory Compliance Forum at the Group-level was conducted in 2017 for personnel from our various Businesses. The event served as a platform for strategic updates and discussion on meeting product regulatory compliance requirements in countries of operations.

A PETRONAS Technical Standard on product stewardship was also established in 2017 to further streamline our management approach towards product regulatory compliance. This included the strengthening of our product supply chain mapping initiative, which will follow through in 2018. Primarily, it will focus on the materials used throughout our product's lifecycle to allow systematic capture and storage of key product test data for traceability at source.

Operational efficiency also plays a vital part in our product stewardship aspirations. Leveraging our automated label management system, more than 50,000 labels were printed for a range of PETRONAS products following the Go-Live of the system in late 2017, which 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 operations.
- Centralising all labels into a single database for ease of accessibility and traceability.
- Streamlining the overall label management process, thus reducing the likelihood of human error.

Food Contact Plastics

We pursued consistent efforts to optimise the value of our products through continuous monitoring. In 2017, we conducted regulatory compliance tests of our polymer products used in the manufacturing of plastics and packaging materials, where some are intended for the food industry. Overall findings proved adherence with the Food and Drug Administration Federal Regulations (United States) as well as Commission Regulation (European Union).

PETRONAS-YALE INTERNATIONAL SCIENTIFIC COLLABORATION

In 2017, PETRONAS initiated an ongoing collaboration with the Yale School of Public Health via our Product Stewardship and Toxicology team to better understand health risks associated with chemicals widely used in the oil and gas sector. This entailed assessment of chemicals used in the unconventional oil and gas (UOG) operations, specifically focusing on reproductive health hazards. A novel approach based on a scoring system was developed to facilitate the identification and prioritisation of UOG-related chemical hazards as part of reproductive health stewardship. The PETRONAS-Yale network which is aligned to the SDGs creates a synergy between industry players and the academia in propelling mutually beneficial partnerships as part of our commitment to achieve sound chemical management.



SECURITY

What Governs Us:

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

The global security landscape has changed in light of evolving risks, thereby requiring stringent risk assessment and management practices. PETRONAS operates operational facilities and administrative sites globally, on land and offshore by leveraging on cyber-connectivity to drive our business activities. Access to timely, reliable as well as robust safety and security management systems is vital for uninterrupted business operations. In Malaysia, we operate some 100 onshore plants and facilities, as well as more than 300 offshore platforms. Internationally, we have a business presence in over 80 countries across several continents, each with unique levels of development.

We stand guided by the aspiration that *everyone goes home safely* and that security is a shared responsibility. To this end, we put in place solid plans and procedures to reduce security risk on our people, and assets, as well as maintain information integrity. We work towards developing a security compliance culture which is suited to our operations domestically and globally. This is supported by a holistic security framework, the Security Management System (SeMS), which includes guidelines on security management and Mandatory Minimum Security Standards (M2S2). We work collaboratively with our stakeholders in driving our security strategies for PETRONAS' global operations, bringing together multidisciplinary teams to address potential risks arising wherever we operate. Presently, works are ongoing to fortify our digital networks in response to the evolving security pressures in the cyberspace.

SECURITY MANAGEMENT

In 2017, we streamlined our security management framework across PETRONAS following the roll-out of SeMS, resulting from thorough research and benchmarking efforts. Complementing SeMS is the M2S2, which defines security measures matched to asset type and classification. Collectively, these align with the industry's good practices, as well as international and local standards. In the period under review, we conducted a series of security risk assessments and 154 asset classification exercises. The latter encompassed audits carried out at selected domestic and international installations as well as operational facilities to assess the adequacy of security measures for ensuring compliance with M2S2. Moving forward, efforts will be continued to integrate a sustainable safety and security culture Groupwide.

MARITIME SECURITY

PETRONAS pursued a strategic partnership with relevant maritime enforcement agencies to inculcate stronger safety and security awareness amongst the local fishing communities. In 2017, the reach of the *Sahabat Maritim* programme was extended nationwide, from the initial implementation in East Malaysia. Overall, programmes held imparted insights on the potential implications arising from encroachment as well as illegal blast fishing at areas surrounding offshore platforms to prevent any untoward incident. Meanwhile, regular engagements with the relevant authorities and enforcement agencies resulted in improved risk management practices in these areas namely, safety, health and security. The proactive engagements, including collaborations with our various stakeholders strengthened our existing safety and security culture. Concurrently, these contribute towards the long-term development of PETRONAS' offshore operations.

CYBERSECURITY

We have in place tools and procedures to detect, respond and mitigate potential cyber disruptions for upholding information security protection. Our systematic approach, whilst adhering to our information security policy and baselines, is accredited by the International Organization for Standardization (ISO) 27001:2013 - Information Security Management System. Furthermore, we have in place a Disaster Recovery Plan for critical business applications.

In 2017, we embarked on a holistic approach to assess our cybersecurity controls comprising PETRONAS' numerous business assets. The effort, which will follow through in 2018, is anticipated to further solidify as well as strengthen our cybersecurity readiness and practices.



HUMAN RIGHTS

What Governs Us:

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

Social risks facing the energy sector are intensifying as a result of changing stakeholder demands on responsible business practices. This includes the area of human rights, with a growing interest for openness and transparency in disclosure practices.

A vital subject for us in the larger discipline of Social Performance (SP) is Human Rights. We define it as managing impacts arising from areas of business whilst contributing to the society in a responsible manner. Concurrently, we are committed to respecting internationally recognised human rights in areas of our operations, complying with our Code of Conduct and Business Ethics (CoBE), and all relevant legal requirements. Our focus areas are: *Labour and Working Conditions for Contractors; Third-Party Security; Supply Chain and Community Wellbeing*.

We have in place solid social risk management practices, supported by robust governance mechanisms, processes and procedures. These include technical guidelines to support the implementation of Human Rights Commitment, namely Social Risk Assessment (SRA), Human Rights Due Diligence (HRDD), Cultural Heritage Assessment, Indigenous People Assessment, Grievance Mechanism as well as Land Acquisition and Involuntary Resettlement. Collectively, these mechanisms support us in managing and minimising impacts to the surrounding communities and reduce human rights risks across our integrated supply chain.

To date, elements on human rights are integrated into our existing systems and processes. These include the PETRONAS Contractors Code of Conduct on Human Rights (CoCHR) and the PETRONAS Procedures and Guidelines for Upstream Activities (PPGUA).

A Social Performance talent skillgroup was also established to hone a pool of internal experts for managing social risks facing our Businesses, including human rights. The holistic SP competencies cut across diverse sustainability elements such as environment, health, safety and social investment.

Efforts to advocate, reinforce and uplift existing understanding on SP is ongoing, amongst internal and external stakeholders. This includes tailored training programmes covering topics such as human rights and grievance mechanism.

HUMAN RIGHTS

We strengthened the implementation of our Human Rights Commitment and practices across the business value chain via the establishment of the PETRONAS CoCHR in 2017. Provisions on human rights were included into the PETRONAS General Terms and Conditions of procurement contracts, which included sourcing of goods and services alike. External service providers using the Supplier Self Service portal were also required to adhere to the CoCHR requirements.

In addition, the PPGUA, applicable to all upstream interests in Malaysia, was enhanced to align with our commitment on human rights.

In 2017, we organised engagements using the Vendor Relationship Management platform, reaching out to 1,368 registered and active contractors. The sessions, led by our internal SP experts, imparted insights on our expectations, as well as the roles and responsibilities of the vendors in upholding our Human Rights Commitment. The focus areas under the CoCHR, which vendors are required to comply, are: freedom of labour; prevention of child labour; wages and benefits; working hours; grievance mechanism; non-discrimination; freedom of association; humane treatment; and foreign and migrant workers. The vendors are also required to cascade PETRONAS' requirements to sub-contractors in applicable language(s).



TRAINING ON HUMAN RIGHTS

A total of 28 in-house trainings were conducted by our SP practitioners targeting internal constituents of all levels representing our various businesses in Malaysia and internationally. The trainings were intended to elevate the importance and subsequently integrate human rights elements across our Businesses.

SOCIAL RISK ASSESSMENTS

In 2017, we undertook continuous monitoring of gap closure activities for elements identified during the SRAs and HRDDs carried out previously. To date, our SRA practices are aligned with the International Finance Corporation's Performance Standards on Environment and Social Sustainability. Moving forward, SRAs will be pursued on a need-basis for identified operational facilities and projects.

HUMAN CAPITAL

What Governs Us:

- PETRONAS Code of Conduct and Business Ethics

The way we work, the workplace and the workforce will continuously evolve at a rapid pace, thus calling for organisations to embrace this new normal. The competition for talent is beyond the energy industry's search of emerging competencies to leverage on disruptions in the business space. In tandem, talent management practices are required to be more dynamic for hiring and retaining the right talents. PETRONAS brings together talents of different generations, experiences and multicultural backgrounds to collectively drive the Group towards greater heights by enabling a self-driven culture.

PETRONAS fosters a high performance culture, premised on our Shared Values, to provide equal growth opportunities for all. Our PETRONAS Global Talent Strategy (GTS) anchors on nurturing the right talents, developing the right leaders and providing the right environment to turn challenges into opportunities. Our practices are premised on the concept of lifelong learning by investing in evolving knowledge, expertise and leadership. Sharpening the competitive edge of our people by igniting thought creativity is central to sustaining our business and driving the energy sector forward. In shaping an empowered and driven workforce, we promote year-long engagements using various platforms for encouraging timely dialogues. Our employment policies, procedures and strategies are benchmarked to the industry's good practices, aligned with cultural norms, international laws as well as regulatory requirements of countries where we operate.

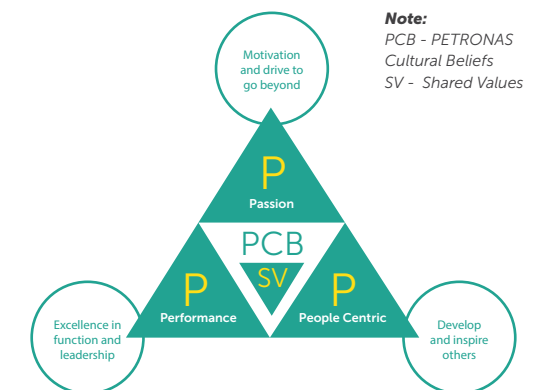
TALENT AS INVESTORS

Our employees are instrumental to our growth for decades running, hence we strive to generate an adequate return on investment for their energy, commitment and skills. Human capital excellence is thus a priority Groupwide and via our GTS, we ensure the availability of an agile, enabled and empowered workforce to lead our business growth. The competition for talent intensifies in the face of volatile externalities, driving the need for dynamic individuals to steer as well as to shape our energy future.

Our talent recruitment, retention and general employment practices are benchmarked against the industry's good practices, aligned with regulatory requirements of host nations.

We seek to nurture a self-driven and an empowered workforce, enriching the knowledge and capability of our talents through cross business experiences. This encompasses international postings and assignment to special projects. The development of our talents is accelerated via our holistic leadership and learning strategy by leveraging advanced methodology and digital solutions.

We adopt the PETRONAS 3P Leadership Model of Passion, People Centric and Performance Focused, which anchors on our Shared Values and Cultural Beliefs. In 2017, the fundamental principles of these three qualities were embedded into our signature leadership programmes and assessments. This was part of our larger commitment in building a pipeline of future successors.



HOLISTIC CAPABILITY DEVELOPMENT

Investing in people is a cornerstone of our sustainable growth. To this end, we strive to sharpen the knowledge, functional skills as well as leadership competencies of our talents, guided by our Enhanced Learning and Development Framework. We embrace the concept of life-long learning where talents undergo relevant trainings, in-house, externally and on-the-job, including coaching, based on findings derived from timely performance evaluations and leadership competency assessments, amongst others. This encompasses the adoption of new and innovative approaches, such as the application of digital technology to promote self-directed learning which give employees the flexibility to pursue learning programmes at all times. The heavier focus on experiential learning and on-the-job training enabled a more enriching experience amongst employees.

In 2017, we invested approximately RM163.2 million to build the capability of our employees. Furthermore, we continued to execute our flagship PETRONAS Leadership Competencies syllabus and targeted signature programmes at the PETRONAS Leadership Centre (PLC) in Malaysia, amongst others. Please refer to page 58 of this Report to know more on our learning institutions.

Our technical talents undergo additional trainings and assessments, namely, Accelerated Capability Development (ACD) for technical executives, Technical Professional Career Progression (TPCP) for technical professionals, PETRONAS Competency Assessment System (PECAS) for technical non-executives and Technical Trade Specialist (TTS) for skilled technicians and operators.

DIVERSITY AND INCLUSION

Guided by the CoBE and supported by our GTS, we work towards inculcating a stronger high performance culture for employees to thrive, based on the philosophy of best fit. This defines our stand on moulding a workplace that is founded on the concept of equality as well as merit, irrespective of gender, age, nationality, ethnicity, educational background or religion. We also provide job opportunities for talents from diverse backgrounds and cultural experiences. To date, our workforce comprising talents from more than 100 nationalities work to meet our business requirements. Furthermore, we continued to carry out programmes under the banner of PETRONAS Leading Women Network to empower female employees in the workplace.

We prohibit forced and child labour as well as workplace discrimination whilst adhering to stipulations such as minimum wage and conducive working hours.

COLLECTIVE BARGAINING AND FREEDOM OF ASSOCIATION

PETRONAS respects our employees' right to form labour unions intended at safeguarding its members' wellbeing. Our practices are guided by policy statements in the CoBE, which are benchmarked against international good practices, such as the International Labor Organization.

- Collective bargaining: PETRONAS has five in-house unions in Malaysia, with a membership of 8,964 employees as at 31 December 2017, compared to 8,616 in the preceding year. In the period under review, discussions were centred on the culture of performance and delivery. At the same time, it focused on improving the welfare of union members. Internationally, our collective bargaining practices are aligned with the local laws and requirements.
- Freedom of association: In the period under review and those applicable, eligible employees continued to be under the umbrella of Worker's Union of PETRONAS (KAPENAS) and Worker's Union of Optimal (KEPKO).

WORKFORCE ENGAGEMENT

We employ several avenues to promote two-way communication across PETRONAS, such as top management engagement sessions, surveys, digital applications, site visits and whistleblowing channel. This is to promote open, transparent and constructive conversations across all levels of staff on matters of mutual interest. The roll-out of our PETRONAS Cultural Beliefs namely the *Tell Me* element, encourages engagement by giving and receiving feedback, amongst others. This includes the giving of commendation for exemplary effort through the concept of *Focused Recognition*.

We continued to hold the President's Townhall session, led by our President and Group Chief Executive Officer (CEO). The annual event sheds light on our business plans, giving employees an opportunity to seek direct viewpoints from, and network with our top management personnel. Similar management engagement sessions were also led at the respective Business and Entity levels. Furthermore, top management site visits to global facilities gave employees the chance to engage with our key executive personnel, including members of the PETRONAS Executive Leadership Team. In addition, regular insights from our President and Group CEO, as well as other top management personnel using digital solutions keep employees abreast of ongoing business developments.

Additionally, the PETRONAS Organisational Cultural Survey (POCS) was conducted in 2017 with suitable interventions targeted to follow suit. The POCS, carried out periodically, aims to ascertain employees' satisfaction towards attaining a high performance culture, amongst others. The scope of the assessment was expanded to include a set of question on the topic of safety in efforts to drive greater HSSE excellence.

SOCIAL RESPONSIBILITY

What Governs Us:

- PETRONAS Corporate Social Investment Framework

We co-exist in an integrated business environment alongside multicultural societies, each with its unique desires, interests and expectations for growth. The quest for lasting and self-sustaining socio-economic developments is nevertheless a shared aspiration. Embracing local norms, we work towards harnessing mutually beneficial partnerships in sharing the value we generate, making investments that are consistent with the needs of local communities.

Empowering local communities with the right knowledge, skills and capabilities underpins our approach to creating sustainable socio-economic progress. We are guided by the PETRONAS Corporate Social Investment (CSI) Framework to realise our mission statement of contributing towards societal wellbeing. To this end, we are committed to spur societal advancements, primarily by creating value in the areas of education, environment and community development. Our programmes vary based on the locality of operations, unique to the local culture and community prerequisites of respective host nations. Nevertheless, the central pursuit is to evolve alongside local communities. We partner with our stakeholders, where practicable, in spearheading the various socio-economic activities, leveraging their shared expertise, resources and more importantly, understanding distinctive local needs.

Staff volunteerism is promoted Groupwide through the establishment of clubs and associations which encourage staff involvement in initiating as well as driving relevant social programmes, where feasible.

Emphasising on local talent, we seek to provide socio-economic opportunities for individuals as well as enterprises across a wide range of industries. Whilst supporting a host country's aspirations, we collectively ensure the availability of a reliable, distinct and skilled talent pool for the energy industry. We view human capital development as a mean to alleviate poverty and encourage livelihood sustenance. The establishment of our educational institutions drive knowledge development in the technical and functional acumens relevant to the larger energy industry.

On local procurement, we seek to provide greater opportunities for local businesses and where required, trainings are provided to a host of local suppliers for a clearer understanding of our expectations.

CORPORATE SOCIAL INVESTMENTS

In the period under review, we pursued initiatives aligned with the focus areas outlined by our CSI Framework:

- **Education** - Providing access to quality education via knowledge development and capability building opportunities regardless of income level, gender, ethnicity, physical and mental abilities.
- **Community Wellbeing and Development** - Empowering and uplifting local communities via provision of basic needs, skills trainings and youth development programmes to attain a better standard of living.
- **Environment** - Encouraging active contribution towards natural ecosystem related conservation efforts, prioritising the concept of prudent resource management.

EDUCATIONAL PROGRAMMES IN 2017

We work towards instilling interest in the subjects of Science, Technology, Engineering and Mathematics (STEM) amongst young leaders. This includes equipping individuals with competitive skills and digital literacy. Where necessary, we also undertake infrastructure development works such as the building of boarding schools, for example the Mara Junior Science College (MRSM) and building hostels namely, *Asrama Harian Luar Bandar*. In Malaysia, our efforts largely complement the national aspirations developing a reliable talent pool, aligned with the Malaysia Education Blueprint 2013-2025.



PETRONAS' Learning Institutions

We own and operate the following educational facilities in Malaysia, which are accessible to all PETRONAS employees including members of the larger oil and gas fraternity:

Universiti Teknologi PETRONAS	Amongst Malaysia's premier science and technology institutions of higher learning, which provides students with opportunities for the pursuit of knowledge and expertise in the fields of engineering, science and technology.
PETRONAS Leadership Centre	Offers a suite of internationally-acclaimed management and leadership programmes for elevating personal as well as professional growth, including tailored offerings for different levels of employees.
Institut Teknologi Petroleum PETRONAS	Specialises in the discipline of technical acumens offering a simulator plant that replicates an integrated oil and gas facility such as an upstream and downstream live training plant, drilling rig as well as drilling simulator, amongst others.
Akademi Laut Malaysia	A maritime education and training institution for developing seafaring professionals.

STEM EDUCATION

In the period under review, we pursued several STEM programmes in Malaysia and internationally. For example, our signature programme, *Program Sentuhan Ilmu PETRONAS* benefited more than 1,500 students aged between seven and 17 throughout Malaysia. Meanwhile, *BUDI PETRONAS*, a joint-initiative provided annual allowance to students aged between 14 and 17 from underprivileged families to pursue an interest in STEM. In 2017, more than 300 students benefited from this initiative.

In addition, Petrosains, Brilliant Young Minds (BYM) and Basic Education Programme were other STEM-oriented initiatives executed in the year.

Petrosains, a PETRONAS-owned science centre in Kuala Lumpur, Malaysia propels interest in STEM via fun and engaging techniques, especially amongst school students. In 2017, Petrosains reached out to more than 580,000 students through various programmes held in Malaysia and internationally which included venturing into logistically challenging locations. To date, Petrosains continues to contribute towards honing a more scientifically literate society in tandem with grooming a pool of future scientists and critical thinkers.

In Malaysia, via the BYM programme, we reached out to students aged 13 and 14 from selected schools around the Klang Valley. The intent was to raise young talents' exposure to higher order thinking skills, project management, pitching of ideas, coding and scratch programming including robotics. The BYM is endorsed by the local Ministry of Education and aligned with Malaysia's Digital Economy Corporation (MDeC) #mydigitalmaker movement. Commendably, the BYM participants have since won several state and international science competitions.

In 2017, a total of 1,670 students from 101 schools participated in our subsidiary, Engen Petroleum's Educational Programme. The programme uplifts educational proficiency in the subjects of English, Mathematics and Science through supplementary classes, targeting pupils especially from the underprivileged communities in support of the country's growth aspirations. The participants identified in consultation with relevant local authorities, ranged between grades 10 to 12, hailing from regions such as Kwa-Zulu Natal, Eastern Cape, Western Cape, Port Elizabeth, Gauteng and Cape Town. Resulting from this programme, the pupils recorded a 94 per cent passing rate and a bachelor's passing rate of 67 per cent, respectively – giving school-leavers a better opportunity to attain a higher education. The initiative which ensures the future availability of reliable, skilled and knowledgeable talent pool for Engen as well as the larger oil and gas industry is aligned with The National Peace Accord Trust.



PETRONAS Education Sponsorship Programme (PESP)

We award scholarships to deserving students via provision of funds for pursuing tertiary education in fields related to the larger oil and gas sector at reputable institutions of higher learning in Malaysia and internationally. To date, more than 36,000 students globally gained from the PESP, of which 387 students were awarded sponsorships in 2017.

Graduate Employment

SL1M-GEES-PETRONAS is a holistic training programme we pursued alongside the Malaysian Government to enhance the marketability of unemployed undergraduates. Since 2011, more than 690 undergraduates have transited to the job market equipped with critical soft skills and attributes imperative for the workplace.

Petrosains Science Festival

The festival is an annual community event jointly organised by Petrosains to celebrate the learning of science. In 2017, the theme of the festival anchored on sustainable living, aimed to contribute towards societal development via exposure to sustainability practices. The event, Malaysia's largest science-themed festival in 2017, was aligned to the United Nation's SDGs. With the tagline *Little Plans for the Big Planet*, the festival showcased workshops, talks, forums, stage shows and demonstrations to encourage a sustainable lifestyle through practices such as recycling, conserving energy, zero food wastage and responsible trash disposal.

The Biodiversity, Environmental and Conservation (BEACON) Project

This project, implemented at Similajau National Park (SNP) in Malaysia has significantly contributed towards helping reverse Bintulu's declining turtle population. The joint effort was led by our subsidiary Malaysia LNG to conserve, protect, regenerate and enhance marine biodiversity off the pristine waters of Sarawak, which was impacted significantly as a result of overfishing and illegal trawling activities.

Achievements to date:

- Turtles nesting at SNP following a seven-year vacuum period where the last turtle sighting was recorded in July 2010.
- Transferred a total of 1,281 turtle eggs from three discovered nests at Turtle Beach SNP to BEACON Turtle Hatchery (TH).
- Deployed 1,500 reef ball units as a passive enforcement effort to protect the marine life sanctuary.
- Reached out to about 250 students from eight secondary schools in Bintulu under the Conservation, Education and Public Awareness (CEPA) initiatives for example, the Friends of Nature and Beach Cleaning programmes.
- Raised awareness on the importance of marine environment conservation amongst local community members via CEPA programmes.

Year	Number of Eggs Transferred to BEACON TH
2015	545
2016	490
2017	246
Total	1,281



Imbak Canyon

The institutionalisation of an alternative solution for local community members to generate economic gains was a highlight under our long-standing partnership aimed at conserving the pristine jungle of Imbak Canyon. The establishment of a homestay concept was a sustainable long-term solution to uplift the socio-economic wellbeing of local communities residing in Imbak Village, Sabah, given its strategic location en-route Imbak Canyon Conservation Area and Gunung Tinkar Forest Reserve trekking trail, amongst others. Presently, the operationalisation of the Imbak Canyon Studies Centre (ICSC) has contributed towards a higher rate of visitors to Imbak Village.

Local community members were provided provisions and building materials to put the lodging facility together as well as for guidance on running a rural homestay operation, including ensuring the availability of adequate basic necessities. To this end, we also made investments to refurbish existing amenities such as the community hall and building new infrastructure. The latter included installation of a gravity-driven water system to supply clean water to houses of close to 700 residents of Imbak Village. In addition to promoting additional incomes and a range of supporting activities such as cultural shows and local handicraft marketing, the initiative resulted in the strengthening of ties amongst the local community members through the availability of a more conducive environment for civic events.

The homestay is part of a larger community development programme, Planting Tomorrow, a joint-initiative since 2016. To date, it has entailed the installation of 10 water gravity systems in East Malaysia, thereby providing villagers in remote areas with access to clean water. Furthermore, the skill development programme has enabled an increase of RM150 in monthly household income of selected recipients. Overall, this initiative supports the Malaysian Government's aspirations which include improving the living standards of low-income households and basic rural infrastructure.

Youth Development

The PETRONAS All About Youth (AAY), reaching its fourth year of implementation in 2017, nurtured more than 100 students from 50 schools located in areas with close proximity to our operational facilities. The programme, in the form of an annual competition, empowers youth in spearheading creative solutions to address their respective community issues in the three categories of our CSI Framework. Each participating school from the selected states in both Peninsular and East Malaysia formed a team of 20 students, aged 16. Each team submitted a proposal to address the unique community issues in their respective areas and an initial grant of RM1,000 was awarded to commence the projects.

Over 70 PETRONAS staff volunteered to serve as mentors by providing guidance and support. The following projects emerged as winners for the 2017 edition, in view of judging criteria, namely, creativity, originality, sustainability, impact on community and clarity of presentation. The judging panel comprised a mix of individuals from PETRONAS and identified external representatives:

Winner	1 st Runner Up	2 nd Runner Up
<p>HISTOMAP, a mobile application that was created to help students master the subject of History using mind maps.</p> <ul style="list-style-type: none"> • RM50,000 to enhance the winning project and school refurbishment. • Each team member received RM1,000 in a national savings scheme. 	<p>Acu Paka, a mobile application that contains useful information on local service providers for ease of reference.</p> <ul style="list-style-type: none"> • RM10,000 to enhance the project and school refurbishment. • Each team member received RM800 in a national savings scheme. 	<p>Chemical-free sand-fly repellent based on an age-old remedy by the Orang Ulu (local indigenous people).</p> <ul style="list-style-type: none"> • RM5,000 to enhance the project and school refurbishment. • Each team member received RM500 in a national savings scheme.

The AAY, endorsed by the Ministry of Education in support of the National Education Philosophy that aims to promote social cohesion and harmonious community development was launched in 2014. To date, more than 200 community projects have been executed with the funding and mentorship from PETRONAS.

In Myanmar, a similar initiative, the Yetagun Youth Programme, helped hone youth into well-rounded individuals with a diverse range of capabilities to excel in a competitive environment and contribute back to society. The scope involved equipping young leaders with creativity, critical thinking and leadership skills. The wide range of participants included individuals from the regions of Mandalay, Tanintharyi and Yangon.

Rural Solar Electrification Project

We implemented a sustainable solar project at a remote village, *Kampung Sungai Karah*, near Lenggong in Perak, Malaysia, led by the Wives and Women Staff Association of PETRONAS (PETRONITA). The joint-effort entailed establishment of a five-kW solar farm using 20 photovoltaic panels. The overarching aim being to provide the local Orang Asli community, comprising some 80 residents, with an uninterrupted supply of safe and cleaner energy resources, in addition to improving the livelihood of the local community members. At the same time, the project aimed to minimise health, safety and environmental risks arising from the use of candles as well as kerosene lamps.

Our female employees and students from UTP's Green Energy Cluster volunteered and spearheaded the project. This initiative which contributes towards the wider community wellbeing and development follows through the success of PETRONITA's inaugural pilot solar electrification project at *Kampung Batu 20* in Tapah, also in Perak.

Disaster Relief

In 2017, a number of our subsidiaries spearheaded disaster relief initiatives nationwide by reaching out to flood evacuees in Malaysia. Braving the floods, our team of staff volunteers passed through inundated townships in the affected states to deliver care packages and food rations to the victims. In some areas, support was also extended for clean-up works of infrastructure such as homes and schools. The assistance rendered varied based on the severity of the situation.

Community Development

In 2017, amongst others, PETRONAS supported local community development programmes in South Sudan, as part of the Joint Operating Company (JOC)'s Exploration and Production Sharing Agreement. Similarly, in Myanmar, we established a water system in the villages of Ohnbinkwin, InnByar, Michaungloun, Zinbar, Taungyininn, Kanbauk and Thingundaw. The initiative involved providing construction material to build a safe and clean water mechanism to benefit 2,600 households or some 14,000 villagers.

A lighting programme was carried out at the Kyay Zu Taw village, involving installation of home solar systems to improve the local community's quality of life. A total of 60 households or 205 individuals and a school benefited from the programme which promoted the use of cleaner energy.

Community Engagement

Respecting local customs and cultural norms is a core aspect of our value system, ensuring a clear understanding of community needs as well as expectations. Engagements are carried out throughout the various project phases using multiple platforms. We aim to provide timely business plan and activity updates to seek feedback, address concerns as well as gain insights from the relevant stakeholders. Dedicated PETRONAS personnel such as Community Liaison Officers and External Relations Teams are tasked to lead regular dialogue sessions with the local community members. The types of initiatives undertaken are suited to the locality of operations. The topics of discussion typically vary based on the maturity of operations, ranging from land acquisition to compensation and sustainable community investments. The grievance mechanism and whistleblower channels, amongst others, are made accessible to all stakeholders, including local community members. For example in 2017, we met with village heads in Myanmar namely, from Myan Aung Township located at the Ayeyarwaddy Region where block IOR-7 is situated. A dialogue was held to share project updates, seek input on our development plans and address matters of concern.

Local Procurement

We support local economies subject to overriding business requirements such as the safety aspect. To this end, procuring goods and services like heavy operational equipment is carried out at the Group-level. In Myanmar for example, several briefings were held to ensure clarity on our tender requirements, processes, procedures and expectations. Findings from the Contractor Performance Evaluation were cascaded in a timely manner to provide feedback on the areas of improvement and concurrently, for addressing matters raised by our third-party service providers. In Malaysia, taking a similar approach, we worked towards spurring the local vendors' participation at Pengerang Integrated Complex. Please refer to pages 72 to 74 of this Report for more information.

Furthermore, PETRONAS embarked on a Groupwide Digital Procurement Programme with the vision to transform our existing practices in the sourcing of goods and services. The programme branches into two phases, one of which was completed in 2017. The key aspect involved completion of the PETRONAS Procurement Blueprint, with the aim of embracing digital solutions to enhance value creation. Comprehensive data was put together to support thorough analytics to assess high value tenders in facilitating more detailed discussions. Overall, the intent is to adopt more innovative approaches in driving growth through streamlined procurement activities across PETRONAS.

Local Talent

PETRONAS is committed to support and realise the aspirations of our host nations. This includes opening up job opportunities by recruiting locally in adherence with respective state laws and regulations. This, whilst assuring the availability of suitable, enthusiastic, qualified and competent individuals to drive our business growth, also contributes towards expanding a reliable talent pool for host nations. For example, in Turkmenistan and Myanmar, succession planning at all levels was carried out involving qualified local employees. Furthermore, a capability roadmap was rolled out to strengthen the technical acumen of our employees through identified development programmes aimed at accelerating operational reliability. Meanwhile in Indonesia, the expatriate mentoring programme facilitated knowledge transfer to elevate local competencies in both technical and non-technical disciplines. PETRONAS scholars were also absorbed as part of our larger workforce.

In Malaysia, the long-standing Vocational Institution Sponsorship and Training Assistance (VISTA) programme grooms individuals with technical and functional acumens to support the growth of Malaysia's energy sector. In 2017, we continued to collaborate with our stakeholders to extend support for selected courses on disciplines such as 6G welding, gas pipe fitting, AO-level chargemen, building maintenance and several oil and gas related engineering programmes across 24 selected institutions nationwide.

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GOVERNANCE

PETRONAS continues to uphold the highest standards of corporate governance to create value and improve efficiencies, whilst maintaining accountability and transparency in all business dealings. Our continuous commitment in fostering a culture of integrity, ethical behaviour and professionalism underpins PETRONAS' ability to deliver sustainable business performance, wherever we operate.



BUSINESS ETHICS AND COMPLIANCE

What Governs Us:

- The PETRONAS Code of Conduct and Business Ethics
- PETRONAS Anti Bribery and Corruption Policy and Guidelines
- PETRONAS Whistleblowing Policy
- PETRONAS "No Gift" Policy

In today's business environment, a stronger focus on enhanced corporate governance is imperative to businesses as industries expand and grow across geographies. For us, the Code of Conduct and Business Ethics (CoBE) guides PETRONAS' behaviour in pursuing our business growth aspirations. We maintain an ethical, law-abiding culture whilst subscribing to PETRONAS Shared Values of Loyalty, Integrity, Professionalism and Cohesiveness.

We adopt a uniformed approach in upholding the highest level of integrity wherever we operate by adhering to our CoBE.

Our policies are developed and implemented in adherence to all applicable laws and regulations. We regularly benchmark our policies and procedures against prevailing international standards to adopt industry best practices on corporate governance, whilst being mindful of the growing expectations of stakeholders worldwide for good corporate citizenship. Enforcement of the PETRONAS "No Gift" Policy, amongst others, demonstrates our longstanding commitment to uphold the highest level of integrity across the Group. In elevating the culture of corporate openness and accountability across all levels, the PETRONAS Whistleblowing Policy provides an avenue for our employees and members of the public to disclose any improper conduct within PETRONAS and to provide protection for employees and members of the public who report such allegations. To further demonstrate PETRONAS' strong commitment on matters of integrity, the Executive Leadership Team of PETRONAS had signed the Malaysian Anti-Corruption Commission's (MACC) Corruption-Free Pledge, strengthening PETRONAS' resolve towards becoming a graft-free organisation.

CODE OF CONDUCT AND BUSINESS ETHICS (COBE)

The CoBE emphasises and advances the principle of discipline and integrity that are critical to the success and wellbeing of the Group. The CoBE also stresses on good conduct and our shared values. The CoBE is applicable to all employees, directors and third parties who represent or act for the Group. The CoBE, available in multiple languages, comprises detailed policy statements on the standards of behaviour and ethical conduct expected of each employee, director as well as third parties working for or on behalf of PETRONAS Group. This includes areas such as conflict of interest, anti-corruption, competition, anti-money laundering, international trade and export controls, amongst others. Disciplinary action will be taken against any employee for non-compliance of the CoBE, subject to the requirements of applicable laws.

The CoBE is expected to be updated in 2018.

Training and Awareness on CoBE

Internal Stakeholders:

We continue to communicate the CoBE to all employees through a series of trainings. For the year 2017, a total number of 5,533 employees have undergone face-to-face training, refresher training or on-boarding training. In reaching out to more employees that are located in various locations globally, PETRONAS will continuously improve the CoBE e-learning platform to effectively manage PETRONAS' Groupwide compliance programme.

External Stakeholders:

PETRONAS expects all third parties acting for or on our behalf to share our values and ethical standards. We regularly engage with third parties to ensure clear understanding of our commitment to ethics and integrity. A provision for all third parties to comply with the CoBE is included in our procurement standard terms and conditions.

Anti Bribery and Corruption (ABC) Manual

PETRONAS adopts zero tolerance policy against all forms of bribery and corruption, which is a reflection of our strong commitment to high ethical standards and in line with anti-corruption laws. The CoBE explicitly prohibits the giving and acceptance of bribes, including the giving and receiving of facilitation payments. The PETRONAS Integrity Compliance Framework (PICF) instills and ensures compliance to all elements related to integrity and business ethics within our business activities. In this regard, PETRONAS Integrity Awareness Committee ("PIAC") coordinates an integrated and structured implementation of programmes under the PICF.

The Anti Bribery and Corruption Policy and Guidelines (ABC Manual) governs matters such as engagement with public officials, no facilitation payments, engagement with third-parties, and gifts, entertainment and corporate hospitality. The ABC Manual is being rolled out in phases to our subsidiaries across all international operations.

Training and Awareness on ABC Manual

Training sessions are currently being conducted to equip employees with sufficient knowledge and understanding on application and interpretation of the ABC Manual. We held 15 training sessions entitled Corporate Integrity Advocacy Programme (CIAP) for higher and middle management Groupwide. CIAP educates managers on the important role they play in building a culture of compliance and integrity. In 2017, a total of 3,515 employees underwent face-to-face training on the ABC Manual. PETRONAS will continuously improve the ABC e-learning platform.

Combating Third Party Corruption

We adhere by the PETRONAS CoBE and ABC Manual, as well as relevant laws when dealing with third parties. Concurrently, we require those partnering with us to comply with the CoBE and ABC Manual. To this end, 10 Vendor Integrity Programmes were conducted in 2017, reaching out to approximately 1,382 companies.

PETRONAS also strives to ensure that the values and principles for combating corruption is embedded in all aspects of our procurement and supply chain activities. We have enhanced our third party due diligence process, including an online third party due diligence compliance screening to assess bribery risks.

Whistleblowing Policy and Procedures

The PETRONAS Whistleblowing Policy (Policy) provides our employees and members of the public with an avenue to disclose any improper conduct (misconduct or criminal offence or malpractices) as stipulated under the Policy. A whistleblower, which includes employees, will be accorded with protection of confidentiality to the extent reasonably practicable, even after the investigation is concluded, provided a disclosure is made in good faith. The Whistleblowing Committee (Committee) deliberates and decides on the next course of action for the submissions put forth, including monitoring the progress of the submissions. In 2017, a total of 52 submissions were reported via the whistleblowing channels.

Our Whistleblowing Policy and Procedures is available on PETRONAS' corporate website at www.petronas.com

Anti Bribery Management System

In 2017, PETRONAS successfully obtained the International Organization for Standardization 370001 (ISO 37001) certification for our Anti Bribery Management System. This was attained upon meeting requirements with respect to anti bribery management system for corporate services, covering the areas of integrity and compliance processes, procurement, registration of suppliers, investment, project management and corporate hospitality management.

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FEATURE STORIES

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UP CLOSE WITH DZAFRI SHAM, VICE PRESIDENT OF GROUP HEALTH, SAFETY, SECURITY AND ENVIRONMENT



Delivering value based and sustainable HSSE performance entails robust business strategies on the back of solid operational discipline. Here, Dzafrî Sham sheds light on PETRONAS' unwavering commitment as well as ongoing efforts towards fortifying our HSSE Leadership and Culture Groupwide.

1 How is safety a key consideration in an energy industry which continues to operate amidst tight cost environment?

Propelling safer work practices is vital to safeguard people, the environment and business assets. HSSE bears utmost prominence regardless of cyclical market conditions. For us, sustaining HSSE excellence in the current market landscape which necessitates greater fiscal prudence underscores our approach towards maximising business opportunities. The need for elevated levels of operational excellence and efficiency puts a spotlight on HSSE in realising competitive business advantage. For example, upholding the integrity of our operational facilities whilst ensuring our plants operate smoothly facilitate the timely delivery of business priorities.

2 How do stringent safety requirements and standards play a role?

HSSE excellence has grown over several phases, and this began with the establishment of comprehensive governance mechanisms. Over the years, we have arrived to a point where the energy industry has matured in institutionalising robust management system and risk management practices on HSSE. The present day entails heavier investment to hone a safety culture centred on inculcating HSSE leadership across all levels. Safety in a nutshell is an evolving discipline in our industry where technical innovations and process enhancements unfold at a fast pace. Lives matter and this resonates with our aspiration that every person goes home safely. To this end, we continuously aim to do better by emphasising on learning from past incidents where the findings are embedded in designing prototype concepts to further strengthen our HSSE resilience. Where feasible, we invest in digital solutions for improved levels of efficiency and effectiveness. Supporting this is an elevated focus on culture, one that mandates shared accountability in propelling HSSE.

3 How does strong HSSE leadership and culture create value?

The right culture encourages accountability and empowerment which will facilitate us to achieve our HSSE ambitions in a systematic manner. Leaders setting the right example will contribute towards shifting behaviours, where every person will make decisions with a precedence on HSSE. When safety becomes more than just a norm, we will see a higher level of personal ownership including from third-party service providers. Subsequently, it leads towards building a steadfast foundation where HSSE excellence goes beyond mere compliance to spur innovations. Promoting a solid HSSE culture is a collective effort. It calls for clarity in defining the purpose and meaning behind every work process, requirement or mandate. Inspirational leadership will thus pave the way for building a shared sense of common purpose on how HSSE is perceived and integrated in all aspects of decision-making. In real fact, every person is a leader in their own unique way and HSSE is a shared responsibility.

4 How is PETRONAS driving towards a streamlined HSSE focus?

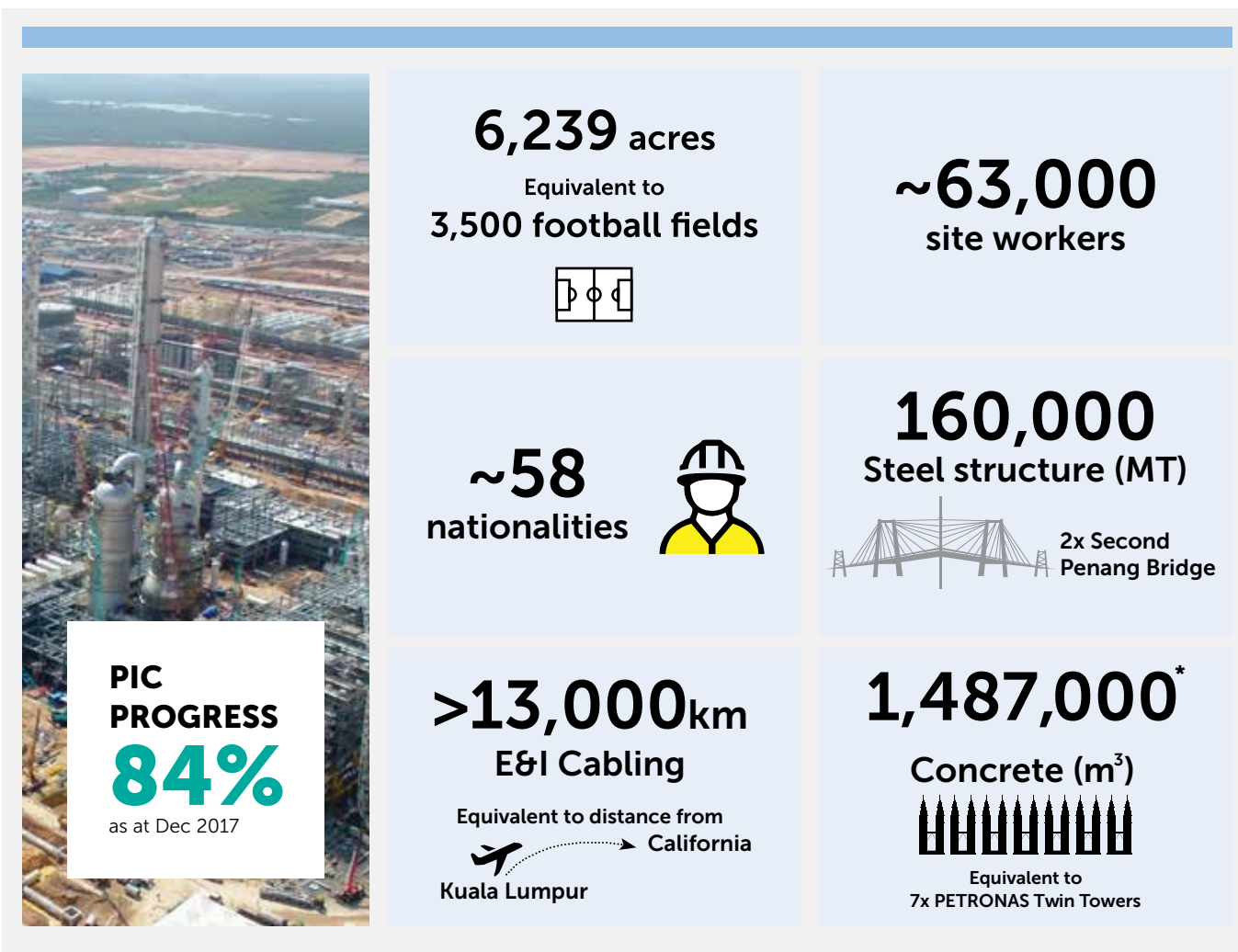
A strong HSSE foundation is central. One that is resilient today, tomorrow and beyond. Regardless of where we operate, our values and belief system are always compatible with our ambitious targets. Binding us together are the PETRONAS Shared Values and Cultural Beliefs. Guiding our endeavours is a suite of robust governance mechanisms, led predominantly by the PETRONAS HSE Policy, aligned with applicable laws and regulations of host nations. These stipulations are applicable not only to PETRONAS, but also to our third-party service providers. In 2017, much of our efforts were focused on strengthening our risk management practices as part of solidifying a culture of compliance across our global operations. Strengthening our safety controls relative to the complexities facing our Businesses is a must for improving our HSSE performance.

5 What are your thoughts on the evolution of safety in the energy sector?

HSSE is a subject close to my heart. It is interesting to mull how fast the energy industry is advancing. Not too long ago, operational processes were tedious and time consuming. In the present day, technological developments have changed the dynamics associated to technical integrity and reliability. Meanwhile, digital solutions are redefining HSSE excellence where big data allows for more accurate analysis and decision-making. I am pleased to share that PETRONAS is presently piloting several digital solutions on HSSE to improve operational excellence and efficiency through simplifications, process enhancements as well as predictive analytics. It is only right to say that the focus on HSSE will fortify with time and embracing technological solutions is imperative to lasting success. Similarly, investment in competencies will be critical to equip individuals with skills and knowledge to leverage opportunities, ensuring risks are proactively identified and mitigated. A steadfast commitment to HSSE in essence paves the way to ensure everyone goes home safely!

PENGERANG INTEGRATED COMPLEX ON TRACK

In 2017, PETRONAS Integrated Complex (PIC) slated a cumulative progress of over 84 per cent, marking a completion rate of 77 per cent in construction activities. PIC, entailing on-site installation of about 1.8 million cubic metres of concrete, 170,000 metric tonnes of steel structures, over nine million diameter-inches of pipelines, 23 million metres of electrical cables and about 6,000 pieces of diverse industrial equipment by 2019 is located at Johor, within Pengerang Integrated Petroleum Complex (PIPC). The Project, underway commissioning sometime 2019, will be a catalyst to elevate the competitiveness of Malaysia's energy sector, concurrently enabling progress in the technology and economic dimensions.



In the period under review, efforts were accelerated to meet our project delivery timelines. In doing so, regulatory requirements and internationally-acclaimed industry good practices were adhered to, which included augmented efforts in the areas of Health, Safety, Security and Environment (HSSE) and socio-economic growth.

HSSE EXCELLENCE

In 2017, efforts were placed on inculcating stronger HSSE awareness amongst third-party service providers, including contractors to ensure strict compliance with our safety requirements. A comprehensive HSE Management Plan was hence rolled out, revolving around four pillars namely, Compliance and Governance, Execution Management, Assurance and Communication and Incident Management and Emergency Preparedness.

Several initiatives to strengthen operational safety practices were carried out concurrently, such as:

- Coaching and mentoring under the Let's Comply and Intervene programme to achieve full compliance with the PETRONAS Zero Tolerance Rules.
- Strengthening HSSE commitment via customised efforts such as the Engagement and Commitment initiative for Engineering, Procurement, Construction and Commissioning (EPCC) safety practitioners and Raising the Safety Bar for site supervisors.
- Tightening Consequence Management and providing timely recognition to outstanding HSSE performers.
- Elevating capacity building in the areas of lifting, scaffolding, confined space, radiation and energy isolation.
- Undertaking in-house Safety Induction for construction workers, having obtained accreditation from the relevant local authorities, thereby saving millions of man hours.

PIC received external commendation from several local governmental agencies for demonstrating exemplary leadership in the execution of Project HSSE.

Other achievements in 2017 included:

- Zero major security incidents.
- Strong alignment with the Guided Self-Regulation system by the local environmental authorities aimed at enforcing independent environmental compliance.

Site Training School (STS)

The establishment of STS enabled verification of site workers' competencies by trainers at the project location. Training and Verification of Competency assessments were conducted covering a range of skills to instill stronger behavioural safety such as scaffolding, basic first aid and rescue operations, working at height and in confined space, rigging, slinging and signalling, including crane operation. Accreditation and certification is awarded by relevant agencies post the completion of the respective training. To date, more than 6,000 site workers had their competencies verified at STS.

Moving forward, scope of STS will be expanded to accommodate the Commissioning and Readiness for Start Up such as flange management and energy isolation.

Foreign Workforce

To ensure the availability of an adequate workforce in support of timely project delivery, we collaborated with various local agencies to accelerate the turn-around time involved for registering foreign workers. Subsequent to which, processing time was reduced from 14 to three days.

Overall, PIC's workforce population in 2017 comprised 63,000 individuals hailing from 58 countries, each with varying multicultural backgrounds. Of this, 40,000 resided at designated on-site accommodation. The Temporary Common Facilities were as such expanded in the period under review to address the needs of a large on-site workforce. To this end, 41 off-site workers' accommodation were made available in the period under review. Meanwhile, more public service, recreational and utility facilities were created to offload pressure on local infrastructure.

SOCIAL DEVELOPMENT

We strive to manage the expectations of our various stakeholders, and in doing so, work towards elevating trust to foster stronger working relationships. This encompassed active efforts in the area of corporate social investment as well as local talent and economy development. Notable achievements in the period under review included:

- Spurring local economy through the participation of 359 local Johorean industry players in PIC, with contractual opportunities valuing up to USD1,185 million.
- Executing tailored initiatives such as the *Pasar Malam*, Vehicle Washing Bay and Commercial Fuel Station through *Special Koperasi Programme* to provide alternative income opportunities for members of the local community.
- Giving job opportunities to local talents in technical and other areas through long-standing initiatives such as SL1M-GEES-PETRONAS which accelerates the marketability of unemployed young graduates as well as Vocational Institution Sponsorship and Training Assistance that increases the availability of reliable talent pool for support services.

Renewable Energy

The Project is exploring the potential of utilising solar energy to generate power for operational use, with feasibility studies currently ongoing.



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About this Report

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Five-Year Sustainability Performance Data

ABOUT THIS REPORT

The PETRONAS Sustainability Report 2017 or SR2017 commemorates a decade of voluntary reporting on PETRONAS' non-financial performance. This 10th edition is a testament of our steadfast commitment to upholding transparency. Growing from strength-to-strength, we have expanded the depth of our disclosure since 2007.

Themed Moving Forward Together, SR2017 covers a suite of initiatives we pursued over a 12-month period, from 1 January to 31 December 2017. Insights are provided in support of 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 mitigate identified environmental, social and governance-related risks. In essence, demonstrating how we conduct our business activities responsibly, ethically and safely.

SR2017 is developed by a dedicated 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.

SR2017 complements PETRONAS Group Annual Report 2017, and both of these publications are accessible on our corporate website at www.petronas.com. The cross-referencing of our standalone financial and non-financial reports is encouraged.

SCOPE

Information provided 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 which provides a holistic representation of our business is in line with the industry's good practices.

PETRONAS also tabulates information of business segments beyond our operational control and influence, where necessary for tracking purposes. The information is however subjected 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 the SR2017 is collated using a centralised web-based system and presented using the stated metric system.

An enhanced digital module was implemented in 2017 to streamline data gathering encompassing the topics of Health, Safety, Security and Environment. Data from preceding years was also reviewed to attain optimum integrity in historical performance. Potential data variance relative to levels reported previously is likely following reclassification, as deemed relevant. To this end, data is reinstated where necessary. Upholding data integrity is part of the Group's continuous efforts in facilitating a more robust annual reporting process, working towards reducing potential human error.

- Safety and health data is reported on the basis of more than 50 per cent operational control.
- Environmental data covers all subsidiaries and joint ventures where we have operational control.
- Workforce data encompasses permanent and contract staff.
- PETRONAS Group's quantitative data is a master tabulation which also covers the sustainability performance of our Public Listed Companies.

DATA ASSURANCE

PETRONAS stipulates internal controls, benchmarked against the industry's good practices for augmenting data reliability and integrity standards. The content of our Sustainability Report is developed in close consultation with subject matter experts (SMEs) across PETRONAS, cognisant of the guidelines on non-financial disclosure, including our stakeholders' expectations. Quantitative and qualitative information submissions for the Sustainability Report undergo thorough evaluation in adherence to internal control mechanisms aimed at elevating information accuracy.

STAKEHOLDER MANAGEMENT

The concept of mutually beneficial partnerships and fostering trust is a cornerstone of how we do business. The concerns, expectations and interests of our various stakeholders are obtained via various formal and informal channels. The insights subsequently inform our business strategies and plans. The aim is to balance the best interest of PETRONAS and our stakeholders.

To date, stakeholder engagement is carried out Groupwide. This ranges from providing timely project insights to sourcing feedback on our growth strategies and providing regular updates on development plans. The frequency of our engagements vary and dialogues are largely led by representatives from multidisciplinary teams. The engagement technique is aligned with the applicable norms in countries of operations.

Stakeholder Group	Why They Matter	Engagement Platform	Interest Area	Our Effort
Business Partners, Suppliers and Service Providers	Collaboratively execute our growth strategies	<ul style="list-style-type: none"> • Meetings • Audits • Targeted Forums • Contractual Provisions 	Timely updates on operational and business requirements	Cascade information on our various requirements such as corporate governance and HSSE namely, safety, human rights and environmental management through various engagement platforms.
Customers and Consumers	End-users of our energy products	<ul style="list-style-type: none"> • Hotline – MyMesra • Email Queries • Social Media • Safety Data Sheets 	Quality products that are reliable, safe and efficient	Offer superior products such as fuel, lubricants and chemicals that are efficient and safe.
Employees and Trade Unions	The pillars of our success	<ul style="list-style-type: none"> • Townhall Sessions • Team Dialogues • Feedback Sessions • Intranet • Mobile Applications 	Professional and personal growth opportunities in a changing business environment	Provide fair and equal growth opportunities, supported by robust people management policies that are benchmarked against the industry's good practices.
Host Governments and Regulatory Authorities	Develop and implement policies	<ul style="list-style-type: none"> • Meetings • Regular Updates • Roundtable Discussions 	Conformance to laws and regulations, as well as spurring local socio-economic growth	Strict conformance with all laws and regulations, including operational norms, wherever we operate, ensuring timely disbursement of payments.
Industry Associations and Non-Governmental Organisations	Collaboratively elevate the standards of oil and gas industry	<ul style="list-style-type: none"> • Dialogues • Working Groups • Collaborative Efforts 	Leveraging shared resources and expertise	Support various initiatives aimed at improving existing standards of the energy sector, whilst harnessing collective strength and resources.

Stakeholder Group	Why They Matter	Engagement Platform	Interest Area	Our Effort
Local Communities	Endorsers of our social license to operate	<ul style="list-style-type: none"> Dialogues Social Events Community Liaison 	Opportunities to improve social livelihood	Spearhead numerous initiatives aimed at empowering local communities with the skills and knowledge for achieving lasting growth.
Media	Provide a fair and balanced view of us	<ul style="list-style-type: none"> Social Events Media Releases Quarterly Briefings 	Access to timely, reliable and transparent information	Provide timely updates on key projects using multiple communication channels, whilst encouraging open discourse on subjects of wider interest.
Shareholders, Financial Institutions, Bond Holders and Investors	Capital contributors to drive our growth strategies	<ul style="list-style-type: none"> Corporate Reports Quarterly Briefings Queries 	Insights on our financial and non-financial performance	Voluntary development of our Annual and Sustainability Reports, as well as Quarterly Results, including a dedicated online platform for queries and channelling feedback.

Notes:
 1. This table, not an exhaustive list, collectively represents the Group's stakeholders.
 2. The PETRONAS Whistleblower channels are accessible to all our stakeholders, internal and external.
 3. All our stakeholders are viewed as important given that each group possesses unique qualities key to our long-term growth.

MATERIALITY ASSESSMENT

Several internal and external information resources as outlined below were scrutinised in facilitating a fair, balanced, meaningful and comprehensive tabulation of material factors, taking into view the context of the global energy sector, key priorities of our various stakeholders and PETRONAS' growth aspirations, including PETRONAS Corporate Sustainability Framework.

- Current and emerging global trends on sustainable development
- Outlook of the energy industry
- PETRONAS Enterprise Risk Management findings
- Internal collaterals namely, speeches, business strategies and management reports
- Media articles
- Sustainability reporting guidelines and non-financial assessment requirements
- External queries

Our materiality assessment process was led internally by our dedicated team at the Group level. It involved several steps and was conducted in consultation with multidisciplinary participants comprising SMEs from PETRONAS. The participants possessed strategic interface with our external stakeholders and were privy to the external operating environment. The steps are summarised as follows:

1		Identify	Important topics to external and internal constituents
2		Assess	Prioritise tabulated list of topics
3		Validate	Obtain SMEs' feedback on identified material factors
4		Approve	Seek relevant management approval on the list of material factors

PETRONAS' partly-owned Public Listed Companies (PLCs) on the Malaysia bourse undergo the FTSE ESG assessment on an annual basis. In the period under review, all six of PETRONAS' PLCs were listed on the FTSE4Good Bursa Malaysia Index. This includes PETRONAS Chemicals Group Berhad, PETRONAS Dagangan Berhad, PETRONAS Gas Berhad, KLCC Property Holdings Berhad, Malaysia Marine and Heavy Engineering Holdings Berhad and MISC Berhad.

NARRATIVE STATEMENTS

The viewpoints and insights presented in this Report premise upon internal evaluations which may vary from other analysis, as well as trending reports available on the various disciplines relevant to our industry. The information presented is nevertheless in the best interest of our various stakeholders and every possible effort is made towards achieving highest level of accuracy. The context in which we operate is fluid, and the statements as such may not guarantee the real-time landscape of our business. PETRONAS thus strongly encourages reader discretion and assessment, and categorically state that it does not hold any liability for its viewpoints and will not be liable for any losses or damages suffered as a result of any party's reliance on the content of this Report.

REPORTING STANDARDS

PETRONAS adopts the Global Oil and Gas Association for Environmental and Social Issues or otherwise 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 or GRI's sustainability reporting guidelines were collectively referenced, where applicable. PETRONAS also takes into consideration the FTSE Environmental, Social and Governance (ESG) assessment indicators' disclosure requirements as an additional base of expanding our existing depth of disclosure.

Our Public Listed Companies are required to adhere to relevant regulations, as applicable.

TELL ME - FEEDBACK

We value your insights, comments and queries on our sustainability disclosure as well as practices.

Write to us:

HSSE Reporting (previously known as PETRONAS Sustainability Reporting)
 Group Health, Safety, Security and Environment
 Petroleum Nasional Berhad (PETRONAS)
 Level 45, Tower 1, PETRONAS Twin Towers
 Kuala Lumpur City Centre
 50088 Kuala Lumpur
 Malaysia

Alternatively, email us at sustainability@petronas.com.my

* The printing of our Sustainability Report has been discontinued.

FIVE-YEAR SUSTAINABILITY PERFORMANCE DATA

Environmental Stewardship	2013	2014	2015	2016	2017
TOTAL GREENHOUSE GAS EMISSIONS (millions tCO _{2e})	52.55	49.57	49.85	50.18	53.51
Upstream	32.02	29.94	29.69	31.59	33.95
Downstream	15.17	15.05	15.71	14.03	15.47
MISC	5.36	4.58	4.45	4.56	4.09
TOTAL FRESHWATER WITHDRAWAL (million cubic metres per year)	48.89	50.47	52.26	56.5	55.91
Upstream	2.17	2.93	3.71	3.1	2.68
Downstream	46.72	47.54	48.55	50.8	50.92
MISC and Others*				2.58	2.31
TOTAL AMOUNT OF ENERGY GENERATED FROM SOLAR PV INSTALLATIONS IN MALAYSIA (megawatt-hours)	1,662	14,782	14,902	14,187	13,343
NUMBER OF HYDROCARBON SPILLS TO THE ENVIRONMENT OVER ONE BARREL (BBL) (one bbl is equivalent to 159 litres)	24	25	25	27	18
TOTAL SULPHUR OXIDES EMISSIONS (metric tonnes)	63,721	61,698	86,814	72,134	87,917
TOTAL NITROGEN OXIDES EMISSIONS (metric tonnes)	85,496	100,915	154,128	168,954	159,498
DISCHARGES TO WATER (metric tonnes of hydrocarbon)	992	992	680	534	591
TOTAL HAZARDOUS WASTE DISPOSED (metric tonnes)	-	26,974	29,280	32,355	19,755

Note: Efforts are ongoing at streamlining our accounting practices.
*Others refer to selected non-oil and gas related operations.

Safety	2013	2014	2015	2016	2017
NUMBER OF FATALITIES	4	10	4	13	4
Employees	0	3	0	2	0
Contractors	4	7	4	11	4
FATAL ACCIDENT RATE Reportable fatalities per 100 million man-hours	1.23	3.03	1.02	3.53	0.93
LOST TIME INJURY FREQUENCY (LTIF) Number of cases per one million man-hours	0.24	0.19	0.2	0.26	0.17
TOTAL REPORTABLE CASE FREQUENCY (TRCF) Number of cases per one million man-hours	0.4	0.64	0.63	0.57	0.53
NUMBER OF TIER 1 PROCESS SAFETY EVENTS	10	7	15	12	12
TOTAL RECORDABLE OCCUPATIONAL ILLNESS FREQUENCY Illness per million working hours – employees	0.51	0.07	0.33	0.32	0.08

Our Workforce	2013	2014	2015	2016	2017
TOTAL NUMBER OF EMPLOYEES	49,193	50,949	53,149	51,034	49,911
BREAKDOWN OF EMPLOYEES (%)					
Malaysian	78	79	80	80	80
Non-Malaysian	22	21	20	20	20
EMPLOYMENT TYPE (%)					
Permanent	82	85	83	85	85
Contract	18	15	17	15	15
GENDER DISTRIBUTION (%)					
Male	72	72	72	72	72
Female	28	28	28	28	28
NUMBER OF GROUPWIDE TECHNICAL EXPERTISE					
Technical Authorities (TA)	163	276	499	325	499
Technical Professionals (TP)	673	736	825	815	860
Technical Trade Specialists (TTS)	126	144	297	198	206

Note: Efforts are ongoing at streamlining our accounting practices.

Our Workforce	2013	2014	2015	2016	2017
EMPLOYEES ABOVE & BELOW AGE OF 35 (%)					
Above 35	44	46	47	46	46
Below 35	56	54	53	54	54
TOTAL NUMBER OF NEW HIRES (Core businesses in Malaysia)	3,699	3,541	4,078	2,932	2,409
Malaysian	3,380	3,198	3,781	2,667	1,982
Other Nationals	319	343	297	265	427
WOMEN IN TECHNICAL POSITIONS (%)	14	14	14	12	14
ATTRITION RATE (%)	6.5	5.7	5.9	7.3*	5.8
Male	6.1	5.3	5.5	7.1	5.4
Female	7.4	6.7	7	8	6.8
NUMBER OF STAFF UNDER COLLECTIVE BARGAINING AGREEMENTS	10,684	8,954	9,651	8,616	8,796
NUMBER OF PETRONAS SCHOLARS RECRUITED	432	250	351	365	337
Recruited by PETRONAS (%)	75	47	51	50	48
Recruited by Others (%)	25	53	49	50	52
NUMBER OF SCHOLARSHIPS AWARDED TO MALAYSIANS	329	337	326	375	387
International Universities (%)	41	44	42	38	45
Malaysian Universities (%)	59	56	58	62	55
NUMBER OF SPONSORED NON-MALAYSIANS Universiti Teknologi PETRONAS (UTP), Malaysia	255	257	191	147	118

TOTAL NUMBER OF MALAYSIAN & HOST COUNTRY NATIONALS (HCN) IN SELECTED COUNTRIES - 2017

	Total Number Employees	HCN	Malaysians	Other Nationalities
Indonesia	333	305	25	3
Myanmar	306	238	67	1
South Africa	3,359	3,305	13	41
Turkmenistan	672	544	64	64

Note: Efforts are ongoing at streamlining our accounting practices.