

# Integrated Sustainability Report

We Contribute to a **Better Living**  
Together with Creating Economic,  
Social and Environmental Values  
for Sustainable Growth



Economic

A blue circle representing the Economic pillar. To its right is a petri dish containing blue liquid, with a glass pipette positioned above it, suggesting scientific or industrial research.



Social

An orange circle representing the Social pillar. To its left is a photograph of a young child wearing a helmet and riding a bicycle, symbolizing community and social well-being.



Environment

A green circle representing the Environment pillar. Above it is a photograph of a small green plant with several leaves growing out of a pot of dark soil, symbolizing nature and environmental stewardship.



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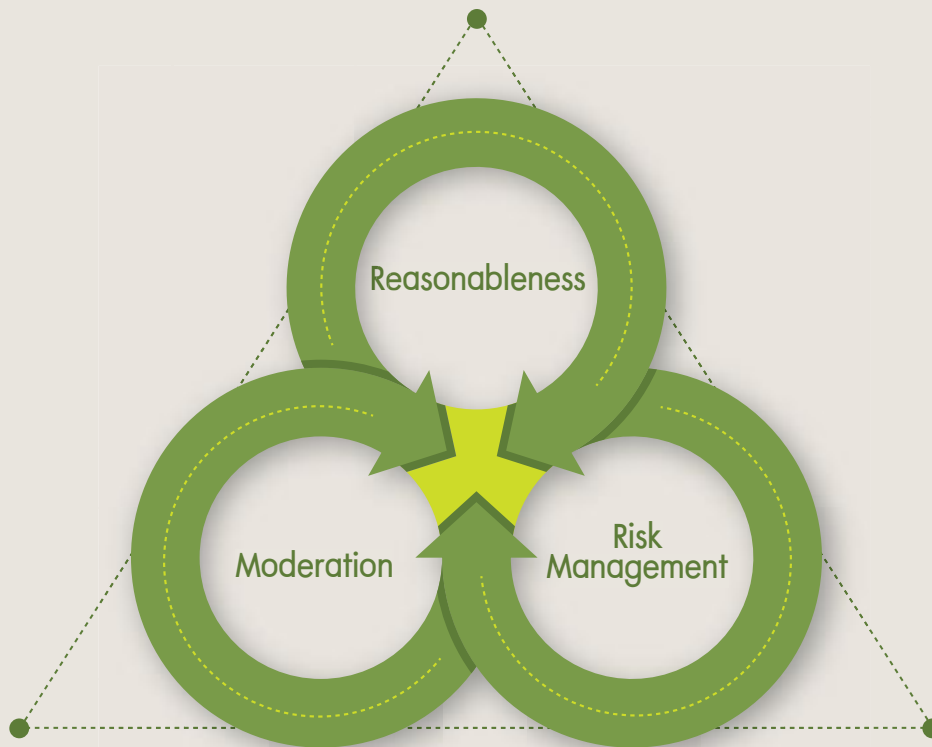
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## His Majesty the King's Sufficiency Economy Philosophy and Our Business

### Reasonableness

#### ● Economic

Medium and long term plan /  
Risk management /  
SWOT analysis /  
BSC and risk monitoring

Sustainable investment :  
Financial ratio i.e. debt-to-equity  
ratio / Internal rate of return /  
DJSI guidelines / UNPRI

#### ● Social

Stakeholder expectation /  
Social satisfaction survey

#### ● Environment

GHG reduction / Eco-efficiency /  
Life Cycle Assessment / 3Rs /  
Green procurement /  
Green process and product /  
Responsible care

### Moderation

#### ● Economic

Core uplift, expansion  
and organic growth  
  
Clear vision of growth  
strategy

#### ● Social

Country benefiting : contribution  
of Thai petrochemical industry  
to economy = 6%

#### ● Environment

1<sup>st</sup> quartile performance in  
operational excellence i.e.  
energy efficiency  
  
Green strategy i.e.  
Bio-chemicals / Bioplastics /  
Biodiesel

### Risk Management

#### ● Economic

Business Continuity Plan [BCP]  
  
Preparedness and  
crisis management

#### ● Social

United Nations Global  
Compact / United Nations  
Environmental Program / etc.  
  
License to operate /  
Community development /  
Employee volunteer /  
Stakeholder engagement / etc.

#### ● Environment

Clean Development  
Mechanism / Carbon  
Disclosure Project / etc.

### Knowledge

- Learning Organization
- Knowledge Management
- Operational Excellence

**G**  
Global  
Mindset

**C**  
Customer  
Focus

**S**  
Synergy

**P**  
Performance  
Excellence

**I**  
Innovation

**R**  
Responsibility  
for Society

**I**  
Integrity and  
Ethics

**T**  
Trust and  
Respect



# Sustainability Policy

At PTT Global Chemical Public Company Limited, three pillars must be taken into consideration for conducting sustainable business - economy, social and the environment - in all that we do. We believe that a balance can be achieved if we remain focus and open to new innovations and concepts.

## นโยบายการบริหารจัดการความยั่งยืน

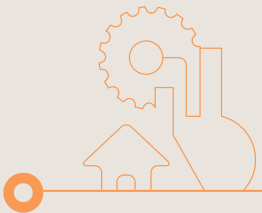
บริษัท พีทีที โกลบอล เคมิคอล จำกัด (มหาชน) เชื่อว่าการดำเนินธุรกิจอย่างยั่งยืนจำเป็นจะต้องพิจารณาใน 3 ประเด็นหลัก ได้แก่ เศรษฐกิจ สังคม และสิ่งแวดล้อม ในทุกๆ กิจกรรมที่บริษัทฯ ดำเนินการ โดยบริษัทฯ เชื่อว่าความสมดุลใน 3 ประเด็นหลักนี้สามารถทำได้ หากเรามุ่งมั่นในการพัฒนาวัตกรรมและแนวคิดใหม่ๆ อยู่เสมอ

## Creating Chemistry Innovation for a Healthy and Sustainable Future



### Wealthy Economy

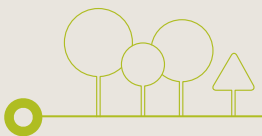
We aim to grow our company through the adoption of sustainable principles in our daily business practices to achieve sustainable business growth. We seek to achieve this through the incorporation of innovation - both strategically and operationally.



### Well-Being Society

As a global company, we are committed to continue embracing the principles of United Nations Global Compact LEAD. To create value and contribute to our stakeholder and the world, we continuously integrate the principles into every area of our operations.

ในฐานะที่เป็นบริษัทระดับโลก บริษัทฯ มีความมุ่งมั่นในการปฏิบัติตามเกณฑ์ขั้นสูงสุดของข้อตกลงโลกแห่งสหประชาชาติ (United Nations Global Compact LEAD) อย่างต่อเนื่องในทุกด้านของการดำเนินงานของบริษัทฯ เพื่อสร้างคุณค่าให้แก่ผู้มีส่วนได้เสียของบริษัทฯ และโลกของเรา



### Better Environment

We understand and value our place in the environment and seek to assure our responsibility by driving change for better environment through our operations and supply chain. We believe the innovation will help us deliver better products to our customers, while reduce the environmental impacts throughout the supply chain.

บริษัทฯ เข้าใจและให้คุณค่าในการเป็นส่วนหนึ่งของสิ่งแวดล้อมและแสดงออกถึงความรับผิดชอบ โดยการขับเคลื่อนให้มีการเปลี่ยนแปลงปรับปรุงสิ่งแวดล้อมให้ดีขึ้น ผ่านกระบวนการดำเนินงานและห่วงโซ่อุปทานของบริษัทฯ เพราะบริษัทฯ เชื่อว่าการขับเคลื่อนด้านนวัตกรรม จะช่วยให้บริษัทฯ ส่งมอบผลิตภัณฑ์ที่ดีให้กับลูกค้าพร้อมทั้งช่วยลดผลกระทบต่อสิ่งแวดล้อมตลอดห่วงโซ่อุปทาน

In line with our vision to be “A Leading Chemical Company for Better Living” and our mission of sustainable growth, this sustainability policy forms the first part of our sustainability framework, which we will seek to deliver a better tomorrow to our stakeholders, through our managements and our employees.

สอดคล้องกับวิสัยทัศน์ของบริษัทฯ ในการเป็น “ผู้นำในธุรกิจเคมีภัณฑ์ เพื่อสร้างสรรค์คุณภาพชีวิต” และพันธกิจในการเติบโตอย่างยั่งยืน นโยบายการบริหารจัดการความยั่งยืนนี้เป็นต้นแบบของกรอบความยั่งยืนของบริษัทฯ เพื่อใช้ในการส่งมอบอนาคตที่ดีขึ้นให้กับผู้มีส่วนได้เสียผ่านฝ่ายบริหารและพนักงานของบริษัทฯ



# Sustainability Performance in Focus

## ECONOMIC

 **SALE REVENUE**  
**400,128**  
Million Baht

 **STRATEGIC PARTNERS**  
**1,778**  
Partners


 **ADJUSTED EBITDA**  
**44,740**  
Million Baht

## ENVIRONMENT

 **ENERGY SAVING**  
**1.71**  
Million GJ

 **100%**  
PRODUCT GRADES  
CARBON FOOTPRINT CERTIFIED

 **% WASTE  
TO LANDFILL**  
**0**

 **GHG EMISSION REDUCTION  
(Scope I and II)**  
**0.27**  
Million Tons CO<sub>2</sub> equivalent

 **WATER RECYCLED**  
**36.8%**

 **EMPLOYEES**  
**5,738**  
Persons

 **HR DEVELOPMENT  
INVESTMENT**  
**123**  
Million Baht



**Financial capital:**  
as the pool of funds  
available to an organization.



**Manufactured capital:**  
mainly comprises of  
physical infrastructure



**Intellectual capital:**  
is intangibles that provide  
competitive advantage



**Human capital:**  
refers to People's skills and experiences, as well as their capacities and motivations to innovate



**Social and relationship capital:**  
is the stock of resources created by the relationships between an organization and all its stakeholders

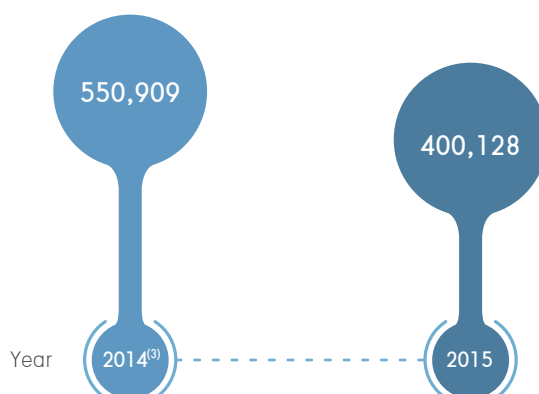


**Natural capital:**  
is an input to the production of goods or the provision of services.

## Financial Highlights

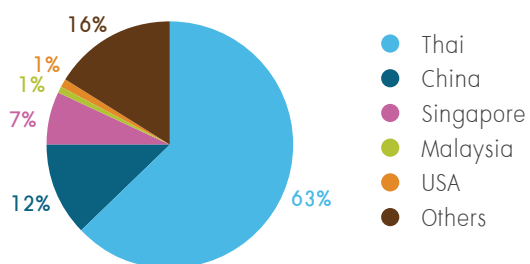
### Sales Revenue

Unit : Million THB



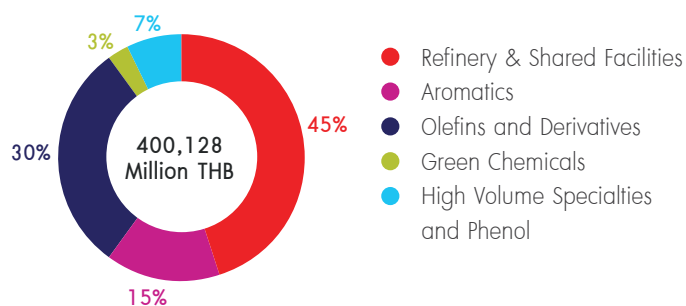
### Sales Revenue Breakdown by Geography

Year 2015



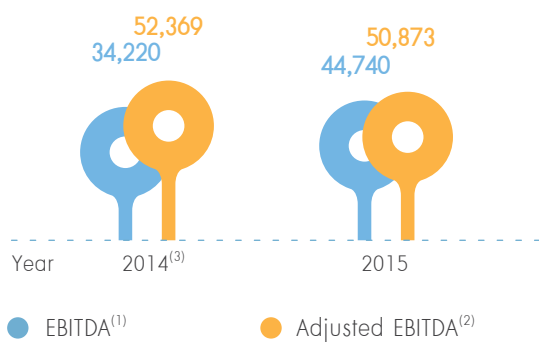
### Sales Revenue Breakdown by Business

Year 2015



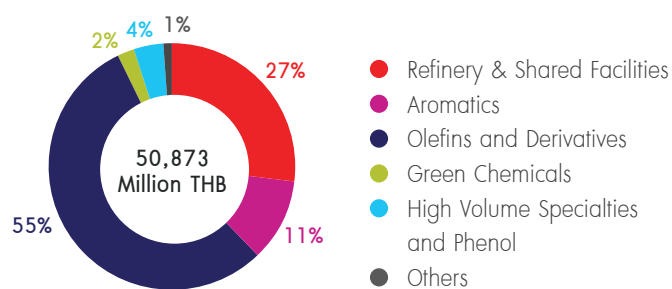
### EBITDA<sup>(1)</sup>

Unit : Million THB



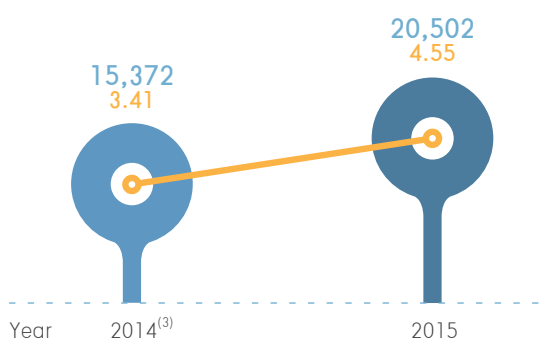
### Adjusted EBITDA<sup>(2)</sup> Breakdown by Business

Year 2015



### Net Profit

● Net Profit (Million THB)  
 ○ Earnings Per Share (Baht/Share)



Statement of Financial Position (Unit : Million THB)				2013 <sup>(3)</sup>	2014 <sup>(3)</sup>	2015
Total Assets				409,286	381,443	377,545
Cash and Cash Equivalents + Short-term Investment				41,704	45,788	47,741
Current Assets				109,662	77,343	70,160
Property, Plant and Equipment				219,318	219,346	220,213
Non-current Assets				38,602	38,966	39,431
Total Liabilities				177,916	152,993	143,280
Loan				115,864	113,142	105,847
Other Liabilities				62,052	39,851	37,433
Total Equity				231,370	228,450	234,265
Statement of Financial Position					2014 <sup>(3)</sup>	2015
Current Ratio (times)					2.19	2.86
EBITDA to Total Revenues (%)					6.21	11.18
Net Profit on Total Revenues (%)					2.79	5.12
Return on Total Assets (%)					5.09	7.36
Return on Equity (%)					6.86	8.99
Interest Bearing Debt to Equity (times)					0.50	0.45
Net Interest Bearing Debt to Equity (times)					0.29	0.25
Net Interest Bearing Debt to EBITDA (times)					1.97	1.30
Dividend Paid (Baht/Share)				Earnings per Share (Baht/Share)	Dividend Payout Ratio (%)	
	1 <sup>st</sup> Half	2 <sup>nd</sup> Half	Full year			
2015 <sup>(4)</sup>	1.50	1.30	2.80	4.55	61%	
2014 <sup>(3)</sup>	1.37	1.00	2.37	3.41	70%	

Note :

- (1) EBITDA is Earnings Before Interest, Taxes, Depreciation and Amortization.
- (2) Adjusted EBITDA refers to EBITDA excluding impact of inventory value (excludes Inventory and NRV) and extraordinary items.
- (3) Restated FY 2013 and FY 2014 Financial Statements from the implementation of Thai Financial Reporting standards (TFRS) no.10 regarding consolidated financial statements and no.11 regarding joint arrangements.
- (4) The Board of Directors at its meeting No.2/2015 held on February 15<sup>th</sup>, 2015 has approved the proposal to propose at the 2015 Annual General Meeting of Shareholders to consider and approve on the dividend payment for the year 2014 operating performance of Baht 2.80 per share or 61% of the net profit, of which Baht 1.50 per share was paid as an interim dividend on September 22<sup>nd</sup>, 2014. The final dividend payment will be Baht 1.30 per share, but the right to receive dividend is subject to the approval of Shareholders at the 2015 Annual General Meeting.

## PTTGC's Value Creation Process

### Inputs

#### Financial Capital

- Equity / Debt
- Operating cost / Investment
- Infrastructure asset

#### Manufactured Capital

- Energy consumption
- Water consumption
- Infrastructure
- Enabling technology

#### Intellectual Capital

- Brands
- Patent
- Knowledge Management
- R&D Expenditure
- Open Innovation

- Stakeholders
- Community
- Customers
- Suppliers / Partners
- Governments / Local authorities
- Investors and Shareholders
- License to operate

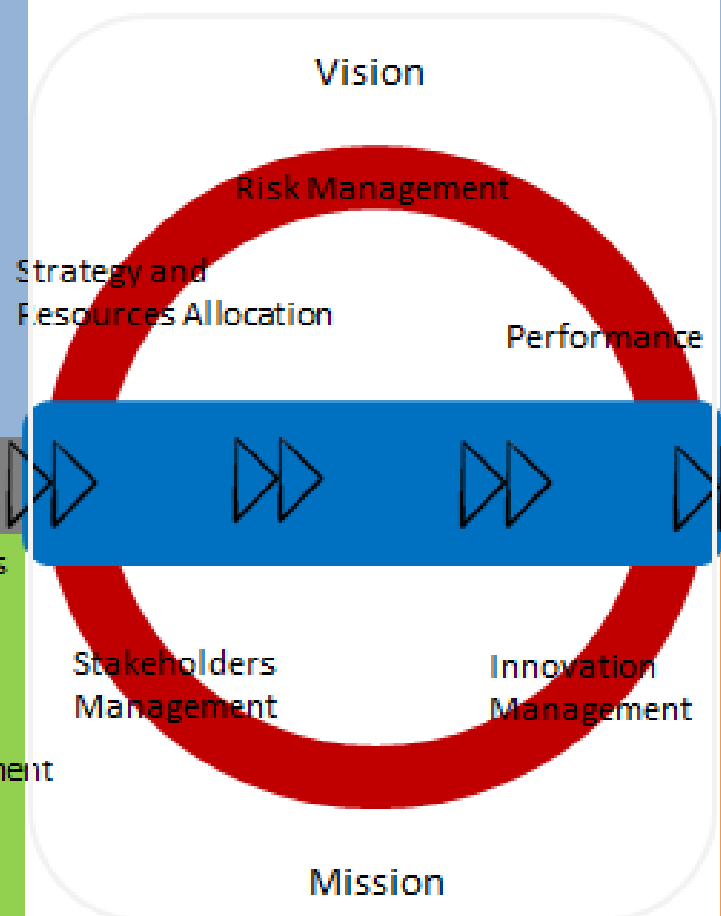
#### Social and Relationship Capital

- Ethic values
- Engaged workforce
- Specialized knowledge and skills
- Training and development
- Salaries and wages

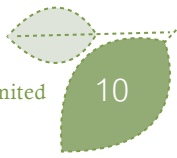
#### Human Capital

- Raw Materials
- Renewables

#### Natural Capital







## Outcomes

### Economic Value

- Sale revenue EBITDA / profit
- New products / EBITDA
- Patent Optimization
- Gross tax
- License to operate
- Dividend
- Cost saving
- Plant Reliability

### Environmental Value

- Environmental products and process
- Environmental Return on Investment
- Environmental database and assessment
- Environmental guidelines and projects
- Operational Eco-efficiency (water / waste / energy / GHG / NOx / SOx / VOCs)
- Environmental impact / compliant
- Environment betterment

### Social Value

- Social guidelines and projects
- Stakeholder satisfaction
- Procurement Spend
- Employee engagement
- Human Capital Return on Investment
- Turnover rate Employee Attraction
- Specialized knowledge and skills
- Social impact / Complaint
- TRIR / LTIFR / Fatalities
- Social betterment
- Sustainability and self-resilience
- Brand / Reputation / Trust

# About This Report<sup>(G4-17 to G4-34)</sup>

## REPORTING GUIDELINES<sup>(G4-17, G4-23, G4-28, G4-30, G4-32)</sup>

PTT Global Chemical Public Company Limited (PTTGC) has prepared an annual Sustainability Report to communicate its performance on issues that are material to business activities and stakeholders in all sectors. The 2015 Sustainability Report focuses on four core sustainability issues: Role Model in Product Stewardship, Sustainable Value Chain, Operational Responsibility and Employee Readiness. The content of this report covers the period from January 1<sup>st</sup>, 2015 to December 31<sup>st</sup>, 2015, and has been prepared in accordance with the Global Reporting Initiative Guidelines, Version 4 (GRI G4), per the requirements of the Core Option, as well as the additional requirements of the Oil and Gas Sector Disclosure. The report was submitted for the GRI Materiality Disclosures Service, and GRI confirmed the correctness of the locations of the G4 materiality disclosures (G4-17 to G4-27).

Prominent topics of sustainability in the area of finance have been presented in accordance with the Integrated Report Framework (IR) guidelines of the International Integrated Reporting Council (IIRC). The scope of this report comprises of companies in PTTGC Group, in which PTTGC holds shares equalling or exceeding 50 percent and therefore has operational control. These companies are considered as an integral part of the business entity of PTTGC Group and so are referenced as part of the data constituting the annual reports of the company and online via [www.pttgcgroup.com](http://www.pttgcgroup.com).

Additional, as a member of the United Nations Global Compact (UNGC) LEAD, the organization has prepared a Communication on Progress (COP) in accordance with the 21 criteria, which is presented on page 132.



**ROBECOSAM**  
Sustainability Award  
Silver Class 2016

MEMBER OF  
**Dow Jones**  
**Sustainability Indices**  
In Collaboration with RobecoSAM

PTTGC is the only chemical company from Thailand and ASEAN that has obtained the Silver Class distinction from RobecoSAM, one of the world's most trusted and accepted sustainability rating agencies. The distinction confirmed that PTTGC is integrating sustainability performances across the value chain and at the global level. Additionally, the annual assessment of companies' sustainability by RobecoSAM is also used for selecting component of DJSI inclusion. The result of the 2015 assessment confirmed the inclusion of PTTGC in the DJSI World members for the third consecutive year.



A man with short grey hair and black-rimmed glasses is smiling. He is wearing a white short-sleeved polo shirt with a small 'JCC Group' logo on the left chest and a black belt. He is standing in front of a lush green forest under a blue sky with white clouds. The background is slightly blurred, emphasizing the man.

-----  
" I WOULD LIKE TO EXPRESS  
OUR UTMOST APPRECIATION  
FOR ALL THE SUPPORTS AND TRUST,  
**THE HEART OF GROWING  
SUSTAINABLY TOGETHER**  
WITH THAI SOCIETY."

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# A Message from Our President & CEO

We live and work today under the conditions of a rapidly changing world, which cause inevitable effect economically, socially and environmentally. In the past year, fluctuations in oil prices resulted in the global economic downturn and incidents of unrest were seen in every corner of the globe. Our industry currently faces a major challenge in the area of sustainable development - the problem of global warming. As a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), Thailand assumes an important responsibility in reducing global greenhouse gas emissions. In particular, following the 21<sup>st</sup> session of the Conference of the Parties to the UNFCCC (COP21), Thailand has come under increasing pressure to enhance its readiness to contribute to international efforts at limiting the global temperature rise well below 2°C. This is to be able to achieve by focusing on sustainable development in all dimensions. For the petrochemicals and chemicals industries, this requires planning in the exhaustion of energy, development of environmentally friendly products and distribution of products all along the supply chain to support national objectives, while remaining aware of current trends in business competition.

Stepping into the fifth year since the merger of PTTGC Group, despite the many challenges we have faced, PTTGC Group continues to sustain positive economic growth and remains committed to being a leading organization in sustainable development. We have conducted our business in accordance with the principles of sustainability, creating a balance between economic, social and environmental dimensions across our supply chain, and this has culminated in tangible accomplishments in the following areas.

## ECONOMIC

Our ongoing dedication to sustainable business performance has resulted in our ability to maintain PTTGC Group's status as a leading model for global sustainability for the third consecutive years. We have received Silver Class recognition for the first year from Dow Jones Sustainability Indices (DJSI), a family of internationally renowned indices evaluating companies' sustainability performances. Such recognition places us as one of the ten leading chemical industry companies in the world.

Our focus on sustainability in business practices has further translated into mutual development alongside our business partners, associates, customers and suppliers. Our company participated in the EcoVadis sustainability assessment of supplier groups and has been rewarded with the Gold Recognition Level, which is the highest recognition level.

Regarding corporate responsibility for sustainability at the international level, PTTGC Group adheres to the principles of the United Nations Global Compact at the highest level and has done so since its affiliation. Last year, PTTGC Group was recognized as the first company in Thailand to be awarded with the UNGC LEAD status.

Lastly, PTTGC Group's dedication in these areas was acknowledged by the Stock Exchange of Thailand (SET), who we received the Sustainability Award and the Sustainability Investment Award. In this way, we will continue setting an example of sustainability for businesses in Thailand.

## ENVIRONMENT

The impacts of climate change are wide-ranging, affecting the balance of nature, life as well as include impacts on PTTGC Group's business operations. Given this, PTTGC Group has revised its strategies to strengthen its environmental practices, with the conscious effort to align our performance with national and global climate change goals and objectives. This led to our recognition as a climate change leader for the third year in the row from the Climate Disclosure Leadership Index of the Carbon Disclosure Project (CDP), an internationally acclaimed institution in environmental management assessments. PTTGC Group was awarded with the maximum score of 100.

Additionally, environmental management constitutes an important part of PTTGC Group's strategies. We have successfully integrated environmental issues, such as the preservation of environmental quality, energy management and quality and safety management. Our efforts to this end were realized with the Prime Minister's Industry Awards by the Ministry of Industry of Thailand.

## SOCIAL

In order to strengthen local communities and enhance the quality of life in the country, PTTGC Group further expanded upon its Corporate Social Responsibility projects as Creating Shared Value projects. This brought about increased confidence and recognition from various institutions, such as CSR-DIW and Green Industry from the Department of Industrial Works, and the Green Star Award and the Gold Star Award from the Industrial Estate Authority of Thailand.

Moreover, PTTGC remains committed to the transparent disclosure of our sustainability performance to our stakeholders. We have chosen to enhance our reporting approach to strive for international best practices in reporting, where we will develop further from the Global Reporting Initiative Guidelines by adopting Integrated Reporting (IR), to better demonstrate the relationship between economic, environmental and social factors.

I would like to express our utmost appreciation for all the supports and trust, the heart of growing sustainably together with Thai Society.



(Mr. Supattana Pongpunmeechaow)  
President and CEO





# Awards and Recognitions

The commitments to operate our business with sustainability can be demonstrated through the awards and success we received both nationally and internationally. Our pride from the awards and recognitions has been motivating us in striving for better.



## ● DOW JONES SUSTAINABILITY INDICES

MEMBER OF  
**Dow Jones Sustainability Indices**  
In Collaboration with RobecoSAM

PTTGC was in the Top 10 Dow Jones Sustainability Indices (DJSI) - World Members in the Chemicals sector for 3<sup>rd</sup> consecutive year and in Silver Class in 2015.

## ● BOARD OF THE YEAR 2015



PTTGC received Board of the Year for Distinctive Practices in 2015 for the 2<sup>nd</sup> time from Thai Institute of Directors Association and other six leading organizations.

## Economic

## ● FORBES GLOBAL 2000



PTTGC was ranked at the 1033<sup>th</sup> in Forbes 2015 Global 2000 (World's Biggest Companies). Four aspects have been taken into consideration for the evaluation : Sales, Profits, Assets, and Market Value.

## ● ASEAN CG SCORECARD



PTTGC received ASEAN Corporate Governance Scorecard : TOP 5 ASEAN PLCs and TOP 3 of good governance of the Thailand PLCs from institution ASEAN Capital Market Forum: ACMF.



## ● BEST MANAGED COMPANY IN ASIA



PTTGC received the Best Managed Company - Oil / Gas / Chemicals / Petrochemicals in Asia, Overall Award 2015 from the EUROMONEY.

## ● ICIS



PTTGC was ranked at the 17<sup>th</sup> in the 2015 ICIS Top 100 global chemical companies with outstanding operational excellence.

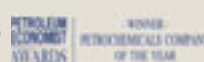


## ● BEST ELECTRONIC BANKING IMPLEMENTATION, THAILAND



PTTGC received the Best Electronic Banking Implementation from The Asset Triple A Transaction Banking: Asset Asian Awards 2015.

## ● PETROCHEMICALS COMPANY OF THE YEAR



PTTGC received Petrochemicals Company of the Year 2015 Award from the Petroleum Economist, England.

## Social



### UN GLOBAL COMPACT: LEAD



PTTGC is the first company in Thailand that made a commitment to the UN Global Compact at the highest level : LEAD.

### GLOBAL REPORTING INITIATIVES



PTTGC Sustainability Report 2014 was in accordance with the Global Reporting Initiative G4 guidelines, for 2<sup>nd</sup> consecutive year.

### ESG 100 COMPANY



PTTGC was ranked ESG 100 2015 (ESG 100 Companies) from Thaipat Institute. PTTGC is a listed company that has been prominent in sustainable business practices that are exposed to society.

### GOLDEN PEACOCK AWARD FOR EXCELLENCE IN CORPORATE GOVERNANCE



PTTGC received Golden Peacock Award for Excellence in Corporate Governance 2015 from Institute of Director, India.

### BEST CSR & BEST ENVIRONMENTAL RESPONSIBILITY 2015



PTTGC received the Best CSR and Best Environmental Responsibility 2015 from Corporate Governance Asia.

### SUSTAINABILITY REPORT AWARD 2015



PTTGC received Sustainability Report Award 2015 in Outstanding category from CSR Club, Thai Listed Companies Association, The Securities and Exchange Commission and Thaipat Institute.

## Environment



### CLIMATE DISCLOSURE LEADER 2015



PTTGC was recognized by the CDP as a Climate Disclosure Leader for the 3<sup>rd</sup> consecutive year, receiving full score (100). CDP is a widely accepted organization that assesses environmental management of companies worldwide.

### ASEAN ENERGY AWARDS 2015



PPCL representing Thailand, received ASEAN Energy Awards 2015 in Industry Special Submission Category from ASEAN Center for Energy.

### ECOMAGINATION AWARDS 2015



PTTGC branch 2 & 3 received Ecomagination Leadership Award and PTTGC branch 2 received Return on Environmental Award: ROE from GE Water and Process Technologies Co., Ltd. (GEWT).

### PRIME MINISTER'S INDUSTRY AWARDS 2015



PTTGC received nine Prime Minister's Industry Awards 2015 in five categories on Environmental Management, Energy Management, Productivity, Quality Management and Safety Management from Ministry of Industry.

### CARBON FOOTPRINT REDUCTION



Products of Polyethylene, Aromatics, Petroleum, Green Chemicals and Ethoxylate of PTTGC Group were certified for Carbon Footprint Reduction from Thailand Greenhouse Gas Organization (Public Organization). This reflected our commitment to minimize environmental impact from our products.

### THAILAND GREEN DESIGN AWARDS



PTTGC received Thailand Green Design Awards 2015 in Honorary Award category, - Product for Life Enhancement from Kasetsart University.



Each stakeholder group is essential to the operations of the organization, both directly and indirectly. In order to better appreciate the expectations of The stakeholders and reduce operational impact, PTTGC has engaged with stakeholders to further understand their key concerns and to integrate their feedbacks into the decision-making process and business operations.

PTTGC has divided its external and internal stakeholders into eight groups, while designating different communication methods and level of involvement for each group. Details are outlined in Table on page 20.

## Stakeholder Engagement<sup>(G4-24, G4-26, G4-27)</sup>

STAKEHOLDERS	KEY STAKEHOLDER INTERESTS	ACTIONS AND RESPONSES	ENGAGEMENT CHANNELS
	Enhance business competitiveness capabilities	Cooperate with various agencies and other companies to enhance operational efficiency	<ul style="list-style-type: none"> <li>Annual General Meeting</li> <li>Annual Report / Sustainability Report</li> <li>Website</li> <li>Annual shareholder visit to company operation sites</li> </ul>
	Receive high quality products and services at a fair price	Assign responsible units to provide customers with recommendations and consultations, including follow-ups on customer complaints, etc.	<ul style="list-style-type: none"> <li>Annual Customer Meeting</li> <li>Customer Service Center</li> <li>Annual Customer Satisfaction Survey</li> <li>Various company media channels, such as newsletters and magazines</li> </ul>
	Operations are conducted with integrity, transparency and fairness	Assign responsible units to provide suppliers with consultations, including follow-ups on complaints, etc.	<ul style="list-style-type: none"> <li>Annual Supplier Conference</li> <li>Monthly Supplier Meetings</li> <li>Approved Vendor List</li> </ul>
	Compliance with conditions and agreements as stipulated in contracts	Assess debt default probability and creditor satisfaction levels	<ul style="list-style-type: none"> <li>Four joint CSR activities</li> <li>Four Analyst meetings</li> </ul>
	Company cooperation in government activities	Delegate responsible units for government relations to communicate with government agencies in an appropriate and transparent manner. Strict compliance with relevant laws related to business conduct	<ul style="list-style-type: none"> <li>Networking with government agencies</li> <li>Report results as per relevant laws</li> </ul>

## Stakeholder Engagement<sup>(G4-24, G4-26, G4-27)</sup>

STAKEHOLDERS	KEY STAKEHOLDER INTERESTS	ACTIONS AND RESPONSES	ENGAGEMENT CHANNELS
 <p>Employee</p>	Occupational health and safety as well as provision of welfare and remuneration	Provide channels where employees can submit comments and complaints directly to managements, reflecting the company's focus on labor and human rights according to the principles of the United Nations, including occupational health and safety measures as well as provision of comprehensive welfare and remuneration to all staff	<ul style="list-style-type: none"> <li>Various communication channels and intranet</li> <li>Quarterly CEO Townhall for employees</li> <li>Annual Employee Satisfaction and Employee Engagement Surveys</li> </ul>
 <p>Community Society and Environment</p>	Social and community impact arising from company operations	Conduct business with discretion and caution in order to prevent impacts. Receive suggestions and feedbacks from communities and societies, as well as promote comprehensive information disclosure in an accurate and timely manner	<ul style="list-style-type: none"> <li>2,000 community visits</li> <li>252 social and environmental activities</li> </ul>
 <p>NGO</p>	Company cooperation with nonprofit organizations	Communicate company procedures to nonprofit organizations, including channels providing nonprofit organizations with the opportunity to offer suggestions and submit complaints directly to the company	<ul style="list-style-type: none"> <li>General issues can be communicated via the company website, <a href="http://www.pttgcgroup.com/contact/form">http://www.pttgcgroup.com/contact/form</a></li> <li>Issues and incidents relating to the Koh Samet oil spill can be communicated via a dedicated website, <a href="http://pttgc-oilspill.com/ContactUs/Index">http://pttgc-oilspill.com/ContactUs/Index</a></li> </ul>



### STAKEHOLDER'S OPINION

"PTTGC is a leading organization in the petrochemicals industry that, at the same time, demonstrates genuine care for society and the environment. For example, PTTGC continuously advances towards greenhouse gas emissions reduction to help alleviate problems related to global warming, in alignment with the 21<sup>st</sup> Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP21). Nevertheless, PTTGC should place greater emphasis on communicating its activities to the public, in order to inform society about the organization's valuable contributions, including how PTTGC operates its business with state-of-the-art technologies and implements CSR activities to share benefits with local communities and society."

Mrs. Prasertsuk Chamornmarn

Director of Thailand Greenhouse Gas Management  
Organization (Public Organization)



### STAKEHOLDER'S OPINION

"As an environmental expert, apart from PTTGC focusing on global environmental issues, such as climate change, where PTTGC has already operated according to national and international standards, the one area where PTTGC can place greater emphasis is on environmental issues at the national level, waste in particular. I would like PTTGC to take Eco-design into consideration, in order to design recyclable and/or re-usable products. It is necessary to start from the product design phase to ensure the least amount of environmental impact along a product's life cycle."

Asst. Prof. Dr. Pomthong Malakul  
Na Ayudhaya

The Dean of The Petroleum and  
Petrochemical College (PPC), Chulalongkorn  
University



PTTGC's materiality assessment process is considered essential to sustainable business operation and in compliance with both direct and indirect stakeholder's expectations. The assessment process for material issues is performed in accordance with the three main phases of GRI's principles, as follows:

#### STEP 1: IDENTIFICATION OF MATERIAL ASPECTS AND ESTABLISHMENT OF REPORT BOUNDARIES

Identify key economic, social and environmental issues that are material to the sustainability of the PTTGC, by examining business risks and opportunities, global business trends and industry levels, the United Nations Sustainable Development Goals (SDGs), as well as both internal and external stakeholder expectations. This process is accomplished by responsible departments via the compilation of data from a variety of sources, both primary and secondary data.

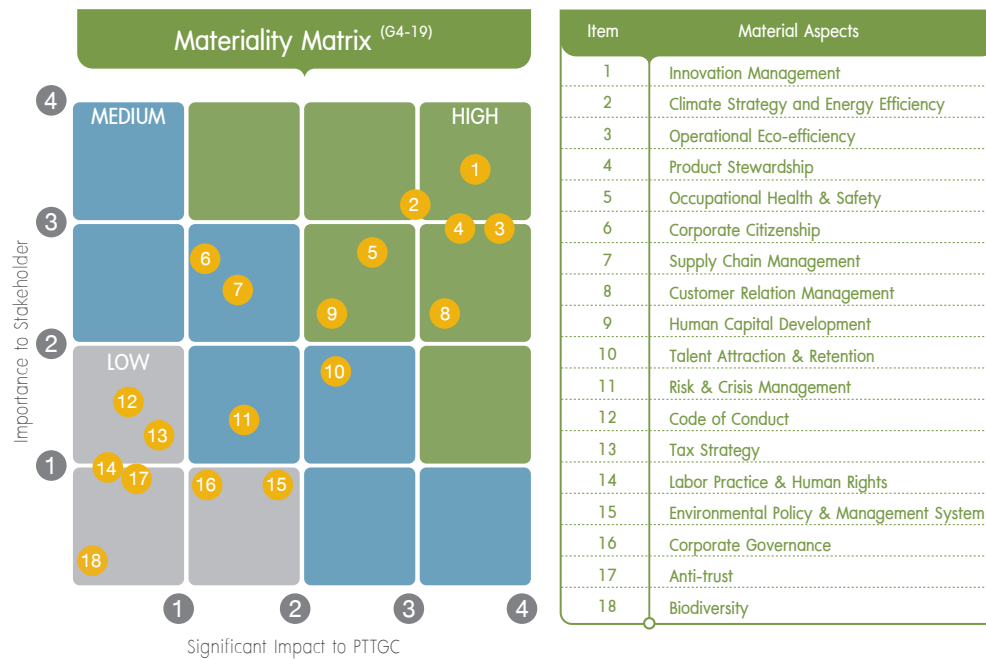
**STEP 2: PRIORITIZATION OF MATERIAL ASPECTS** Prioritize and evaluate the level of importance for each aspect, based on consideration of two sustainability dimensions: 1) Key interests of stakeholders, using information from stakeholder engagement with company departments, or from company's engagement channels as well as direct communication with stakeholders on specific issues and 2) Significance environmental and social implications in areas that are impacted by PTTGC's business operations. Then, each material aspect is ranked from one to four according to the criteria of risk evaluation and opportunity for business operations and the degree of stakeholder's interest. This report covers and focuses on high and medium materialities.

#### STEP 3: VALIDATION OF MATERIAL ASPECT

-  Compile results from the assessment of material aspects and identify relationship between material aspects and the GRI Aspects in order to prepare a summary of material aspects to PTTGC and the reporting scope on each specific area. Thenceforth, present these findings to the Sustainable Development Committee.
-  Review the results of the materiality assessment for compatibility with the company context, goals and strategy. Additionally, Sustainable Development Committee is considered consent for data disclosure on sensitive and specific information with potential repercussions on company business.
-  Prepare the report content and perform a comprehensiveness review, which is carried out by responsibility departments, the Sustainable Development Committee and external agencies for the transparency, accuracy and thoroughness of disclosed information.
-  Undergo an evaluation process by independent external agencies to examine the procedures for materiality assessment, stakeholder engagement as well as the data collection and evaluation, in order to obtain accurate, clear and comprehensive information. The assurance statement of these findings are submitted on page 146-147

#### STEP 4: CONTINUOUS DEVELOPMENT

Perform an ongoing review of information released in the Sustainability Report, including the gathering of suggestions and recommendations from relevant stakeholders, as well as opinions from sustainability report survey. Comments and suggestions will be used for improvement of the next report and to ensure appropriate content disclosure as well as consistency with desired communication topics.



**MATERIAL SUSTAINABILITY ISSUES** (G4-19, G4-20, G4-21)

CHAPTER	MATERIAL ASPECT TO PTTGC	CORRESPONDING MATERIAL GRI ASPECTS	CORRESPONDING WITH IR VALUE <sup>(1)</sup>	KEY STAKEHOLDERS AND IMPACT BOUNDARY		SUSTAINABLE DEVELOPMENT GOALS <sup>(2)</sup>
				WITHIN THE ORGANIZATION	OUTSIDE THE ORGANIZATION	
Role Model in Product Stewardship	Product Stewardship	Economic Performance (G4-DMA, G4-EC1) Indirect Economic Impact (G4-DMA, G4-EC8) Product and Services (G4-DMA, G4-EN27) Customer's Health and Safety (G4-DMA, G4-PR1) Product Responsibility (G4-OG14)	Financial Capital, Intellectual Capital, Social and Relationship Capital	PTTGC, Subsidiary, Joint venture, Employee	Investor, Shareholder, Partner, Customer, Community, Society and Environment	12, 13, 15
	Innovation Management	Economic Performance (G4-DMA, G4-EC1) Indirect Economic Impact (G4-DMA, G4-EC8) Emission (G4-EN19) Product and Services (G4-DMA, G4-EN27)	Financial Capital, Intellectual Capital, Social and Relationship Capital	PTTGC, Subsidiary, Joint venture, Employee	Investor, Shareholder, Partner, Customer, Community, Society and Environment	9, 12, 13, 15
	Corporate Citizenship	Economic Performance (G4-DMA, G4-EC1) Indirect Economic Impacts (G4-DMA, G4-EC7, G4-EC8) Product and Services (G4-EN27) Local Communities (G4-DMA, G4-SO1)	Financial Capital, Social and Relationship Capital	PTTGC, Subsidiary, Employee	Community, Society, Environment and NGOs	1, 2, 3, 4, 10, 11, 12, 13, 15
Sustainable Value Chain	Customer Relation Management	Product and Service Labelling (G4-DMA, G4-PR5)	Financial Capital, Social and Relationship Capital	PTTGC, Subsidiary	Customer	12, 13, 15, 17

MATERIAL SUSTAINABILITY ISSUES <sup>(G4-19, G4-20, G4-21)</sup>

CHAPTER	MATERIAL ASPECT TO PTTGC	CORRESPONDING MATERIAL GRI ASPECTS	CORRESPONDING WITH IR VALUE <sup>(1)</sup>	KEY STAKEHOLDERS AND IMPACT BOUNDARY		SUSTAINABLE DEVELOPMENT GOALS <sup>(2)</sup>
				WITHIN THE ORGANIZATION	OUTSIDE THE ORGANIZATION	
Sustainable Value Chain	Supply Chain Management	Supplier Environmental Assessment (G4-DMA, G4-EN32) Supplier Assessment for Labor Practices (G4-DMA, G4-LA14) Supplier Human Rights Assessment (G4-DMA, G4-HR10) Supplier Assessment for Impacts on Society (G4-DMA, G4-SO9) Procurement Practices (G4-DMA, G4-EC9)	Financial Capital, Social and Relationship Capital	PTTGC, Subsidiary	Partner and contractor	8, 12, 13, 15, 17
Operational Responsibility	Operational Eco-efficiency	Materials (G4-DMA, G4-EN1, G4-EN2) Water (G4-DMA, G4-EN8, G4-EN10) Emissions (G4-DMA, G4-EN21) Effluent and Waste (G4-EN22, G4-EN23, G4-EN24, G4-OG6) Environmental Compliance (G4-EN29) Overall (G4-EN31)	Financial Capital, Manufactured Capital and Natural Capital	PTTGC, Subsidiary	Community, Society, Environment and NGOs	6, 12, 14, 15
	Climate Strategy and Energy Efficiency	Emergency Preparedness (G4-DMA) Economic Performance (G4-EC2) Energy (G4-DMA, G4-EN3, G4-EN4, G4-EN5, G4-EN6, G4-OG3) Emissions (G4-DMA, G4-EN15, G4-EN16, G4-EN17, G4-EN18, G4-EN19)	Financial Capital, Manufactured Capital and Natural Capital	PTTGC, Subsidiary	Partner and contractor, Customer, Community, Society, Environment and NGOs	7, 11, 12, 13, 15

**MATERIAL SUSTAINABILITY ISSUES** (G4-19, G4-20, G4-21)

CHAPTER	MATERIAL ASPECT TO PTTGC	CORRESPONDING MATERIAL GRI ASPECTS	CORRESPONDING WITH IR VALUE <sup>(1)</sup>	KEY STAKEHOLDERS AND IMPACT BOUNDARY		SUSTAINABLE DEVELOPMENT GOALS <sup>(2)</sup>
				WITHIN THE ORGANIZATION	OUTSIDE THE ORGANIZATION	
Employee Readiness	Occupational Health & Safety	Occupational Health and Safety (G4-DMA, G4-LA5, G4-LA6) Asset Integrity and Process Safety (G4-OG13)	Manufactured Capital, Human Capital	PTTGC, Subsidiary, Employee	Partner, Contractor, Community, Society and Environment	3, 8, 11, 12
	Human Capital Development	Training and Education (G4-DMA, G4-LA9, G4-LA10, G4-LA11)	Financial Capital, Intellectual Capital, Human Capital	PTTGC, Subsidiary, Employee	-	4, 5, 8
	Talent Attraction & Retention	Employment (G4-DMA, G4-LA1, G4-LA2, G4-LA3) Diversity and Equal Opportunity (G4-LA12) Equal Remuneration for Women and Men (G4-LA13)	Financial Capital, Intellectual Capital, Human Capital	PTTGC, Subsidiary, Employee	-	3, 4, 5, 8, 10



**Remark**<sup>(G4-22, G4-23)</sup>

- (1) The capitals identified by the International Integrated Reporting Council (IIRC) are financial capital, manufactured capital, intellectual capital, human capital, social and relationship capital and natural capital.
- (2) Sustainable Development Goals were included as details below;
  - GOAL 1 End poverty in all its forms everywhere
  - GOAL 2 End hunger, achieve food security, improved nutrition and promote sustainable agriculture
  - GOAL 3 Ensure healthy lives and promote well-being for all at all ages
  - GOAL 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
  - GOAL 5 Achieve gender equality and empower all women and girls
  - GOAL 6 Ensure availability and sustainable management of water and sanitation for all
  - GOAL 7 Ensure access to affordable, reliable, sustainable and modern energy for all
  - GOAL 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
  - GOAL 9 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
  - GOAL 10 Reduce inequality within and among countries
  - GOAL 11 Make cities and human settlements inclusive, safe, resilient and sustainable
  - GOAL 12 Ensure sustainable consumption and production patterns
  - GOAL 13 Take urgent action to combat climate change and its impacts
  - GOAL 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development
  - GOAL 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss
  - GOAL 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
  - GOAL 17 Strengthen the means of implementation and revitalize the global partnership for sustainable development
- (3) No significant changes in 2015 regarding the organization's size, structure, ownership or its supply chain.
- (4) There is no restatement of previous year performance.
- (5) There is no report significant change in the Scope and Aspect Boundaries from previous year.

**CONTACT INFORMATION**<sup>(G4-31)</sup> : This report can be downloaded at: <http://www.pttgcgroup.com/th/sustainability/report-sd>

For more information, please contact: Sustainability Management Department,  
PTT Global Chemical Public Company (Limited)

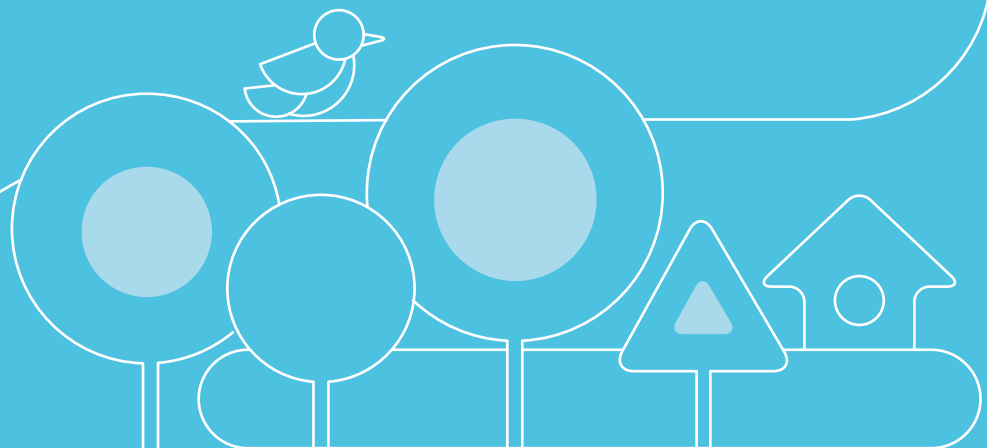
555/1 Energy Complex, Building A, Floors 14-18, Vibhavadi Rangsit Road, Chatuchak, Bangkok, 10900 Thailand



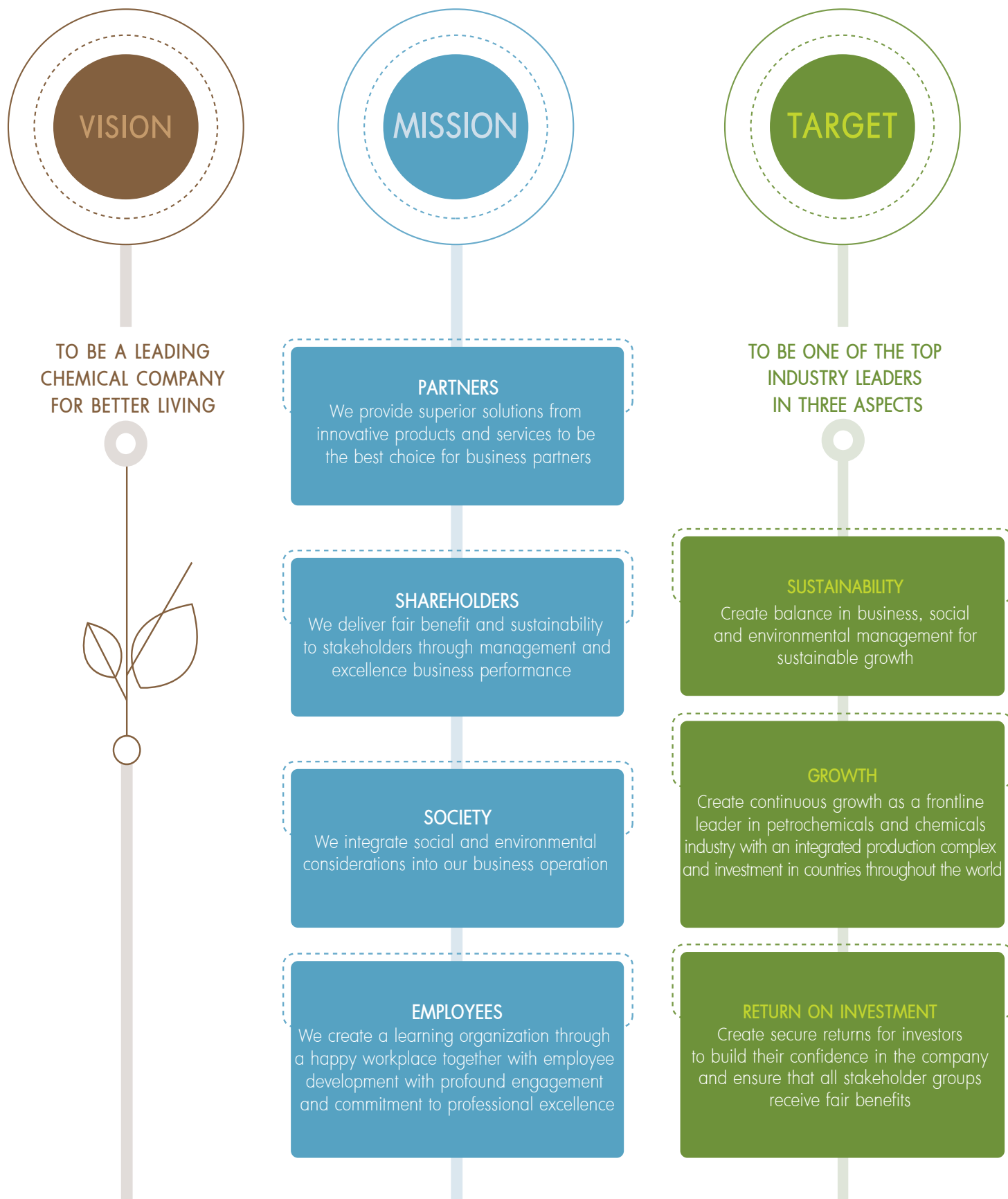


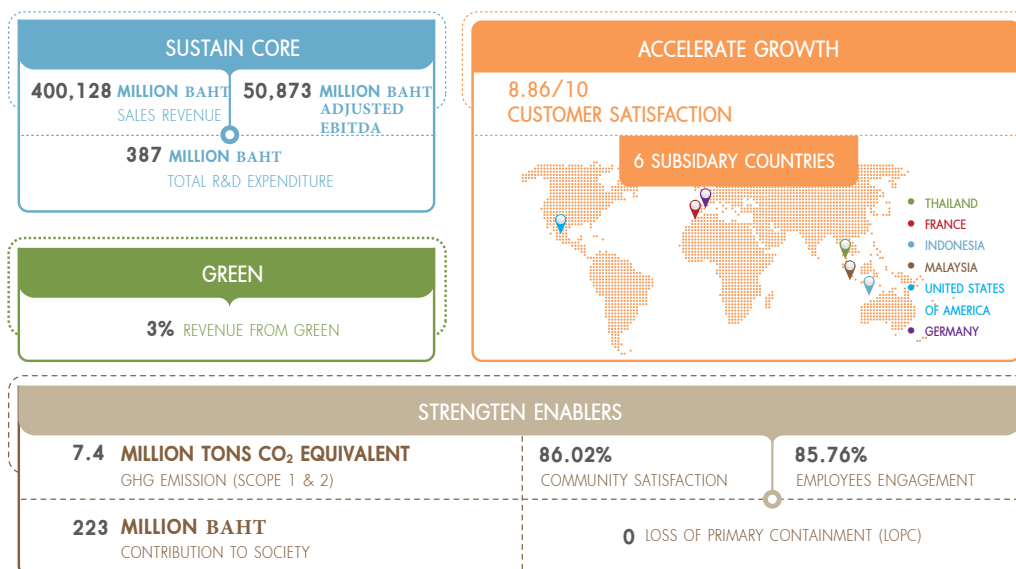


# About PTTGC



# About PTTGC (G4-3, G4-4, G4-5, G4-6, G4-7, G4-8, G4-9, G4-10, G4-40, G4-56, G4-57, G4-58)



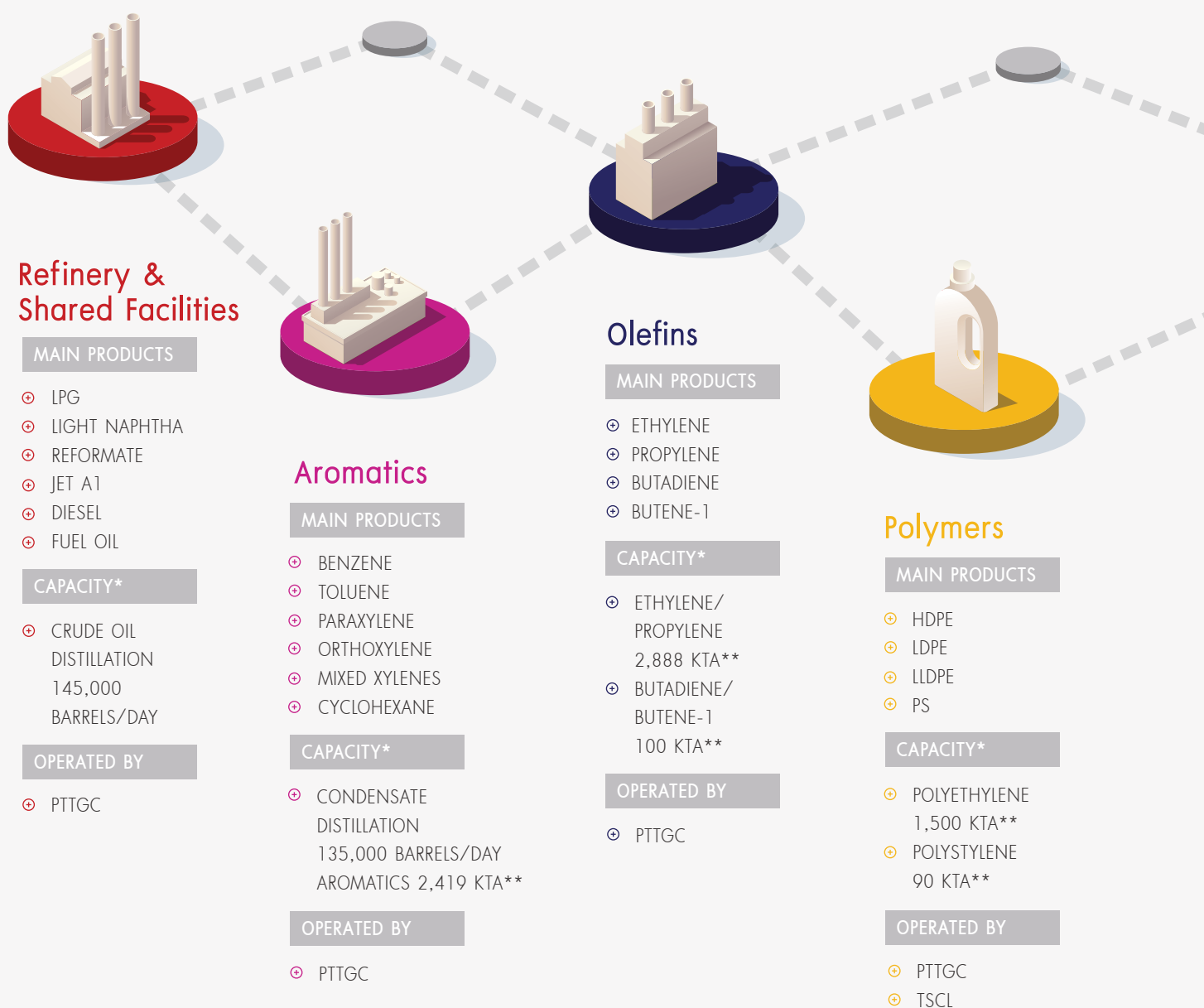


We live under the conditions of a rapidly changing world - economically, socially and environmentally. These are evidences in the past year, including the global economic downturn caused by the fluctuation of oil prices and incidents of unrest throughout every corner of the globe. In Southeast Asia, the launch of the ASEAN Economic Community (AEC) at the end of 2015 has resulted in dramatic changes to the business operations in ASEAN's member countries in areas of investment, resources and labor. As a leader in the petrochemicals industry with a commitment to create a better quality of life, PTTGC has established a strategic sustainable development plan covering three main aspects: 1) create solid returns and increase investor's confidence levels, 2) maintain a growth pace matching other leading organizations and 3) operate a sustainable business by creating balance between business, community and the environment, to develop natural resources in a way that maximizes benefits while minimizing the impact on society and the environment. To this end, PTTGC is focused on strengthening the organization through global expansion, including plans to expand its business into AEC countries in 2016.

## OUR BUSINESS

PTT Global Chemical Public Company Limited (PTTGC) is a leading integrated petrochemical and refining company, both in Thailand and in Southeast Asia. PTTGC commands a combined olefins and aromatics capacity of 8.88 million tons/year together with 280,000 barrels/day of crude oil and condensate refining capacity. PTTGC has eight business units and one service business.

# Business Structure



Refinery & Shared Facilities

Aromatics

Olefins

Polymers

EO-Based Performance

Green Chemicals

High Volume Specialties

Phenol

Remarks \* Only capacity that PTTGC hold equal to or more than 50% share and calculate proportionate by percent share

\*\* KTA is THOUSAND TONS PER YEAR

\*\*\* Thai Oleochemical Company Limited (TOL) is registered as a Public Limited Company and Changed the registered name to Global Green Chemicals Company Limited (GGC) on February 18<sup>th</sup> 2016

PTT Global Chemical Public Company Limited (PTTGC), as a Chemical Flagship of PTT Group with a combined chemical / petrochemical capacity of 8.88 million tons per year and crude oil / condensate distillation capacity of 280,000 barrels per day. PTTGC consists of 8 business groups.



## Services and Others

- ⊕ Jetty and chemical tank farms
- ⊕ Utility businesses
- ⊕ Plant maintenance and engineering design services
- ⊕ Safety, occupational health, and environmental services
- ⊕ Pipeline infrastructural systems
- ⊕ Information technology services
- ⊕ Labor outsourcing services
- ⊕ Marketing and sales of Methyl Amine derivatives, plastic compound products, specialty products, and health and nutrition products
- ⊕ Polymer sales and marketing services
- ⊕ Logistics services

Operated by TTT  
 Operated by GPSC  
 Operated by PTTME and PTES  
 Operated by NPC S&E  
 Operated by EFT  
 Operated by PTT ICT  
 Operated by BSA

Operated by Solution Creation  
 Operated by PTTPM and ITT  
 Operated by PTTPL

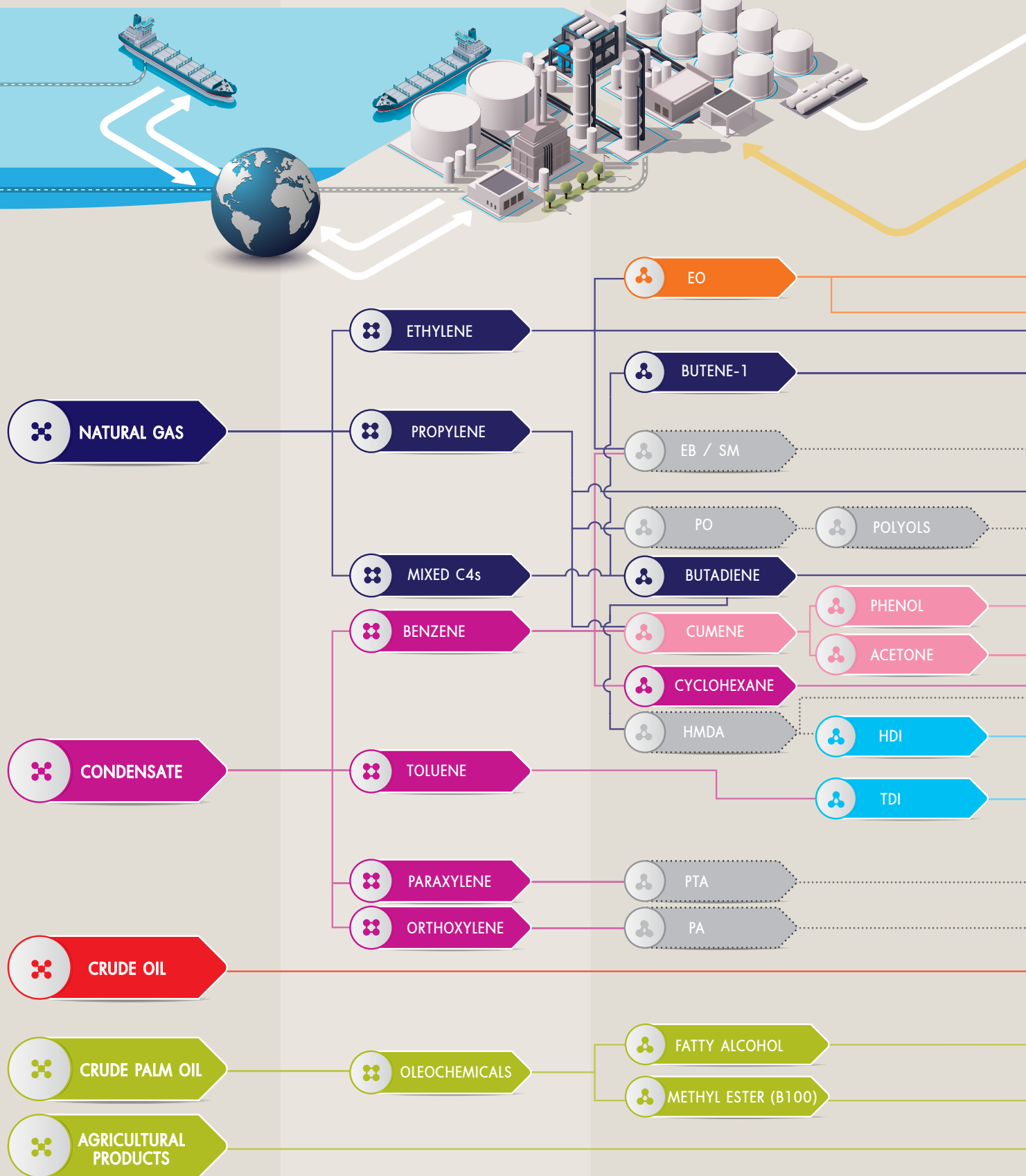


# Business Value Chain

✕ FEEDSTOCK

✕ UPSTREAM

⋈ INTERMEDIATES



Group Performance Center-Refinery & Shared Facilities

Group Performance Center-Aromatics

Group Performance Center-Olefins

Polymers Business Unit

EO-based Performance Business Unit

Green Chemicals Business Unit





## BOARD OF THE YEAR 2015



PTT Global Chemical Public Company Limited received the “Board of the Year 2015” award for the second consecutive year from the Thai Institute of Directors Association (IOD), as well as a special award for being the top five among the highest-ranking organizations in the ASEAN CG Scorecard 2015.

PTTGC operates its business with transparency in accordance with the principles of good corporate governance and business ethics. In 2015, PTTGC disclosed its Committee Nomination Process, which is the process of recruiting competent committee members to replace those who have resigned or finished their terms. It requires due consideration of applicants' qualifications in a variety of areas, including gender, age, knowledge, abilities, skill, work experiences and relevant experiences that is consistent with PTTGC's business. In addition, PTTGC also prepared data on the special characteristics of its Board of Directors in the form of a skill matrix to aid in the Board nomination process, to ensure that the selection of the Board of Directors is completed and of the greatest benefit in all aspects. The nomination process also takes into account potential interests and conflicts of interest of Board members in a comprehensive and transparent manner. Not only that, PTTGC also values the equality for all board members, where in 2015, the number of females on the Board of Directors increased from one to three, accounting for 20 percent of total Board members.

## THREE FEMALE DIRECTORS IN PTTGC'S BOARD OF DIRECTORS



Mrs. Boobpha Amornkiatkajorn



Mrs. Watanan Petersik



Miss Ruenvadee Suwanmongkol

PTTGC commits to basic human rights principles, including non-discrimination towards gender. We have three female directors who are highly qualified and widely recognized industry professionals. Their experiences in capital market, finance, accounting, audits, economics, international business and petroleum and petrochemical knowledge related to the Company's business provide broader perspectives that is valuable for the Board's action.

Two of the three female directors have also been appointed as a Director of the Audit Committee and Director of the Risk Management Committee. Over the past year, they have performed their duties with careful diligence and have offered opinion and recommendations regarding finance, accounting, investment in a variety of projects, risk management and contract management in relation to the trade of key products, etc.



In 2015, PTTGC revised the Corporate Governance & Business Code of Conduct Handbook to include updates according to international standards and guidelines, as part of its commitment to improve good governance.

Additional details can be found at <http://pttgcgroup.com/th/governance/cg-principle>

In addition, PTTGC has developed Corporate Compliance Policy for the company and its subsidiaries. This is to allow all employees, including the Board of Directors, executives and employees at all levels to acknowledge and strictly adhere to. Activities under Corporate Compliance Program have also supported successful policy implementation.

Additional details can be found at <http://www.pttgcgroup.com/th/sustainability/sustainability-economic>

PTTGC reports the Corporate Income Tax (CIT) by country for all areas where the company operates in the 2015 Annual Report and company website, in order to accentuate good corporate governance principles and support transparency in data disclosure.

Additional details can be found at Annual Report and <http://www.pttgcgroup.com/th/sustainability/strategy>

PTTGC is committed to Sustainable Development as the company aims to be a sustainable chemicals industry leader with transparent operations and responsible for the society and the environment through innovation and green technology. As a consequence, PTTGC appointed the Sustainable Development Committee (SDC) comprising of the Chief Operating Officer of Upstream Petrochemical Business and the Chief Operating Officer of Downstream Petrochemical Business as Advisory Directors; Senior Vice President of Corporate Affairs as the Chairman, and the Executives and Senior Vice Presidents from each department as committee members, accounting for a total of 11 members. The responsibilities of the committee include development of policies, strategies and plans that are in line with PTTGC's goals and international standards.

In addition, PTTGC has a function called Corporate Sustainability Management (C-SM) responsible for formulation of policy, frameworks and strategies for the sustainable development. C-SM's roles also include overseeing and reviewing the implementation of sustainable development, as well as monitoring and evaluating performances and supporting the implementation of the relevant policies and plans internally and externally including collaboration with PTT Group. The Corporate Governance Committee has a role to monitor and control overall performance to ensure the corporate sustainable development goals and continuous improvements are achieved.

In 2015, the Sustainable Development Committee carried out key sustainable development projects including:

-  Supply Chain Sustainable Development: PTTGC participated in the Green Network, Green Industry Level 5 of the Ministry of Industry, by evaluating five key suppliers in environmental, social and governance aspects. PTTGC also became a member of the international organization, EcoVadis, which specializes in sustainable supply chain development.
-  Maximized the capacity of Corporate Social Responsibility projects by defining social and community shared value strategies, sharing benefits and preventing impacts to all stakeholder groups and defining long-term goals to continuously create shared value for society.
-  Being a leader in climate change management through being listed in Climate Disclosure Leadership Index for three consecutive years with a score of 100 in 2015 by the Carbon Disclosure Project (CDP), an internationally recognized organization in environmental management assessments.

## Sustainable Development Committee (SDC)



**Advisory Director**  
**Mr. Kun Patumraj**  
Chief Operating Officer –  
Upstream Petrochemical Business



**Advisory Director**  
**Mr. Athavudhi Hirunburana**  
Chief Operating Officer –  
Downstream Petrochemical Business



**Chairman of the Board**  
**Mrs. Warawan Tippawanich**  
Senior Vice President –  
Corporate Affairs



**Committee**  
**Mr. Patiparn Sukorndhaman**  
Executive Vice President –  
Finance & Accounting



**Committee**  
**Mrs. Puntip Oungpasuk**  
Executive Vice President –  
Corporate Strategy



**Committee**  
**Mrs. Sriwan Eamrungrroj**  
Executive Vice President –  
Marketing, Commercial and Supply



**Committee**  
**Mr. Varit Namwong**  
Executive Vice President –  
Organizational Effectiveness



**Committee**  
**Mr. Kongkrapan Intarajang**  
Executive Vice President –  
International Business Operations



**Committee**  
**Mr. Booncherd Suwanti**  
Senior Vice President – Quality, Safety,  
Occupational Health and Environment



**Committee**  
**Mr. Siridech Kumvongdee**  
Senior Vice President –  
Science and Innovation



**Committee Secretary**  
**Mrs. Pranee Poopair**  
Vice President –  
Sustainability Management

**Note :** This was SDC for 2015. There are changes in SDC for 2016.

## RISK AND CRISIS MANAGEMENT

The current uncertainties of a rapidly changing world can potentially affect business goals. Therefore, PTTGC has identified significant risk factors, which may affect current and future operations in three to five years. PTTGC has also developed risk management measures for risk factors, which included: price, long-term feedstock, operation and safety, water management, foreign exchange rates, investment and innovation risk factors. PTTGC further emphasizes on the proactive risk management, while also focusing on emerging risks, such as long-term feedstock availability and water management, which are beyond PTTGC's control.

### RISK MANAGEMENT MEASURES FOR EMERGING RISKS •

#### EVENTS

A portion of the feedstocks used by PTTGC comes from natural gas reserves in the Gulf of Thailand where there is a decreasing trend of production, but an increasing trend in the production cost. This may impact the competitiveness and long-term sustainable growth of PTTGC.

Global Climate Change is affecting rainfall in both ways: floods and droughts. As a result, sustainable water management is essential for every sector.

#### RISK FACTORS

##### Long-term feedstock (Quantity and Price)



##### Water Management (Floods and Drought)



#### RISK MANAGEMENT MEASURES

- Improve production processes to support alternative feedstocks
- Introduce alternative feedstocks, which have a competitive economic value.

- Implement 3Rs Projects (Reduce, Reuse and Recycle).
- Prepare additional water reservoirs.
- Actively engage with the government sector to support and promote the water management projects.





## RISK CULTURE

PTTGC recognizes the importance of risk management, so PTTGC strives to promote risk management as a part of its corporate culture where employees are consciously aware of risk management. Such culture will drive the risk management systems and processes towards continuous improvement, overall effectiveness and sustainability. PTTGC divides the corporate risk management culture in to six key areas: 1) Risk Governance, 2) Leadership, 3) Risk Structure, 4) Risk Technique, 5) Risk Communication and 6) Risk Management Knowledge.

### ENTERPRISE RISK MANAGEMENT :



PTTGC carries out Enterprise Risk Management (ERM) together with improving the risk maturity level by integrating feedback from stakeholders to the risk management process covering the strategic through operational levels. This enables a comprehensive risk identification and ensures the appropriateness and effectiveness of enterprise-wide risk management. This allows risk management to be assessed for effectiveness at the corporate level.

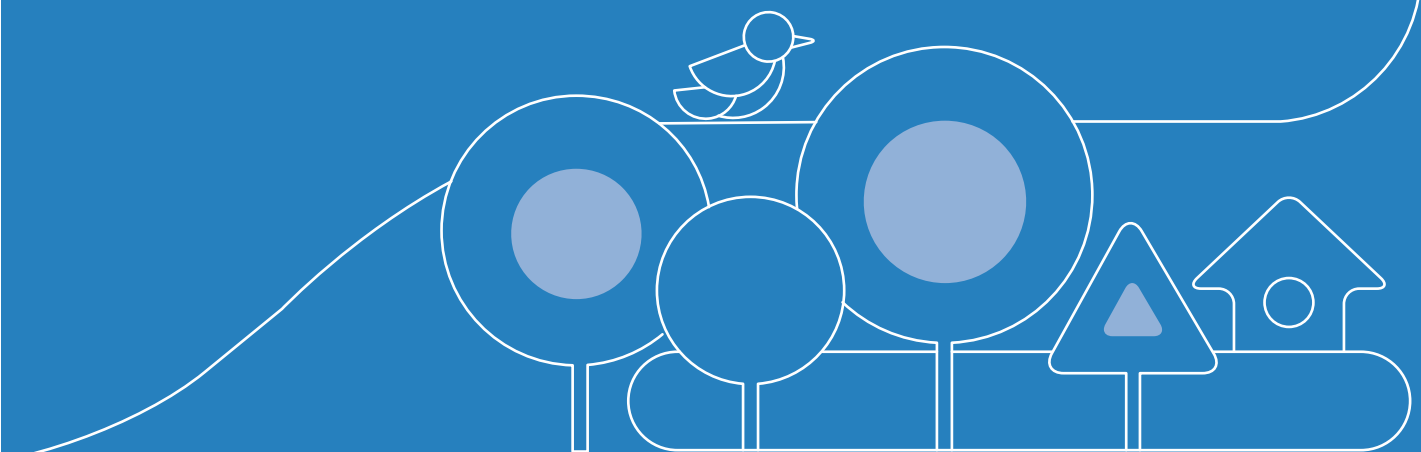








# Role Model in Product Stewardship



# Role Model in Product Stewardship

## Key Figures



🌱 **15** new products in 2015

🌱 Total sales of environmentally friendly products: **4,791** million Baht

🌱 Budget for research and development of environmentally friendly products: **8,022,000** Baht

🌱 **10,332** hours of employee volunteering

🌱 Budget for social activities: **223** million Baht

## TARGET AND PERFORMANCE

PLAN	TARGET FOR 2015	PERFORMANCE IN 2015	TARGET FOR 2016
Sustainability Foundation			
1. Dow Jones Sustainability Indices (DJSI)	Retain position in the Top 10 percent of DJSI World	Ranked sixth in DJSI World Members in the Chemicals sector	Continuously retain position in the Top 10 percent of DJSI World Members
Innovation for Future			
2. EBITDA for Green Chemicals (million Baht)	894	833*	1,041
3. EBITDA for High Volume Specialties (million Baht) EBITDA	1,805	1,846	2,054
4. Research and development budget is 3 percent of gross profit (million Baht)	CAPEX: 237 OPEX: 287 Total: 524	196 191 387	510 289 799
5. Patents (Applications)	6	9	10
6. Community Satisfaction Evaluation (Percent)	86	86.02	86

Note : \* Not include Impairment



#### COMMITMENT •

PTTGC has always been committed to being a leader in the chemicals industry, aiming to achieve sustainable business growth and create value for society and the environment through environmentally friendly products. This is accomplished by using more natural raw materials, thereby minimizing impacts on the community, society and environment.



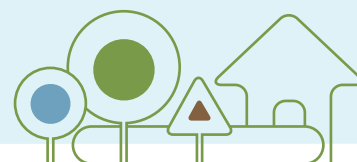
#### GOAL •

PTTGC focuses on the development of sustainable products, particularly green products and aims to conduct Life Cycle Assessment for all product grades by 2016 and to have all product grades certified with Carbon Footprint Reduction labels or Global Warming Reduction labels by 2020. Furthermore, PTTGC has projected to communicate on Product Safety and Toxicity disclosure in 2017.



#### CHALLENGES AND BUSINESS OPPORTUNITIES •

Leadership in product stewardship is a challenge and business opportunity for PTTGC in the development of environmentally friendly products that correspond to the Sustainable Development Goals of the United Nations, such as ensuring availability and sustainable management of water resources and sanitation, access to energy sources and infrastructural development to support sustainable industrial processes, etc. Additionally, being a leader in Product Stewardships means building confidence among stakeholders that PTTGC's product development and production focuses on reducing societal and environmental impact.



## Product Stewardship Strategy

PTTGC commits to be a Leading Chemical Company for Better Living. To that end, PTTGC embraces Product Stewardship as an integral part of its activities to continuously improvement and Product Stewardship Policy was announced to drive our company-wide product stewardship program.

PTTGC's Product Stewardship program is a critical value throughout our value chain. In order to achieve such statement, a five year strategy for product stewardship has been shaped which focuses in three main areas: i) production of green chemicals products, ii) production of safe products and iii) consideration of environmental impacts throughout a product's life cycle. Beside the strategy to improve processes and innovate sustainable products, roadmap and product management system are in places to ensure the alignment of strategy.

PTTGC aims to enhance the Life Cycle Assessment (LCA) effectiveness and water footprint to all products. Reduction of life cycle impacts to reflect sustainability challenges is to go toward the target for all products from each production unit throughout the whole life cycle and encourage the value chain to start environmental impact inventory including GHG at the initial stage. Nevertheless, not only the existing products, new developed products of PTTGC must be followed products stewardship policy to lessen the toxicity and to be more responsible and environmentally-friendly products to society in terms of consumption, disposal, and recycling ability.

New product improvement and development should follow the product design criteria in 2 dimensions: i) "Eco" – to reduce ecological footprint throughout life-cycles and ii) "Efficiency" - to improve performance effectiveness in order to achieve top performance listed at international level. PTTGC targets to deliver high performance products together with environmental impact reduction.



## PTTGC Performance

To respond to PTTGC's business strategy in seeking new business opportunities for a green and sustainable future, PTTGC develops environmentally friendly products utilizing renewable natural raw materials, such as palm kernel oil, vegetable oil, animal fat, sugarcane and cassava as main raw materials in production. In 2015, PTTGC developed environmentally friendly products such as Polylactic Acid (PLA) bioplastic, light-weight polyethylene plastic, bio-diesel and bio-methyl ester (BME), amounting to a total of 4,791 million Baht in sales of environmentally friendly products.

PTTGC focuses on the production of safe products and aims to have all chemicals registered under the regulations of the European Chemicals Agency (Registration, Evaluation and Authorization of Chemicals or REACH) by 2018. Since 2013-2015, 12 products have passed REACH registration. Additionally, PTTGC has implemented the Product

Stewardship Program (PSP) involving the Sustainability and QSHE / Innovation / Corporate Planning / Marketing / Supply Chain Management / Sustainability Management, to compile on the toxicity of raw materials and chemical substances used in the production of PTTGC's products and communicate this information to customers. PTTGC

established a target to complete all data compilation for product safety and toxicity disclosure in 2017 and to communicate this information to all customers via pipelines. In 2015, PTTGC compiled data on the seven most important products and communicated this information to customers. Furthermore in 2015, PTTGC operated in compliance with the PTT Group's QSHE (Quality, Safety, Health and Environment) Policy and eliminated the use of chemicals and materials that are classified as harmful under domestic and international standards, including sourcing for equipment and materials used in PTTGC's business operations. Presently, 162 equipment and materials have undergone examination for potential hazardous impacts on living things and the environment.

Considering the effects that PTTGC's products may have on the community, society and environment, in 2015 the company began evaluating the life cycles of products for all product groups from the Olefins and Polymers business, and is aiming to complete life cycle analysis for all products within 2016. From the findings, PTTGC will understand the full extent of the effects, which emerge in each step of production. PTTGC has further conducted research and set up long-term working plans on Life Cycle Management (LCM), in order to reduce the usage of resources and energy in the production process, to ensure minimum social and environmental impacts. In 2015, all of PTTGC group's product grades were certified by the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO) and received the Carbon Footprint of Products (CFP) label, while 44 product grades of our Polyethylene (PE), Aromatics, Petroleum, Green Chemicals and Ethoxylate products received TGO certified and labels for Carbon Footprint Reduction (CFR).



## PRODUCT HIGHLIGHT

### Biodegradable seeding bags awarded for environmental – care innovation



PTTGC has developed biodegradable seeding bags with innovation compound formulated for drainage and aeration qualities good for root development in nursery, reducing risk of transplant shock to the tree seeding. With the specially developed formula, the bags attract micro-organisms and promote microbial degradation. The bags will serve as fertilizer when decomposed.

With these environmentally friendly innovations, PTTGC won the Invention Awards 2016 from the National Research Council of Thailand (NRCT) and the Thailand Green Design Award 2015 for the “Product for Life Enhancement” category from the Kasetsart Agricultural and Agro-Industrial Product Improvement Institute, Kasetsart University.

## PRODUCT HIGHLIGHT

### Downgauging : Minimize the material use, but not quality



PTTGC recognizes the future rising trend of raw materials' cost and the customers' need in cost saving, thus the downgauging projects have been established to minimize the use of raw materials, yet maintaining product's good functionality. In 2015, PTTGC served the frozen food industry by developing downgauged packaging from Linear Low Density Polyethylene (LLDPE) with good impact strength and good puncture resistance. The resulted film was 20 percent thinner and 10 percent cost saving.

Examples of downgauged products include : 1) Packaging for CPRAM frozen steamed bun and crab meat dumpling, 2) Packaging for TUF export frozen salmon and squid, and 3) Packaging for CPF frozen meat.



## PRODUCT STEWARDSHIP POLICY



PTT Global Chemical Public Company Limited (PTTGC) commits to be a Leading Chemical Company for Better Living. PTTGC elevates its corporate responsibilities and citizenship values by implementing best practice Product Stewardship Program that adheres to the precautionary principle and advocates for Sustainable Chemical Industry. To that end, PTTGC embraces Product Stewardship as an integral part of its activities to continuously improve the environment, health and safety performance of its products and processes by:

- ✎ Working in partnership with stakeholders in our supply chain to improve the environment, health and safety performance of our products.
- ✎ Maintaining open communication channels with relevant stakeholders regarding PTTGC's products and processes.
- ✎ Providing resources to productively implement product stewardship programs, such as Life Cycle Assessment (LCA) program, research and development program to reduce environmental impacts, and sustainable sourcing programs. PTTGC invests in innovative sustainable products and process improvements, which aimed at reducing its operational footprint through implementation of sustainable product design criteria, strategic use of our LCA program, and effective outreach to key consumer markets to design solutions to emerging sustainability challenges.
- ✎ PTTGC's Product Stewardship is a critical value for health, safety and the environment throughout our value chain. PTTGC is investing in the development of the best practice in Product Stewardship program that is central to our operational effectiveness. This will enhance company reputation, promote and adhere to core values, and is a key lever of strategic growth for the company.

(Mr. Supattanapong Punmeechaow)  
President and CEO

## Next Step

PTTGC will continue to focus on the production of environmentally-friendly and safe products, and will comply with available laws and regulations regarding the product stewardship and as well as PTTGC's Product Stewardship Policy.

PTTGC has set product design criteria that respond to the environment stewardship; e.g. environmental impacts of product manufacturing for new process technology, and reduction of hazardous materials for product development. PTTGC plans to study Life Cycle Management (LCM) in 2016. This project including environmental impact assessment throughout life cycle of polymer product (cradle-to-grave), product eco-efficiency, eco-design for polymers, and revise proactive environmental management for PTTGC Group. Eco-design study aims to imply the eco-design for polymers. Then, the eco-design guideline of plastic pellets will be developed and expanded to other products in PTTGC Group.

Moreover, PTTGC aims to engage with more customers in developing products that response to both customers' need and the global market trend, while valuing natural resources and caring for climate. Developing a strategic communication is a crucial factor to communicate PTTGC's product stewardship management system to PTTGC's supply chain, especially the suppliers and customers.

## Link to Capitals

Capital	Input	Output
<b>Financial</b>	<ul style="list-style-type: none"> <li>New product development</li> </ul>	<ul style="list-style-type: none"> <li>Sale revenue</li> <li>Profit / EBITDA</li> <li>New products</li> <li>Gross Tax (Environmental tax)</li> <li>Dividend</li> </ul>
<b>Manufactured</b>	<ul style="list-style-type: none"> <li>Enabling technology</li> </ul>	<ul style="list-style-type: none"> <li>Carbon Footprint Products</li> <li>Carbon Footprint Process</li> </ul>
<b>Intellectual</b>	<ul style="list-style-type: none"> <li>Open innovation</li> <li>Knowledge mangement</li> </ul>	<ul style="list-style-type: none"> <li>Product design criteria guideline</li> <li>LCI Database / LCA Assessment</li> </ul>
<b>Social and Relationship</b>	<ul style="list-style-type: none"> <li>Customers</li> <li>Suppliers</li> <li>Partners</li> </ul>	<ul style="list-style-type: none"> <li>Brand Reputation</li> <li>Customers / suppliers / partners satisfaction</li> <li>Social impact / compliant</li> </ul>
<b>Human</b>	<ul style="list-style-type: none"> <li>Specialized knowledge and skills</li> </ul>	<ul style="list-style-type: none"> <li>New better products</li> <li>Specialized knowledge and skills</li> </ul>
<b>Natural</b>	<ul style="list-style-type: none"> <li>Raw materials</li> <li>Renewables</li> </ul>	<ul style="list-style-type: none"> <li>Green chemical products</li> <li>Safe products</li> </ul>



#### COMMITMENT •

PTTGC is committed to consolidate its sustainability directives into innovation management in order to create more value for business, society and the environment.



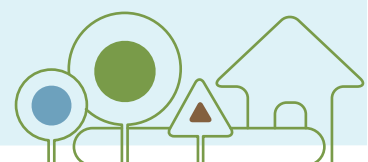
#### GOAL •

PTTGC employs a policy of investing more than three percent of its net profit per year in research and development and will expand its cooperation with domestic and international partners. In the next ten years, PTTGC's target is to yield research results that can produce new products, which will generate an annual revenue of 59,000 million Baht, or approximately ten percent of PTTGC's total sales revenue.



#### CHALLENGES AND BUSINESS OPPORTUNITIES •

The innovation competition within the industry group can be considered as a challenge and an opportunity for PTTGC in terms of the development of new innovations. Therefore, PTTGC focuses on sustainable growth by producing innovations that lead to the creation of environmentally friendly products and value generation for business, communities and society, which in line with the United Nations Sustainable Development Goals, for example, to support sustainable production patterns.



## Innovation Management Strategy

PTTGC realizes that innovation is one of the key drivers of future success and therefore one of our top priorities. Innovation drives products, processes and organizational changes and is the vital differentiation factor for PTTGC's sustainable growth. The strategy of innovation has been set to attain value creation and development of new products and processes that are able to better meet market demand.

Under the R&D Transformation program, PTTGC had also re-assign R&D activities and resources management. As such, the 10-year R&D Roadmap (2016–2025) was revised as explained below:

For “Product Improvement”, PTTGC intends to respond to customers' feedback and provide solution to the market while seeking for ways to suppress production cost. At the same time, PTTGC focuses in broadening application pipelines and create new value-added products in order to engage with new customers and enter new market segment. Additionally, PTTGC strives towards social and environmental responsibility as well as sustainable business growth.

“Process Development” R&D will create technologies to enhance competitiveness of our assets while “Transformative Process” R&D will spin-in/create new technologies platform for the Company towards a sustainable business growth as well as social and environmental responsibility. PTTGC will shortlist key potential technological areas that could either cause disruption our current business or create new opportunity for long-term corporate growth.

Moreover, PTTGC recognizes high values in conduction open innovation programs with universities, network of experts, and private entities to accelerate the pace of innovation along the value chain to create technology platform and emerging product to the market.

## PTTGC Performance

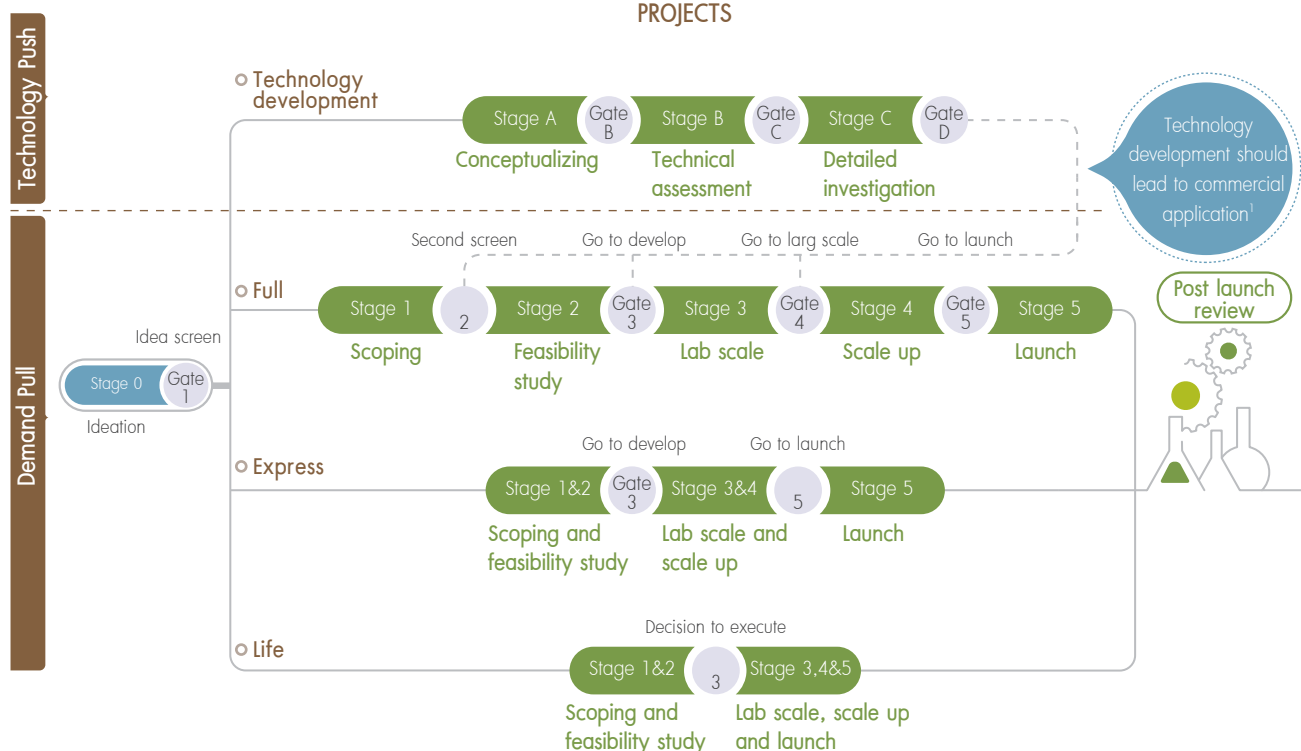
PTTGC recognizes the importance of factors that have effect on the competitiveness and technology. Therefore, PTTGC pays close attention to significant global trends, which influence customers' purchasing decisions. These factors include climate change, limited resources and the growth of urban communities. PTTGC researches and develops new products to reduce effects on the environment, society and community, for example the development of new materials and chemicals from carbon dioxide emissions released during production processes, as well as other raw materials, such as Ethylene, Propylene or Butadiene. This is an effective way of creating the highest value from existing resources. Furthermore, PTTGC is also preparing the development of environmentally friendly and lightweight materials that fit the rising demands of the Smart City.

Additionally, PTTGC has been cooperating with educational institutions, research organizations and other companies to participate in joint research and development of technologies in various areas, including 1) Advanced Materials, 2) Clean & Green Technology, 3) Materials supporting Health & Wellness and 4) Technologies for Resources Management (water, food and feed). All of these are technologies that will support present and future national business, social and environmental objectives.

Nevertheless, as PTTGC is well aware of the complexity, uncertainty and risks in various areas affecting innovation, as a result, it has implemented processes to examine research, development and innovation projects. This has been achieved by defining the principles covering numerous key factors, ranging from technologies, intellectual property, and investment profitability to impact on the environment.

### TECHNOLOGY DEVELOPMENT PROCESS

STAGE GATE PROCESS SHOULD BE SCALABLE AND ADAPTABLE TO DIFFERENT TYPE OF PROJECTS



Research & Development projects can be different in objectives some are implemented according to customer request, some are technically pushed, while some are demandingly pulled. As such, PTTGC has carefully designed the examining process suited to customer's need and urgency as well as foreseeable risks.

Being committed to become innovation leader with 387 million Baht in Research & Development investment, PTTGC has achieved over 15 new products and over 100 projects and prototypes are in the pipeline. Nine products and innovations are currently applied for patents. These represent the increasing potential both in production process and product development. Finally, PTTGC has aligned strategic and competitive targets for each business group to ensure that all directives and responsibilities are met.

## IN FOCUS



### OUTSTANDING COMPANIES USING INTELLECTUAL PROPERTY FOR COMMERCIAL BENEFIT

PTTGC places importance on the protection of intellectual property, and the use of intellectual property to create value added products as well as enhancing the branding image. The efficient management system of intellectual property has brought PTTGC the IP Championship Awards for invention patent category from the Department of Intellectual Property, Ministry of Commerce.

## Next Step

Following PTTGC's commitment to become innovation leader, the next step is to achieve the production of new products, product commercialization through the provision of advanced technical support, the value added product portfolio and the development of key technologies and know-hows for PTTGC's core products. Additionally, PTTGC will focus on the development process of core products, product applications and new technologies that align with all BUs for long-term corporate growth. PTTGC will do more co-create with more customers in developing products that response to both customers' need and the global market trend, while valuing natural resources and caring for climate. Eco-design study to imply the eco-design for new products development is also initiated. Then, products of both existing and new will aligned to the same guideline in the PTTGC Group.

Referring to our revised R&D roadmap, PTTGC has continuously employed various external innovation arms as technology scouting and sourcing model. While continually improving process and innovating new technology, PTTGC also considered M&A option to acquire process innovation. In order to speed up the realization of targeted product and technology portfolios, PTTGC has invested in joint ventures to accelerate the progress of our key process innovations. Currently, our technology of interest includes the advanced materials and bio-based processes which they will enable PTTGC to successfully manufacture a variety of chemicals that serve various markets. Such emerging technology will be passed through the due diligence process prior to decision making for direct or indirect investment (via venture capital firm).

Also, PTTGC expects more patent filings in 2016, and has a plan for patent utilization in order to create more value added to business.

## Link to Capitals

Capital	Input	Output
<b>Financial</b>	<ul style="list-style-type: none"> <li>• R&amp;D spending &amp; investment</li> <li>• Infrastructure asset</li> </ul>	<ul style="list-style-type: none"> <li>• Sales revenue</li> <li>• Profit / EBITDA</li> <li>• New portfolio / New products</li> <li>• Gross Tax (R&amp;D Tax)</li> <li>• Dividend</li> </ul>
<b>Manufactured</b>	<ul style="list-style-type: none"> <li>• Enabling technology</li> </ul>	<ul style="list-style-type: none"> <li>• Environmental products and processes</li> <li>• Environmental return on Investment</li> </ul>
<b>Intellectual</b>	<ul style="list-style-type: none"> <li>• Knowledge transfer / management</li> </ul>	<ul style="list-style-type: none"> <li>• Patent / Optimization</li> </ul>
<b>Social and Relationship</b>	<ul style="list-style-type: none"> <li>• Open Innovation activities</li> </ul>	<ul style="list-style-type: none"> <li>• Brand Reputation</li> <li>• New developed products</li> </ul>
<b>Human</b>	<ul style="list-style-type: none"> <li>• Ethics value</li> <li>• Engaged workforce</li> <li>• Salaries and wages</li> </ul>	<ul style="list-style-type: none"> <li>• Specialized and skilled reserachers</li> </ul>
<b>Natural</b>	<ul style="list-style-type: none"> <li>• Effective use of raw material</li> </ul>	<ul style="list-style-type: none"> <li>• Optimization of raw materials</li> </ul>







### COMMITMENT •

PTTGC is committed in creating and developing the quality of life and protecting the environment through sustainable business practices that create trust for stakeholders by balancing business success with responsibility for society and the environment.



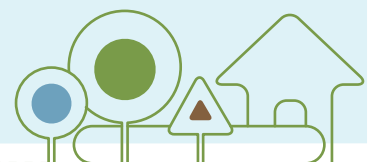
### GOAL •

PTTGC has set a target of establishing and implementing Creating Shared Value (CSV) Projects. PTTGC has already undertaken two Corporate Social Responsibility (CSR) projects, namely the development of sustainable bioplastic for agriculture usage and the Huai Ma Haad Project for reforestation and water conservation as CSV projects. Moreover, PTTGC aims to develop guidelines for the selection of future CSR/CSV projects, so that CSR projects can be evaluated and developed to achieve the highest value for society and business.



### CHALLENGES AND BUSINESS OPPORTUNITIES •

Showing our social responsibility through business activities and stakeholder participation is an approach for creating mutual benefit between PTTGC, local communities and society as a whole. This policy helps foster the sustainable development of both the company and society, leading to mutual economic and social growth. This corresponds to United Nations Sustainable Development Goals, which include promoting healthy lives and well-being for all and ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all.



## Corporate Citizenship Strategy

PTTGC is committed to operate business in an economically, socially and environmentally sustainable manner, while balancing the interests of stakeholders and assuring sustainable business growth. As such, the Corporate Social Responsibility (CSR) strategy builds on three elements, namely Brand, Trust and Growth. It is designed specifically to commit to meaningful and measurable social investment and community development, raise corporate profile at national and international level, and promote public awareness. In addition, PTTGC has established the Creating Shared Value (CSV) strategy to reinforce the CSR policy. Our CSV principles are associated with three main drivers as follows: leveraging PTTGC strengths, creating value rather than just protect, and creating social and business value.

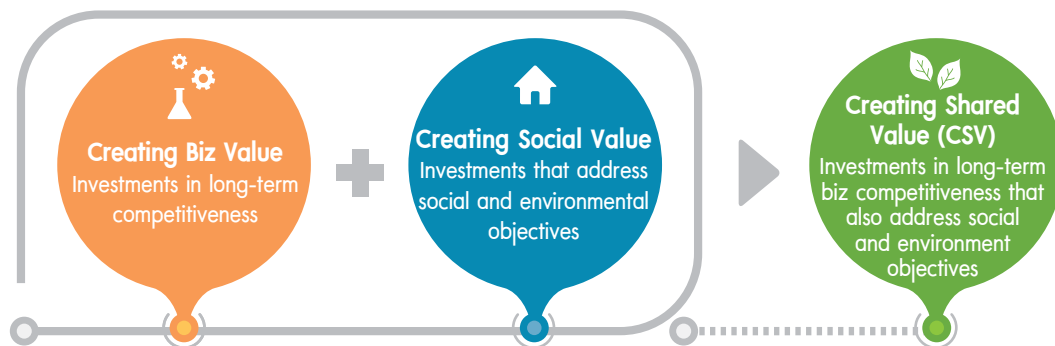
PTTGC's group-wide CSR and CSV strategy in place, its main priorities are aligned with its business drivers. Programs and initiatives that are aligned with the company's business drivers will allow for the company to leverage its strengths, its brand and its employees to have the maximum impact on the beneficiaries. Additionally, the strategy guides PTTGC's philanthropy and adds to value the development of communities where it operates in 5 focus areas: environment, economy, health, society and education. Such programs are also designed in response to community surveys to create shared value between PTTGC and society. Creating value for beneficiaries and shareholders alike requires companies to have the ability to measure the effectiveness of their philanthropic activities from a cost/benefit perspective.

PTTGC's CSR activities and projects cover different regions. Most projects are on-going, but are focused in Rayong province where our operations are located. The projects are implemented in collaboration with communities along with other stakeholders, such as local authorities, private sector, academic institutions, etc. Formal process has been defined for the identification of stakeholders and issue management in order to develop projects that meet the expectations of communities and society.



## PTTGC Performance

PTTGC is committed to increase the potential of its social responsibility projects and has laid out strategies to create shared value for society and communities as well as all groups of stakeholders. The long-term goal in Creating Shared Value is based on innovations for efficiency, and in ensuring that benefits derived from PTTGC's business operations are shared without any negative effects on communities through constant assessment and evaluation. The Creating Shared Value (CSV) concept has also been integrated into PTTGC's business activities and community engagement – extending far beyond monetary contributions. Examples of this include supporting the use of bioplastic to create long-term benefits for communities and society in the sectors of agriculture, housing and industry. This will enhance the quality of life in the community and the environment.



### IN FOCUS

#### BIOPLASTIC HUB ●

Our advantages in terms of natural resources and its position at the center of different types of industry have enable PTTGC to be a Bioplastic Hub in the ASEAN region. Polylactic Acid (PLA) bioplastic is an important bioplastic product, because it is a degradable bioplastic and can be processed easily and therefore can be used for various purposes. PTTGC cooperated with the Royal Project Foundation and the Thailand Research Fund to provide PLA bioplastic for use as planting bags and greenhouse sheet in planting fields and green houses. The PLA is environmentally friendly bioplastic PTTGC invented which can decompose within six months to one year, whilst conventional plastic products require more than 100 - 400 years.



PTTGC continuously collaborates with partners in a variety of ongoing projects and activities. These include projects aimed at creating sustainable shared value in Rayong Province as well as in other areas all over the country, covering five dimensions: environment, economy, health, society and education. In 2015, PTTGC invested more than 223 million Baht in activities for the benefit of the public that reflect community needs, for example, education, youth development, environment, sports, health and life quality development, as well as care for community relations, religious activities and cultural traditions. PTTGC collaborated with different charity organizations on a total of 252 activities, donating more than 39 million Baht and providing a total of 10,332 volunteer hours from PTTGC employees.

## IN FOCUS

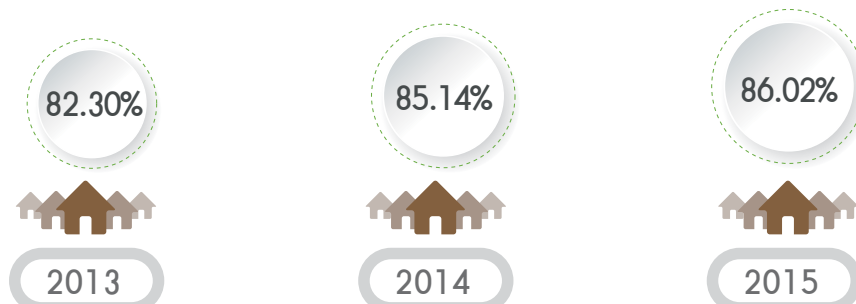


### CLEAN WATER TANKS PROJECT: INNOPLUS

To improve public health issues, alleviate shortages of clean drinking water and reduce conflicts between communities and local businesses over water usage, PTTGC has supplied special grade Linear Low Density Polyethylene (LLDPE) products. PTTGC is the only company in the country able to produce this material. Since 2013, PTTGC has provided more than 57 tons of plastic for the production of 651, 2,000-liter water tanks for communities facing water shortage problems in various regions of the country.

## COMMUNITY SATISFACTION

In 2015, the satisfaction level of communities and society was at 86.02 percent, which is higher than in 2014. The reason for this positive trend is attributed to a continuous increase in PTTGC's activities and innovations focusing on creating value and benefits for community and society. In 2016, PTTGC is planning to invest more in social activities, including activities for education, support for professional development and greater public benefit in local communities.



## Next Step

PTTGC is looking forward to develop a CSR/CSV projects screening guideline, so both CSR/CSV projects can be evaluated and develop to generate value to business, social and environment. The CSR/CSV screening guideline included stage-gate screening step, where projects will be filtered through three stage-gates. Each gate will be prompted with different checklists. The acquired CSV then proceed to activities and communication steps. CSV project evaluation is the last step where project will be evaluate for effectiveness and to further achieve the best value. In addition, since creating value for beneficiaries and shareholders are the main aspects of our PTTGC CSR policy and strategy, which provides a clear direction and focus for our corporate philanthropic activities. As a result, we have various input categories to implement our CSR projects and activities, including time of employees volunteering during paid working hours, cash contributions, in-kind giving, contributions of product, and management costs.

With implementation as a part of our CSV commitment, PTTGC has conducted an evaluation of our CSR project portfolio to identify projects that are of high value to society and our business. An evaluation result of CSR projects in 5 criteria, which includes good citizenship, better living, ecology, sharing and togetherness, are then used to identify “Flagship” project with high value to society and business. The “Flagship” projects are considered to strengthen company business performance and increase value to the communities. Additionally, “Flagship” projects will able to be model projects for improving performance of other projects and encourage PTTGC to CSV way with enhancing level of CSR to be well-known in social and community. Our existing CSR bioplastic project has been selected as a CSV project to be strengthened to enhance CSV value in 2016.

## Link to Capitals

Capital	Input	Output
<b>Financial</b>	• CSR/CSV activities investment	-
<b>Manufactured</b>	-	-
<b>Intellectual</b>	-	• CSV/CSV guideline
<b>Social and Relationship</b>	<ul style="list-style-type: none"> <li>• Communities</li> <li>• Customers / Suppliers / Partners</li> <li>• Investors and shareholders</li> <li>• Brands</li> </ul>	<ul style="list-style-type: none"> <li>• Lincense to operate</li> <li>• CSV/CSV projects</li> <li>• Satisfaction of stakeholders</li> <li>• Stakeholders engagement</li> <li>• Social impact / compliants</li> <li>• Social betterment</li> <li>• Brand / reputation / trust</li> <li>• Sustainability and self-resilience</li> </ul>
<b>Human</b>	<ul style="list-style-type: none"> <li>• Engaged workforce</li> <li>• Ethics value</li> <li>• Salaries and wages</li> </ul>	
<b>Natural</b>	-	• Environment Betterment





# Sustainable Supply Chain



# Sustainable Supply Chain

## Key Figures



❖ **5** key suppliers were assessed on environmental, social and corporate governance performance in 2015.

❖ **239** new suppliers passed screening criteria on environmental, labor practice, human rights and impact on society.

❖ **264** suppliers joined the Knowledge Management for Suppliers Project in 2015

❖ **9** suppliers have applied for Green Industry certification at Level two or above from the Ministry of Industry.

❖ Sales **400,128** million Baht in 2015

❖ Reduction in operating costs by more than **21.3** million Baht from activities focusing



## TARGET AND PERFORMANCE

PLAN	TARGET FOR 2015	PERFORMANCE IN 2015	TARGET FOR 2016
1. Customer satisfaction (score)	more than 84.6	88.6	more than 88.6
2. Supplier satisfaction (percentage)	more than 80	91.08	more than 80
3. Key suppliers (high risk tier 1 suppliers) assessed on environmental, social and corporate governance performance (percentage).	4	4	4
4. Suppliers receive yearly performance evaluations (number).	383	383	more than 380

PTTGC recognizes the importance of creating sustainability in the chemicals industry's supply chain, throughout the production process both nationally and internationally. Initiated from the efficient management of processing natural resources into raw materials, the research and development of innovations and green technology, the manufacturing of environmentally friendly products and the sustainable logistics management, to the distribution of products and services that promote sustainable consumption. These must be done in order to achieve customer satisfaction and reduce risks for suppliers and thus create a more stable and efficient supply chain.

## CUSTOMER RELATIONSHIP MANAGEMENT

**COMMITMENT •**

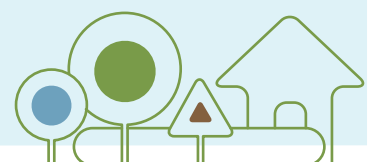
PTTGC aims to sustain excellence in continuously delivering customer satisfaction by building confidence in products quality and services.

**GOAL •**

PTTGC's targets to maintain good customer satisfaction levels, in order to consistently and sustainably operates its business. Additionally, by 2018, PTTGC will develop a systematic customer database system, including customer satisfaction, customer dissatisfaction and customer engagement results. This system will allow group companies to access all customer database, which can be used for further analysis in order to continually develop sustainability customer satisfaction and relation plans.

**CHALLENGES AND BUSINESS OPPORTUNITIES •**

PTTGC delivers value to our customers, so as to create customer satisfaction, which is our core mission. PTTGC endeavors to develop a more effective customer relationship management through aligning our business operation with United Nations Sustainable Development Goals, both in sustainable production and consumption. Risk mitigation in supplier risk management also taken into consideration for efficient energy utilization and product distribution.



## Customer Relationship Management Strategy

PTTGC has a strong focus on value creation through customer portfolio management. The company has identified opportunities for generating high-value customer portfolio and increasing value along the chain through an analysis of market outlook/insight and an assessment of opportunities and threats. All marketing strategies are developed in line with this approach in order to match them to the needs of the customers and provide excellent products/services beyond customer's expectation. The marketing strategies, which are the directions for all BUs to set marketing execution plan, have been deployed to all business units. In order to reassure that the plan will be achieved, it will be monitored and evaluated regularly.

PTTGC created and updated a Customer Relationship Management (CRM) systematic process to allow for more consistent and up-to-date customer management with the ability to share accurate and instantaneous data across all BUs and product groups. PTTGC has a multi-faceted customer relationship management approach in order to respond appropriately to customer expectations. Moreover, PTTGC applies customer feedback to be one of the criteria for product innovation, which leads to develop existing products, design new products and improve product's eco-footprint.

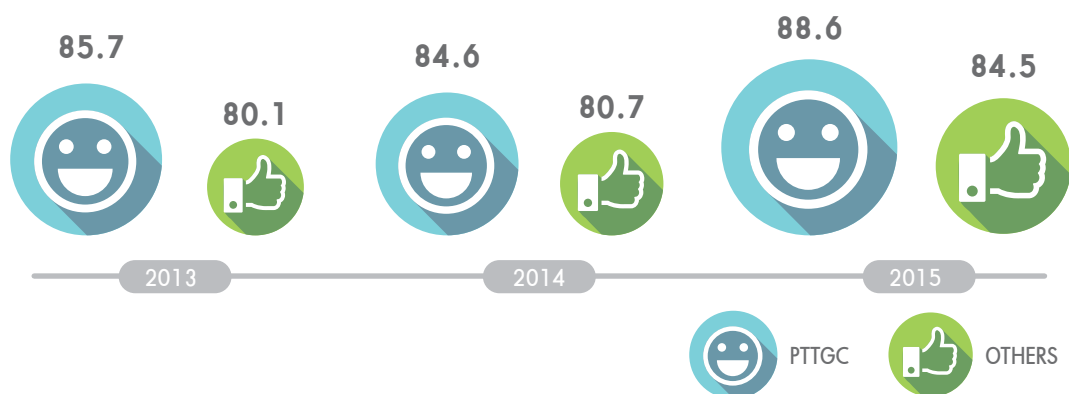
Customer relationship management is continuously maintained as the marketing strategy due to a longer-term perspective rather than a transactional perspective to managing the customer base. The customer satisfaction survey, as a part of customer relationship management, is a strong indicator of both recurring customer intentions and behaviors. These feedbacks of customer satisfaction surveys are utilized as a significant indicator as well as opportunities to improve performance and corporate perception to maximize value that meets customers' needs or exceeds customer's expectation.

## PTTGC Performance

Increasing customer satisfaction is the heart of PTTGC's operations. This is achieved through the development of more effective customer relationship management and the creation of products that respond to consumer needs. PTTGC promotes customer participation through customer satisfaction surveys and ongoing coordination meetings with its customers in order to response to their needs, exchange product information and receive customer feedback directly. The information contributes to the development of business solutions, which lead to product development and design, improvement in production efficiency as well as marketing and logistics strategies. These result in continued reduced production costs and three consecutive years of higher customer satisfaction ratings than the industry average.

## CUSTOMER SATISFACTION RATINGS

PTTGC has conducted customer satisfaction, customer dissatisfaction and customer engagement surveys in the following aspects: Product Quality, Service Quality, Process Quality, Value and Price, Corporate Image and Loyalty. In 2015, PTTGC's customer satisfaction score was 4.1 higher than the industry average, which also met the 2015's target. In addition, PTTGC just started conducting customer dissatisfaction and customer engagement surveys in 2014.



## IN FOCUS



### SALES AND LOGISTICS WORKSHOP

PTTGC organized a Sales and Logistics Workshop in order to strengthen relationship and cooperation between suppliers and the Phenol Business Unit. The workshop was intended to develop, trade strategies and product delivery guidelines so as to achieve mutual benefits through the reduction of operating costs. The results in 2015 illustrated PTTGC's ability to reduce operating costs by 600,000 USD, or about 21.3 million Baht.



"PTTGC puts in place a management approach that ensures the effectiveness of customer relationship management through regular activities aimed at strengthening relationships and trust. This results in consistently high customer satisfaction levels and gaining customer confidence in joint business operations."

## Next Step

PTTGC will increase trend for customer satisfaction survey. The customers' expectations/feedbacks are increasingly more specific in global mega trend and emerging concerned issues. These inputs will help PTTGC to serve customers with the up-to-date situation strategy and could achieve the satisfaction index and be able to retain key accounts while exploring new customers in the same time.

Moreover, PTTGC contributes to society with quality and responsible products together with creating shared value with customers and partners for sustainable growth. PTTGC is moving forward for more customer engagement in order to offer the quality and responsible products in terms of environmental-friendly value products with high performance in various applications. The communication through customers for the Carbon Footprint and Carbon Reduction products is the strategy to be carried on. Introduction of social and environmental values of products will eventually lead to the green society and sustainability.

## Link to Capital

Capital	Input	Outcomes
Financial	• Customer Relationship Activities Investment (CRM)	• Sales Revenue
Manufactured	-	• Product Footprint
Intellectual	• Knowledge Management	• Customer Satisfaction Feedback • Product Improvement & Development
Social and Relationship	• Customer Relationship Activities	• Customer Engagement
Human	• Training and Development	-
Natural	-	-

## SUPPLY CHAIN MANAGEMENT



## COMMITMENT •

PTTGC aims to improve supply chain management and build customer confidence to become the number one business partner recognized and trusted by both domestical and international clients in the chemicals industry.



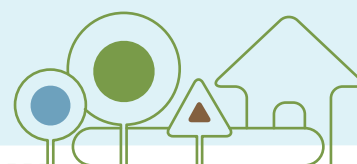
## GOAL •

PTTGC aims to gain supplier's acceptance with the Supplier's Code of Conduct and conduct their businesses in accordance with the Code by 2020. It also sets a goal to collaborate with supplier in reducing environmental impact throughout the supply chain.



## CHALLENGES AND BUSINESS OPPORTUNITIES •

Efficient supply chain management will reduce both risks and costs within the supply chain, which have direct impacts on stakeholders, including suppliers, customers and the surrounding communities. PTTGC, therefore, is committed to manage its supply chain in accordance with the United Nations Sustainable Development Goals to promote sustainable industrialization, foster innovation and build resilient infrastructure via a sustainable supply chain management system. This includes sustainable production through the implementation of PTTGC's Supplier's Code of Conduct, in order to achieve the goals of efficient supply chain management, the reduction of greenhouse gas emissions and the production of more environmentally friendly products.



## Supply Chain Management Strategy

The ability to systematically integrate sustainability objectives into the overall supply chain strategy shows a strategic dedication to making the supply chain more sustainable which will give the company a better position when it comes to leveraging opportunities and mitigating risks that are arising in the supply chain.

PTTGC is confronted with the need to minimize costs and time of delivery to satisfy the demand of their suppliers and increase profitability without jeopardizing the quality of the product or at high environmental or social costs. In an increasingly globalized world, when a company outsources its production, services or business processes it also outsources corporate responsibilities and corporate risks.

PTTGC's supply chain management (SCM) strategy focuses in providing an operation framework to maximize economic value and potential risk for all procurement activities. This strategy aligns with corporate business strategy by supporting logistic transportation and on-time delivery and providing guidance and frameworks to assess suppliers on ESG aspects and to reduce potential risks from suppliers.

PTTGC is aware of and places high priority in embedding ESG into business practices and the corporate mind-set. A variety of initiatives are implemented in parallel with long-term large scale programs to assist employees in developing organizational capability and behavioral transformation, by incrementally embedding ESG in each personnel role and responsibility. PTTGC has expanded sustainability aspects as a part of team KPIs in core business practices to ensure that BUs delivers tangible ESG results i.e. green procurement, operational efficiency, and effective CSR programs. By this strategy, cumulative team efforts should result in the recognition of PTTGC's sustainability performance by international rating agencies – a Corporate KPI.

Also, the strategy enables cross-function/cross-category value optimization, creates wide collaboration among PTTGC and partners, and ensures that the required resources including raw materials and services are prioritized, allocated and developed.

## PTTGC Performance

PTTGC aims to build confidence in supply chain management that extends across the entire supply chain, including product and service quality from feedstock and non-feedstock suppliers. PTTGC encourages employees and suppliers to uphold and abide by the Supplier's Code of Conduct, along with the efficient raw material sourcing, green procurement and sustainable development of suppliers.

PTTGC manages its key supplier including PTT Public Company Limited, its parent company, which supplies raw materials including natural gas, condensate and crude oil. PTTGC has appointed GSP Reliability Improvement Committee to evaluate the suppliers' qualitative and quantitative performances and efficiency of product delivery. The committee is ensured supply security and has worked in close collaboration with PTT Public Company Limited to resolve the issues around suppliers' inability to deliver adequate natural gas as planned. PTTGC and PTT Public Company Limited jointly identified the causes and formulated short- and long-term plans. This includes the replacement of heat exchanger in 2016, which has been scheduled for completion by 2017, as well as the installation of additional electricity generators in order to prevent power outages. The operations of the GSP Reliability Improvement Committee, therefore, ensure sufficient sourcing of natural gas to meet production plans and customer demand, while maintaining production cost competitiveness.



PTTGC has supplier risk management system, which includes supply chain risk assessment; spend analysis and identification of key suppliers in the supply chain. Risk assessment is based on the severity of environmental, occupational health and safety and business impacts, and the likelihood of adverse consequences. Supplier registration is the process in which PTTGC will evaluate supplier qualifications in four aspects: 1) Technical capabilities 2) Quality assurance and quality control 3) Occupational health and safety and environmental impacts and 4) Financial impacts. Furthermore, suppliers will be assessed in the area of human rights and compliance with labor laws as the well-managed operations in reducing direct and indirect impacts on PTTGC.



## IN FOCUS



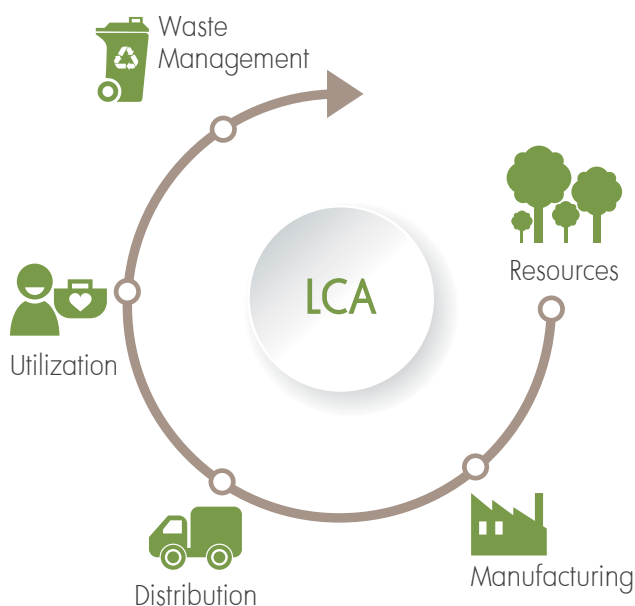
## KNOWLEDGE MANAGEMENT PROJECT

In 2015, PTTGC organized a knowledge management event for its partners known as “Better Reliability is Our Duty” aiming at building knowledge and sharing experiences regarding maintenance work as well as potential risks and consequences for utility customers.

PTTGC remains committed to minimize environmental impacts and manages risks in the supply chain by carrying out Green Procurement policy for non-feedstock sourcing. The products must undergo Life Cycle Assessments (LCA) and pass requirements for environmentally friendly products and services in line with the 3Rs principles, Reduce, Reuse and Recycle. In addition, other considerations include price, quality and product delivery, in order to generate shared value between PTTGC, its suppliers and broader society, and to create consistency in strengthening supplier relation management.

Moreover, in order to achieve sustainability throughout the supply chain, PTTGC demonstrates its determination to obtain Green Network certification from the Ministry of Industry’s Green Industry Level 5, and has conducted environmental, social and corporate governance performance assessments of its five suppliers. In 2015, PTTGC also became a member of EcoVadis, an international organization that specializes in sustainable supply chain management.

## LIFE CYCLE ASSESSMENT: LCA



## Characteristics of Environmentally Friendly Products and Services

- ✪ Reduce the use of resources and use recycle materials
- ✪ Use energy efficiently and reduce waste generation
- ✪ Minimize or zero environmental impact from production process
- ✪ Longer life span products and design a reusable product
- ✪ Collect and reuse or recycle the packaging
- ✪ Low environmental impact logistic system
- ✪ Return of products for proper waste disposal

## IN FOCUS



## SUPPLIER CONFERENCE •

In 2015 PTTGC organized 2015 Annual Supplier Conference under the “Inspiring Sustainability” theme for non-feedstock suppliers, in order to standardize and set out business direction together and to promote Green Procurement. This event was held to communicate PTTGC’s policies aiming at promoting sustainable business practices on the foundations of environmental, social and community stewardship. Along with this, PTTGC emphasized the importance of business ethics and expressed its commitment to conducting business in a fair and transparent manner and to fight against corruption in all forms, in order to build relationships and mutual understanding between PTTGC and its suppliers, as well as to support the efficiency of joint operations and sustainable growth. This event took place on November 3<sup>rd</sup>, 2015, in the auditorium at Rayong Office and received a satisfaction rating of 91.08 percent.



## Next Step

PTTGC is also implementing a series of initiatives to create strong partnerships with our critical suppliers. Proceeding with ESG integration in its SCM Strategy to ensure effective delivery, the Supply Chain ESG Audit Program will provide protocol and guideline for selecting suppliers to audit, both self-assessment and on-site audits, and post-audit action plans. Overall, PTTGC is able to confirm the compliance of its remaining suppliers and ensure that they are able to take responsibility for their own improvement. PTTGC aims at 100% ESG audit conducted for 1st tier high risk critical supplier by third party within 2018.

Moreover, PTTGC's Group Sustainable Supplier Code of Conduct (SCoC) is agreed and communicated throughout the PTTGC group's suppliers. It is targeted to have 100% of suppliers to accept SCoC within 2017. This is to align and improve the overall standard to sustainable way.

Since PTTGC has worked with many local and international suppliers which requires international standard and guideline as a principle. PTTGC then encourage ourselves in the global context for sustainable supply chain management by entering to the EcoVadis assessment and to be members of Tomorrow for Sustainability (TfS). These best practices support PTTGC in advancing internal operation to world-class standards and to finally sustain the business.

## Link to Capitals

Capital	Input	Outcomes
<b>Financial</b>	• Supplier Investment (AVL)	• Spending Saving
<b>Manufactured</b>	-	• Spending Risk Mitigation • Procurement Improvement System
<b>Intellectual</b>	• Knowledge Management	• Suppliers Feedback
<b>Social and Relationship</b>	• Supplier Activities (ESG Audit / Supplier Conference)	• Suppliers / Partners Satisfaction
<b>Human</b>	• Training and Development (PTTGC)	-
<b>Natural</b>	-	• Green Procurement Spending



# Operational Responsibility





# Operational Responsibility

## Key Figures



❖ Reduce accumulation of GHG emission by **3.5%**  
(0.27 million tons of carbon dioxide equivalent)

❖ Reduce energy consumption by **1.71** million GJ

❖ Water Recycled **904,842** m<sup>3</sup>

❖ **Zero** waste to landfill

❖ Carbon Footprint Reduction Labels for  
**44** Product grades

❖ **6** Tier 1 process safety events

❖ **Zero** Loss of Primary Containment

## TARGET AND PERFORMANCE

PLAN	TARGET FOR 2015	PERFORMANCE IN 2015	TARGET FOR 2016
Responsible Environmental Management			
1. Water management by recycling water (percentage)	35	36.8	40
2. Waste reduction (tons)	Zero waste to landfill <sup>ε</sup>	Zero waste to landfill <sup>ε</sup>	Continuity of Zero waste to landfill
3. Greenhouse gas emissions (tons carbon dioxide equivalent)	76,000	83,000	76,000
4. Efficient energy use at 1 <sup>st</sup> Quartile (Number of plants)	15 plants	10 plants	10 plants
5. TRIR: Total Recordable Injuries Rate (Case/1 Million Manhours) 6.	≤ 1.80	0.37	0.60
LTIFR: Lost Time Injuries Frequency Rate (Case/1 Million Manhours)	0	0.09	0

\* Greenhouse gas quantity is under revision in accordance to ISO 14064-1 standard, which is planned to completion by April 2016

PTTGC recognizes its responsibility to the environment and is therefore committed to improve the environment as well as the safety of all operational facilities. PTTGC has incorporated sustainable development principles into the daily operations of its employees; projects and activities, which are currently being implemented strongly. Furthermore, these projects align with the vision and mission of the company in terms of the Group's sustainable development.



### COMMITMENT •

PTTGC recognizes the importance of limited natural resources and is committed to comply with the laws and regulations of the operating area as well as with international guidelines. Therefore, PTTGC utilizes sustainability as a main operational concept in improving its production processes to increase operational performance and reduce environmental impacts.



### GOAL •

PTTGC has set goals to reduce natural resources use and greenhouse gas emissions from all companies in the Group, including:

1. By 2023, reduce water intensity by ten percent from 2013 base year, based on business as usual scenarios.
2. By 2023, reduce waste generation intensity by ten percent from 2013 base year, based on business as usual scenarios.
3. By 2023, reducing air emission intensity, VOCs, NO<sub>x</sub> and SO<sub>2</sub> by ten percent from 2013 base year, based on business as usual scenarios.



### CHALLENGES AND BUSINESS OPPORTUNITIES •

PTTGC has responded to changes in current situations to remain in compliance with many aspects of the United Nations Sustainable Development Goals. For instance, the company assured the ability of equal and appropriate access to water resources of all sectors through sustainable water management. The company has protected and reduced its impacts on biodiversity and taken part in restoring and bringing back balance to the eco system. In addition, the changes of applicable environmental laws and regulations, the increasing expectation of stakeholders and the expenses associated with reducing environmental impacts were critical challenges and opportunities in outlining the operations of the company.



## Corporate Strategy

PTTGC realizes the increasing impact of scarcity of natural resources on business operation and population. With the intention to conserve the valuable natural resources and create a better living, PTTGC has been operating the business in strict compliance with existing environmental regulations, while preparing for future regulations. PTTGC embeds Proactive Environmental Management (PEM) in our QSHEB Policy and into the strategy and one of tangible implemented programs aiming to minimize environmental impacts by focusing on improvement and prevention at-source, including water and raw material consumption efficiency; and Waste Management and Emissions Policy (solid waste, wastewater, NOx and SOx, and VOCs); emphasizing on 3Rs concept and Green initiatives.

To enhance efficiency in water management, PTTGC established goal for both internal and external water management. For internal water management, PTTGC set the reduction target of water consumption to ten percent lower than the business as usual rate (of 2013) by the year 2023, which is equivalent to a reduction of 3.89 million cubic meters. For external water management, PTTGC is collaboration with partners to monitor and evaluation water situation in Eastern region, especially in Rayong province.

Waste management at PTTGC, Many waste reduction projects has been initiated over the past years, to achieved the target of waste generation to ten percent lower than the business as usual rate (of 2013) by the year 2023, which is equivalent to a reduction of 6,235 metric tons.

PTTGC highly considers air quality management of NOx and SOx and continually monitors our direct NOx and SOx emissions using our Continuous Emissions Monitoring System (CEMS) and reports to local authorities as required by laws and regulations. PTTGC's commitment toward SOx limitation is adopting a policy of selection on only raw materials and fuels, which have less impact on health and environment, such as the use of fuel gas as well as low-sulfur fuel instead of fuel oil. PTTGC set the target of direct NOx and SOx emissions to ten percent lower than the business as usual (BAU) rate (of 2013) by the year 2023, which is equivalent to a reduction of 325 metric tons NOx and 108 metric tons SOx.

PTTGC has continuous effort to maintain and reduce VOCs as a part of PTTGC's environmental strategy. VOCs emission target is ten percent lower than the business as usual (BAU) rate (of 2013) by the year 2023, which is equivalent to a reduction of 160 metric tons. We have invested and established various projects to reduce the amount of VOC emissions to achieve our VOC target. In addition, PTTGC aggressively announced the zero emissions VOC target for tank farm and truck loading station, which are the material sources of VOC emission.

## PTTGC Operation

### SUSTAINABLE WATER MANAGEMENT

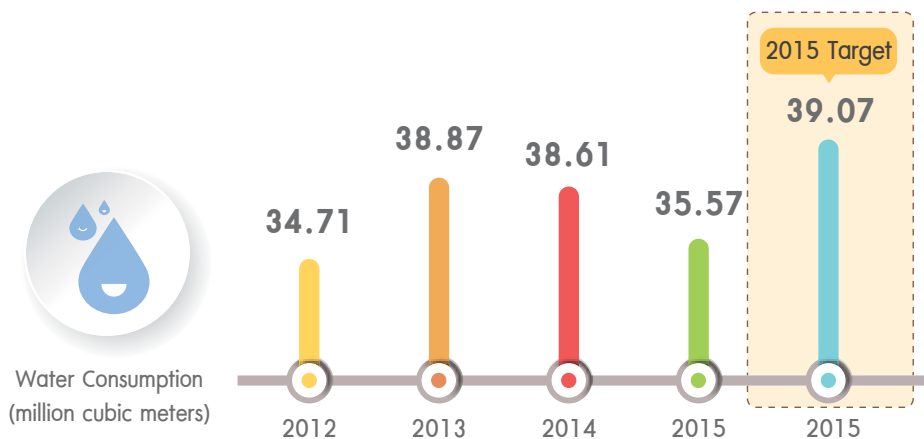
Water is a valuable and essential resource for communities, a critical factor in every process of PTTGC's business effort to integrated water management, both internally private sectors and PTT Group to proactively manage risks arising from water management and reduce water-related impacts to stakeholders.

For external water management, PTTGC created a long-term water management plan in collaboration with the PTT Group Water Management Team (PTTWT). The operational team meets quarterly in order to monitor, evaluate and report the water situation in the Eastern region. It also responsible for analyzing and planning water management within PTT Group. In addition, PTTGC developed and implemented a water conservation project to restore water resources by collaborating with water-related sectors to effectively and efficiently manage water supply.

Regarding internal water management, PTTGC is committed to three principles: 1) Water Saving: Reducing water consumption based on the 3Rs principle (Reduce, Reuse, Recycle) for the most efficient water consumption; 2) Water Innovation: Reducing the risk of water shortages and reduce water consumption from the same source as communities by producing fresh water from sea water; and 3) Water Stewardship: Evaluating direct and indirect water consumption throughout the production chain. The PTTGC established a goal to reduce ten percent of water consumption by 2023, compared to 2013 base year, with the objective to enhance efficiency in water consumption

In 2015, PTTGC was able to reduce untreated water consumption from natural resources by 3.04 million cubic meters, or 7.88 percent compared to the performance in 2014. Furthermore, the company was able to reduce waste water from its factories by recycling 904,842 cubic meters of water. This amount represented an increase of approximately 170,000 cubic meters compared to 2014. In total, PTTGC was able to return 36.8 percent for recycling into production processes. This resulted in a reduction in production expenses of approximately 4.5 million Baht. The company plans to recycle 40 percent of water back to prduction processes in 2016.

### WATER CONSUMPTION



## IN FOCUS

## WATER FOOTPRINT PROJECT •

In 2015, PTTGC evaluated the water footprint of 67 Olefins and Polymers product grades. Currently, the organization water footprint project is in the process of expanding to all products, which is projected to completion by 2018.

PTTGC recognizes the importance of efficient water consumption. For this reason, the company conducts research and evaluation of water consumption throughout a product's life cycle in order to identify process operation to decrease water consumption in each production process.



## RESOURCES AND WASTE MANAGEMENT

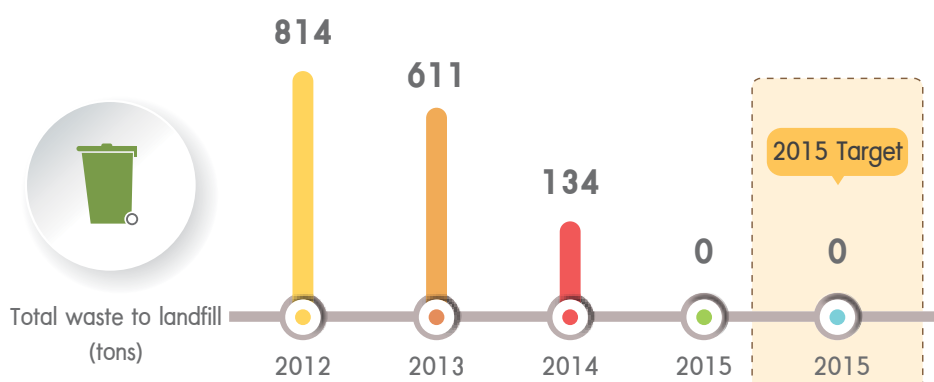
A decrease in waste production is an important indicator as well as helps reduce environmental impact and lower efforts towards waste reduction by adhering to the Group's Waste Management Policy, and has further launched a system for tracking and preventing environmental impacts covering from: storage, transportation and disposal. The goal is to reduce the total amount of waste to landfill to zero by 2015.

Through efficient operations, PTTGC successfully met this goal by the end of 2015 – the company has not sent any waste to landfill since the beginning of the year. Moreover, decreased 12,883 tons of waste to landfill and reduced greenhouse gas emissions by a total of 6,416 tons carbon dioxide equivalent or equivalent to 2.3 million liters in diesel consumption.

that demonstrates the effectiveness of the resource use waste disposal costs. For these reasons, PTTGC invests vital efforts towards waste reduction by adhering to the Group's Waste Management Policy, and has further launched a system for tracking and preventing environmental impacts covering from: storage, transportation and disposal. The goal is to reduce the total amount of waste to landfill to zero by 2015.

goal by the end of 2015 – the company has not sent any waste to landfill since the launch of the project in 2012, the Group has decreased greenhouse gas emissions by a total of 6,416 tons carbon dioxide equivalent or equivalent to 2.3 million liters in diesel consumption.

## WASTE TO LANDFILL



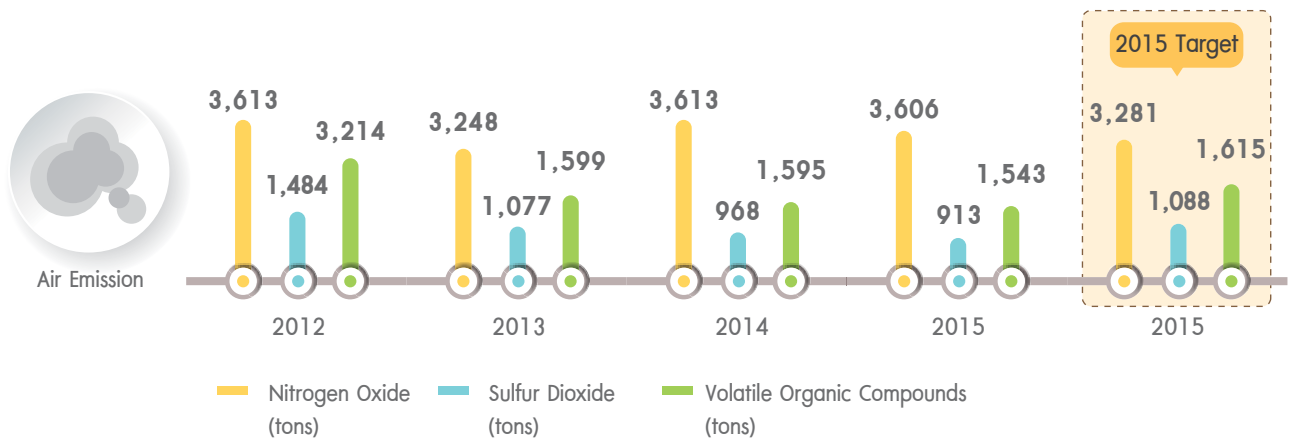
Since the beginning of 2015, the total amount of waste to landfill has been reduced to zero. The Zero Waste to Landfill project had been ongoing since 2012, and has effectively created environmental awareness for all employees.

## AIR QUALITY CONTROL

PTTGC gives high consideration to air quality control both inside its facilities and in the surrounding communities. By 2023, PTTGC aims to reduce emissions of Volatile Organic Compounds (VOCs) by ten percent in 2023 from 2013 base year from business operation as usual, as well as implement a system to protect and eliminate pollutants before being released to the environment and ensure that emission levels comply with legal limits. In 2015, the result of air quality monitoring inside and outside of PTTGC facilities indicated lower emission levels than the legal limit.

PTTGC joins the VOCs Monitoring and Mitigation taskforce in Map Ta Phut area, IRPC Industrial Zone and surrounding area in Rayong province. This is endorsed by Rayong Provincial Governor, which aims to monitor and integrate all sectors in significant reduction of VOCs in the area.

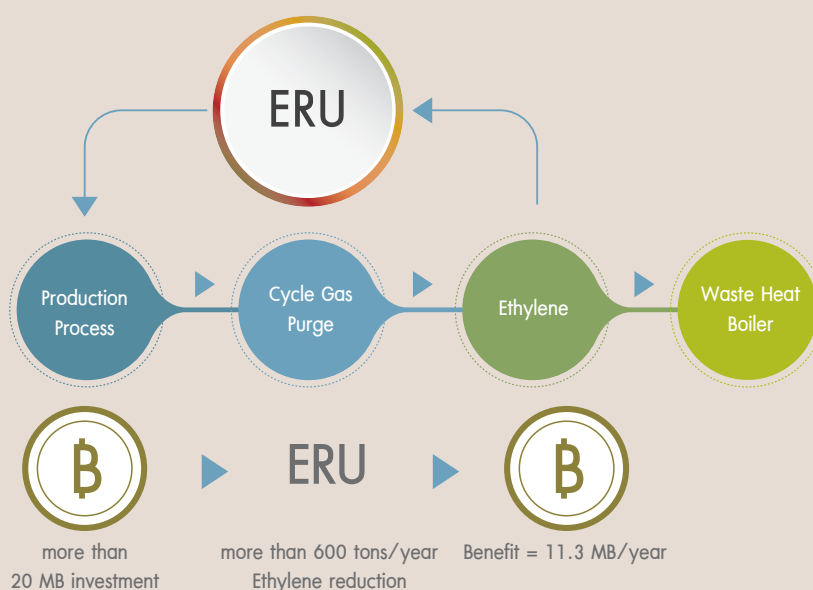
## AIR QUALITY CONTROL



## IN FOCUS

## PURGE GAS REDUCTION PROJECT (ERU UNIT) •

PTTGC established the Ethylene Recovery Unit (ERU) to remove Ethylene from the Gas Purge Cycle for reuse in the production processes, before being sent to the Waste Heat Boiler. The target is to have an Ethylene Recovery Rate of not less than 160 kilograms per hour. Following implementation, the project was able to bring Ethylene back into the production process at an average rate of 156 kilograms per hour. This resulted in a reduction in the amount of gas being sent to the Waste Heat Boiler and decreased the air quality issues that might affect the surrounding communities.



In addition, PTTGC initiated the Environmental Management Accounting (EMA) Project in 2014. The EMA is an environmental management tool to be used by management in decision-making processes concerning environmental issues. The project has been implemented a pilot plant and expanded to all plants, which is planned to be completed in 2016.

All PTTGC projects comply with applicable environmental laws and regulations. As a result, in 2015, there were no fines or penalties for violations of environmental laws and regulations.

## Next Step

To ensure compliance with regulations and international guidelines, PTTGC has committed to operating businesses in a sustainable manner toward conserving natural resources and limiting our impact toward social and environment. As a result, the corporate guidelines prescribing both technical and managerial requirements for PTTGC group and along value chain to measure and reduce environmental impacts implemented not only present operations but also new projects in the future have been established and adopted. Moreover, PTTGC will join forces with other local government, community and stakeholders to create a sustainable management.

PTTGC has implemented a new initiative entitled Environmental Management Accounting (EMA) following international guidance. EMA Guidance to standardize spending categories and systematically record. Moreover, PTTGC has initiated the Environmental Return on Investment (EROI) Project to improve the effectiveness of a company's EMS financial reporting capabilities and return on environmental investment.

To maintain and improve operational excellence, PTTGC engages in international benchmarking assessment on our operations, in order to assess our performance against industry peers and continuously improve our operational performance.

## Link to Capitals

Capital	Input	Output
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Plant Improvement Investment</li> <li>• Operating cost</li> </ul>	<ul style="list-style-type: none"> <li>• Sale revenue / EBITDA / profit</li> <li>• Revenue generation</li> </ul>
<b>Manufactured</b>	<ul style="list-style-type: none"> <li>• Water consumption</li> <li>• Enabling technology</li> <li>• Proactive Environmental Management</li> </ul>	<ul style="list-style-type: none"> <li>• Cost reduction</li> <li>• Plant reliability</li> <li>• Operational Eco-Efficiency</li> </ul>
<b>Intellectual</b>	<ul style="list-style-type: none"> <li>• Knowledge Management</li> <li>• Open Innovation / Patent</li> </ul>	<ul style="list-style-type: none"> <li>• Best Practices / Knowledges</li> <li>• Guidelines : EMA / EROI</li> </ul>
<b>Social and Relationship</b>	<ul style="list-style-type: none"> <li>• License to operate</li> <li>• Community</li> <li>• Stakeholders (Suppliers / Contractors / NGO)</li> <li>• Governments / Local authorities</li> </ul>	<ul style="list-style-type: none"> <li>• Community Satisfaction</li> <li>• Environmental Betterment</li> <li>• Compliant / Stakeholder engaged</li> <li>• License to operate</li> <li>• Trust / Relationship / Complaint</li> </ul>
<b>Human</b>	<ul style="list-style-type: none"> <li>• Ethics value</li> <li>• Engaged workforce</li> <li>• Specialized knowledge and skills</li> <li>• Training and development</li> </ul>	<ul style="list-style-type: none"> <li>• Human Capital Return on Investment</li> <li>• Specialized knowledge and skills</li> <li>• Employee Engagement</li> </ul>
<b>Natural</b>	<ul style="list-style-type: none"> <li>• Less raw materials</li> <li>• Higher renewables</li> </ul>	<ul style="list-style-type: none"> <li>• Water (3Rs / 2Rs)</li> <li>• Zero waste / Zero emissions</li> <li>• Environmental impact</li> <li>• Air quality</li> </ul>

## CLIMATE STRATEGY AND ENERGY EFFICIENCY

**COMMITMENT •**

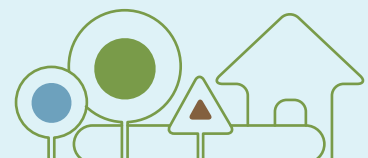
PTTGC's business is committed to strives towards a Low Carbon Society through the development of environmentally friendly products and other projects. This is to increase efficient energy consumption and greenhouse gas emissions reduction.

**GOAL •**

The company has set the goal to reduce greenhouse gas emissions by ten percent by 2022, from 2012 base year, based on business as usual scenarios. PTTGC further aims to reduce energy index under business as usual by ten percent in 2020, from 2015 base year.

**CHALLENGES AND BUSINESS OPPORTUNITIES •**

Climate change and efficient in energy consumption are important issues for all stakeholders. PTTGC conducts these issues in alignment with the United Nations Sustainable Development Goals, namely in ensuring access to reliable and sustainable energy for all. In addition, following the 21<sup>st</sup> Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP21), during which all participating countries accepted the agreement to limit the global temperature rise well below two degrees Celsius, PTTGC has undertaken prompt measures to enhance its readiness for such conditions and to prepare for potential impacts. An important part of this preparation involved launching several projects aimed at reducing energy consumption. Ultimately, these challenges will be crucial for PTTGC to work towards developing efficient production processes and using resources efficiently to reduce long-term direct and indirect impacts to stakeholders.



## Climate Strategy and Energy Efficiency Strategy

Following the COP21 agreement in late 2015, PTTGC began to revise its climate and energy efficiency strategies to ensure the alignment with global goal. The result from the revision demonstrated that PTTGC's initial strategy was already in line with the global direction and support company intention to move toward low carbon society. To achieve such intention, PTTGC has set up Climate Strategy Long Range Plan that focuses on reduction of environmental impact and climate change risk and Energy Excellence Roadmap that emphasizes on the sustain energy consumption to be International Top Quartile Energy Efficiency in 2020 according to benchmarking results from Solomon Associates and Phillip Townsend Associates. The reduction of energy consumption is focused in performance and production process. This aspect is direct impact to the GHG emission performance.

At the corporate level, the climate strategy focuses on the long-term GHG emission reduction by energy efficiency in the operations and products, and the mitigation of climate change related risks. For the initiatives in the operations and products, PTTGC's evaluation of emission reduction systematically in place to reduce the emissions and the QSHS department has responsibility to monitor and deploy the climate change related action plans including energy saving project, GHG inventory, and carbon labels in the operations. PTTGC strives to achieve 10% of the reduction from our emissions by 2022 by setting a target of

- 1) greenhouse gas emissions reduction (Scopes 1 and 2) to ten percent lower than the business as usual rate (of 2012) by the year 2022, which is equivalent to a reduction of around 715,708 ton CO<sub>2</sub>e.
- 2) reduction target of electricity purchased to ten percent lower than the business as usual rate (of 2013) by the year 2023, which is equivalent to a reduction of 185,339 MWh.
- 3) long target of Energy Index (EI) reduction by 10 percent in 2020, compared to base year in 2015, which is equivalent to a reduction of 3,201,514 MWh.

PTTGC values our business strategy toward to sustainability future by the transformation to a Green Company stemmed from our risk assessment and management process. The process identifies resource depletion and increasing need to protect the earth (and reduce GHG emissions), as our protection from many long-term risks. We foresee these risks as opportunities to direct our company into a sustainable direction, hence we are implementing several environmental-friendly aspects e.g. venturing to bio-based products, promoting of resource conserving products (using less raw material while maintaining the same product quality), and employing in more efficient processes.



## PTTGC Performance

Currently, climate change is a global challenge, whether with regard to economic, social and environmental issues. Such issues need cooperation from all sectors - public, private and individual. As a leader in the Petrochemicals and refining business, PTTGC has clearly demonstrated its commitment and intention to be a part of the climate change solution. Thus, PTTGC has incorporated guidelines for combatting climate change into its business strategies and expanded these to all operational processes, effectively enhancing efficient energy and leading to greenhouse gas emissions reduction.

PTTGC has leveraged its position as an environmentally- friendly business by striving to become a leading manufacturer of low-carbon products through its Climate Strategy Long Range Plan, focusing on the reduction of environmental impacts and the prevention of climate change risks. The company has set the goal of a ten percent voluntary reduction of greenhouse gas emissions (scope 1 and 2) by 2022, based on business as usual scenarios, from 2012 base year. Once completed, the plan is anticipated to reduce greenhouse gas emissions by 760,000 tons carbon dioxide equivalent.

In 2015, the company's greenhouse gas emissions was 7.4 million tons of carbon dioxide equivalent. This accumulated amount was approximately 3.5 percent decreased from 2012, or equivalent to 270,000 tons of carbon dioxide equivalent. Additionally, PTTGC continued its implementation of greenhouse gas reduction projects as part of its social and environmental responsibilities to climate change. Not only did PTTGC's greenhouse gas emissions records comply with the ISO 14064-1: 2006, The Greenhouse Gas Protocol, American Petroleum Institute (API 2009), IPCC 2006 and Thailand Greenhouse Gas Management Organization (Public Organization) (TGO), PTTGC also joined the registration of the TGO's Carbon Footprint for Organization, Carbon Footprint of Product's label, Carbon Footprint Reduction label and Certified Carbon Offsetting label.

### IN FOCUS

#### ENVIRONMENTAL-FRIENDLY PRODUCTS AND SERVICES



##### ALL PRODUCT GRADES •

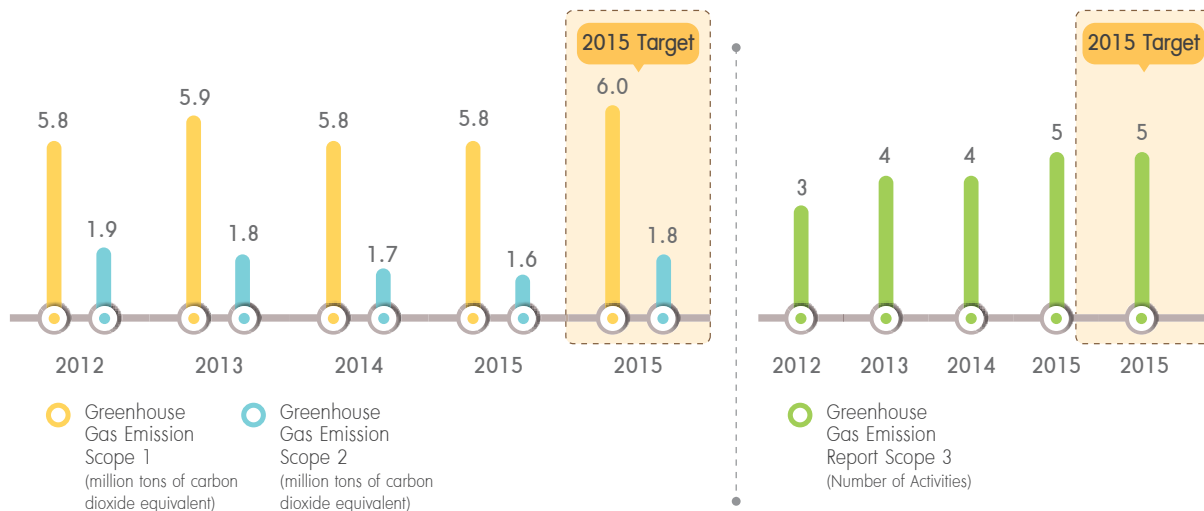
Received Carbon Footprint of Products: CFP Label certified by the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO)



##### 44 PRODUCT GRADES • 44

Received Carbon Footprint Reduction : CFR Label certified by the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO)

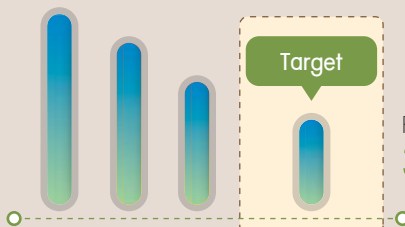
## GHG EMISSIONS



## IN FOCUS

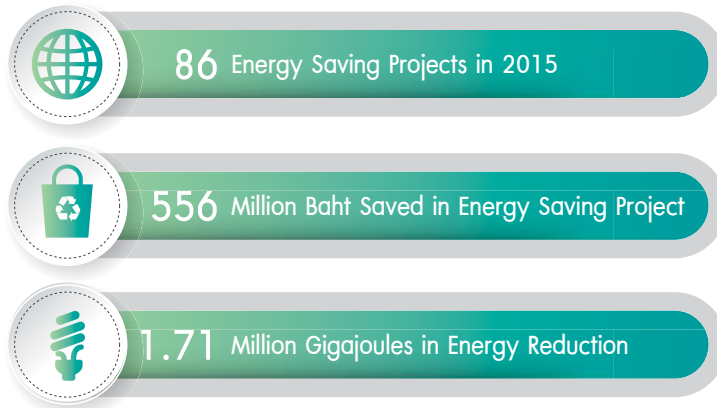
RAW CO<sub>2</sub> TRADING PROJECT •

In order to reduce greenhouse gas emissions to the environment, PTTGC organized an agreement to sell raw CO<sub>2</sub> to Genius Integrated Solution Co., Ltd. The purchased CO<sub>2</sub> was used as a raw material for Sodium Bicarbonate. With this agreement, the company set its goal to reduce carbon dioxide emissions by 120 tons per day or approximately 35,000 tons per year. The agreement is expected to be completed in the year 2016, resulting in an approximate income of more than 20 million Baht per year.



Reduce carbon dioxide by  
**35,000** tons per year

Furthermore, to continuously reduce energy consumption in the organization, PTTGC conducted several projects focusing on energy savings and increasing efficiency in energy consumption. To this end, the company established a goal to reduce Energy Index (EI) by 10 percent in 2020, compared to base year in 2015.



## IN FOCUS



### 2015 INTERNAL ENERGY REDUCTION PROJECT

The company received the Prime Minister's Industrial Excellence Award in Energy Management in 2015 for the High Selectivity Catalyst (HSC) Project for changing the type of catalyst from a Medium Selective Catalyst to a High Selective Catalyst in the EO Reactor. This change increased the efficiency of the catalysts and reduced the consumption of raw materials by 41,690 tons per year, steam consumption by 33,288 tons per year,

and 40 million Baht in annual expenses on eliminating carbon dioxide from production processes or a decrease in the total expenses by 215 million Baht per year.



## Next Step

Based on the Climate Strategy Long Range Plan toward 2022, PTTGC planned to ensure that our performance for GHG emission reduction is on track with its stated commitment. Climate strategy and sustainable energy consumption will still be in PTTGC's focus to move toward low carbon society. Currently, to reduce GHG emission from electricity, PTTGC focuses on 3 dimensions: Performance, Process and People. PTTGC believes in opting the cleaner fuel whenever it is available. However, in order to maintain plant reliability and secure source of electricity, PTTGC needs to balance the portion of electricity purchasing.

For product carbon labeling, PTTGC emphasizes direction goes to produce and sell products with lower GHG impacts by continue to seek for technologies or collaboration that could create value to offset emission or wastes and can be further reduced within the cradle-to-gate cycle. PTTGC aims to have all of our products grades to be certified under the Thailand Greenhouse Gas Management Organization (TGO) Carbon Label.

In 2015, PTTGC has planned to participate in the Thailand Voluntary Emission Reduction Program: T-VER and the Thailand Voluntary Emission Trading Scheme: Thailand V-ETS by starting with PDD Report in 2016. Both T-VER and Thailand V-ETS were established to prepare the private sectors and all the stakeholders to become accustomed to the emissions verification systems and promote the voluntary carbon trading market in Thailand, under TGO supervision.

## Link to Capitals

Capital	Input	Output
<b>Financial</b>	<ul style="list-style-type: none"> <li>Plant Improvement Investment</li> <li>Operating cost</li> </ul>	<ul style="list-style-type: none"> <li>Sale revenue / EBITDA / profit</li> <li>Revenue generation</li> </ul>
<b>Manufactured</b>	<ul style="list-style-type: none"> <li>Energy consumption</li> <li>Enabling technology</li> <li>Proactive Environmental Management</li> </ul>	<ul style="list-style-type: none"> <li>Cost reduction</li> <li>Plant reliability / Risk Avoid</li> <li>Operational Eco-Efficiency</li> </ul>
<b>Intellectual</b>	<ul style="list-style-type: none"> <li>Knowledge Management</li> <li>Open Innovation / Patent</li> </ul>	<ul style="list-style-type: none"> <li>Best Practices / Knowledges</li> <li>Guidelines : product design</li> <li>Environmental product / process</li> </ul>
<b>Social and Relationship</b>	<ul style="list-style-type: none"> <li>Suppliers</li> <li>Customers</li> <li>Community</li> <li>Brand</li> </ul>	<ul style="list-style-type: none"> <li>Community Satisfaction</li> <li>Environmental Betterment</li> <li>Compliant / Stakeholder engaged</li> <li>Brand / Reputation / Trust</li> <li>Sustainability and self-resilience</li> </ul>
<b>Human</b>	<ul style="list-style-type: none"> <li>Specialized knowledge and skills</li> <li>Training and development</li> </ul>	<ul style="list-style-type: none"> <li>Specialized knowledge and skills</li> <li></li> </ul>
<b>Natural</b>	<ul style="list-style-type: none"> <li>Less raw materials</li> <li>Higher renewables</li> </ul>	<ul style="list-style-type: none"> <li>Energy consumption</li> <li>Environmental impact</li> </ul>

## OCCUPATIONAL HEALTH AND SAFETY



## COMMITMENT •

Safety is the main component of sustainable development within PTTGC and impacts upon the trustworthiness of the company's operations. PTTGC therefore strives to instill safety into all processes for more than 18,000 employees and contractors within the organization. This has led to the company's recognition in the petrochemicals industry as an Incident-free Organization.



## GOAL •

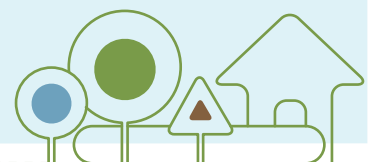
PTTGC has set the following health and safety goals:

1. Reduce the Lost Time Injury Frequency Rate (LTIFR) of employees and contractors to zero by 2020
2. Reduce Tier 1 Process Safety Events to zero by 2020



## CHALLENGES AND BUSINESS OPPORTUNITIES •

An unsafe workplace remains an issue of sustainable development that concerns by both the United Nations and all stakeholders of the company. Therefore, the company has developed safety plans for all operational processes. The plans focus on the concerns and interests of all stakeholders, such as employees, contractors and communities. All processes complied with the requirements and regulations both at national and international levels. This was to reflect the commitment of PTTGC to sustainable growth and ensure security for all stakeholders.



## Occupational Health and Safety Strategy

As a leading petrochemicals company, it is crucial for PTTGC to operate business in a responsible manner and take every essential aspects into consideration. PTTGC has been raising awareness among employee and contractors, monitoring the safety performance and compliance with regulations and procedures. PTTGC ensures that safety is given priority over commercial matters in the selection process of Vendor/Supplier. PTTGC is continuously improving its contractor selection, management, training and capacity building, audit, and feedback processes.

PTTGC establishes target to become tier 1 in occupational health and safety management and is committed to be a lost-time incident free organization. Hence, the LTIFR target is set at zero. In Thailand, all plants are required to comply with local OSH legal requirements, which are also aligned with our OSH systems.

PTTGC realizes the significance in linkage between Process Safety Management and Personal Safety Management in order to achieve the best health & safety performance. Excellent production process must be supported with strong Health & Safety culture. We prioritize on Personal Safety Management for employees, contractors and all operating stakeholders in line with targets of loss prevention since there are accidents in operations. PTTGC has created safety culture under the name of “B-CARES,” which employees and contractors have the rights to discontinue their duties if unsafe situation presents. Then the situation has to be reported to supervisor for immediate inspection and correction.

PTTGC follows Personal Safety Management by promoting the Management Safety Leadership Commitment of executives and managers, and by encouraging each person in PTTGC to be engaged in safety measures and practices. The Operational Area Core Team (OACT) and Process Safety Management Taskforce (PSMT) were established for each production unit to truly drive Process Safety Management that is appropriate to each working area. Aside from operation officers, engineers and contractors, employees working at the office are encouraged to perform their routine works with responsibility and cautiously. It is mandatory to all employees at PTTGC to attend occupational health and safety session during new employee orientation day and refreshment course is provided to employees whose work related to operational units.

## PTTGC Performance

Given that safety is the most important issue for the operations, PTTGC utilizes an effective safety management system based on international standards to operate its business. The safety management system covers safety in both the production processes and the individuals and has clearly set goals and performance indicators. PTTGC encourages a safety culture throughout the organization, from management levels to employees in all departments. Through various projects and safety activities, PTTGC thus ensures a safety workplace for all employees contractors and stakeholders and works to prevent risks and potential impacts that may cause harm to personnel and interrupt business continuity.

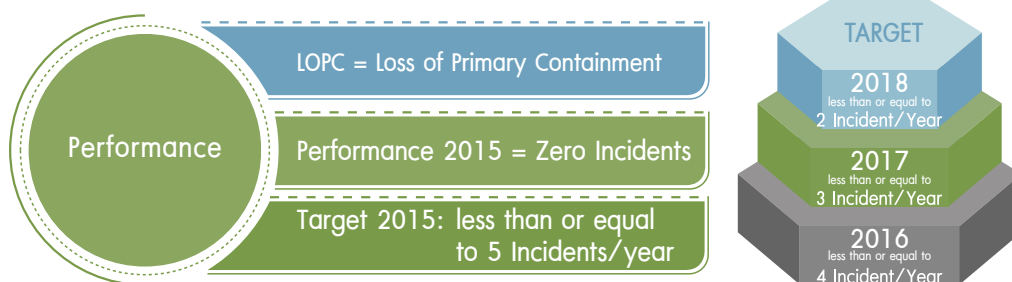
### SAFETY OF PRODUCTION PROCESSES

PTTGC operates its business under Process Safety Management, which is a part of the Operational Excellence Management System (OEMS). It covers all processes from the designing and operating stages, to maintaining, measuring and annual review of standards. The aim of this is to maintain high standards for PTTGC's operations to ensure safe production and reliability of its facilities.

PTTGC appointed the Process Safety Management Taskforce (PSMT) to monitor employee safety performance. Groups responsible for safety further hold 12 meetings per year, and the results and minutes of meetings are used to improve and develop guidelines for more effective performance. In 2015, the company conducted a safety assessment based on OEMS guidelines, or the OEMS Maturity Assessment. The assessment resulted in SSHE Scoring of 2.8 and further led to the establishment of Loss of Primary Containment (LOPC) and number of unplanned shutdowns as targets and indicators for process safety performance.



### PRODUCTION SAFETY PERFORMANCE



## IN FOCUS



## PROCESS SAFETY MANAGEMENT TASKFORCE LEADER

PTTGC was appointed as the PTT Group Process Safety Management Taskforce Leader in order to encourage and improve process safety performance within PTT Group. The overall objective was to reduce the number of Tier 1 Process Safety Events to zero and to share safety knowledge and information within PTT Group. In 2015, the number of Tier 1 Process Safety Events was at six, which was 54 percent lower than in 2014. This was due to the continuation of operations and measurements under the required PSM Effectiveness KPIs.

**PERSONNEL SAFETY AND OCCUPATIONAL HEALTH** In order to accomplish the target of being a zero incident organization, PTTGC encourages all employees, contractors and stakeholders to work on safety and well-being on a regular basis. In 2015, PTTGC continued to focus on its Management Safety Leadership Program for each level of management, as well as on safety engagement with all company personnel.

PTTGC encourages the establishment of a safety culture throughout the organization through the B-CAREs Project. This project emphasizes safe working behaviors, risk assessments and potential accidents in the workplace as well as an Effective Tool Box Talk among operators before starting work. Additionally, PTTGC is giving them the ability to stop processes when an unsafe situation is expected.



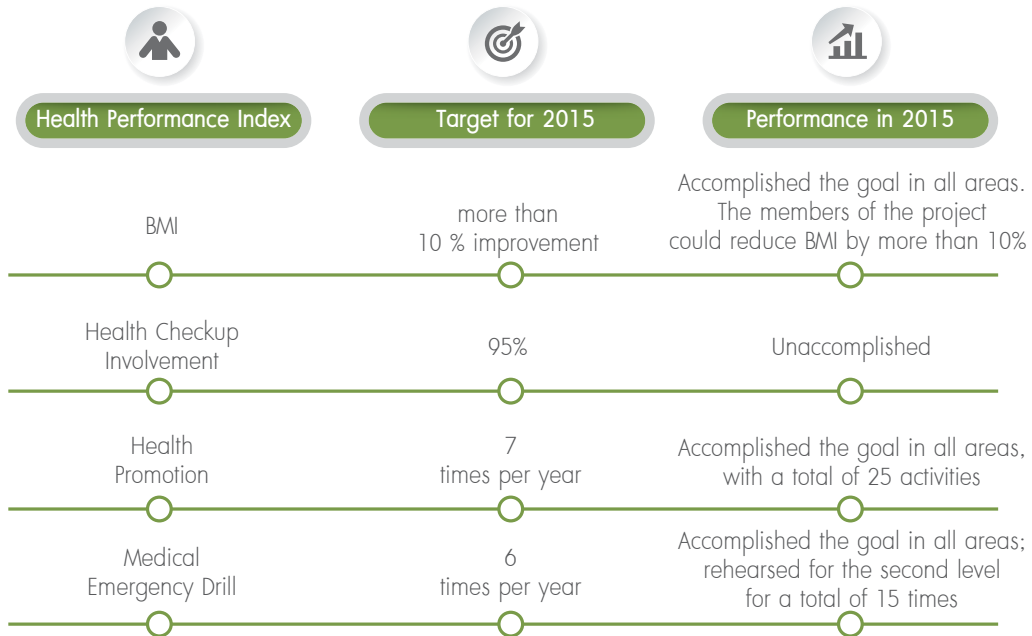
Moreover, PTTGC implements activities that focus on Management Safety Leadership Commitment for all management levels and employees to participate in safety, such as Management Safety and Reliability Walk and Management Safety Commitment Speech in Safety Training.

PTTGC has set clear goals and indicators to manage personnel safety and occupational health, which include: Total Recordable Injury Rate (TRIR), Lost-Time Injury Frequency Rate (LTIFR) and Healthy Performance Index (HPI).





## HEALTH PERFORMANCE INDEX



Finally, PTTGC places high priority to the occupational health and safety of all employees, as well as their understanding of the company's occupational health and safety policy since the first day of employment. As a result, PTTGC regularly holds training sessions for all specific fields of work in order to learn, prevent and respond to potential dangers and illnesses in the workplace, for example, the company also hosted training in Occupational Health, Safety and Environment Standards in 2015.



## IN FOCUS

## FIT @ WORK PROJECT •

The Fit @ Work Project was an example of projects that focused on good health of employees. The project was initiated in 2014 with the purpose of encouraging employees to take care of their health as well as being able to give and exchange knowledge about health issues to others – also known as “Health Sharing.” In order to do so, PTTGC arranged a Healthy Corner for employees to organize health related activities. These activities received positive attention from employees, attracting a total of 764 participants of this number, 279 participants or 37 percent have showed a significant reduction in their BMI scores.

In addition, the company also provided knowledge and information about health to communities in the areas where PTTGC operates, such as at Chak Luk Ya, Payoon Beach and Kho Kok communities. These communities received the same encouragement to support healthy living among family members.



## Next Step

PTTGC will continue to conduct activities related to occupational health knowledge and also to improve safety performance through awareness raising, information sharing, and process safety improvement. PTTGC intends to promote the standard of occupational health by setting programs to monitor Health Performance Index (HPI) of employees, such as: 1) Health checkup involvement; 2) Medical Emergency Drill; 3) BMI; and 4) Health Promotion. The HPI is used in developing the health promotion policy in the near future. Additionally, PTTGC will launch occupational health and safety data collection system, so all relating data will be stored systematically and can trace back comfortably. The trace back data provides useful information to be used during safety audit, in which PTTGC is planned to have 100 percent coverage on process safety audit within Thailand.

In order to prevent future occurrences of this incident, therefore, PTTGC develops “Contractor SHE Management” procedure to control standard for safety, occupational health and environmental management of all PTTGC's contractors.

## Link to Capitals

Capital	Input	Output
Financial	<ul style="list-style-type: none"> <li>Plant Safety Investment</li> <li>Operating cost</li> </ul>	<ul style="list-style-type: none"> <li>Sale revenue / EBITDA / profit</li> </ul>
Manufactured	-	<ul style="list-style-type: none"> <li>Plant reliability / Risk Avoid</li> <li>Operational Eco-Efficiency</li> </ul>
Intellectual	<ul style="list-style-type: none"> <li>Knowledge Management</li> </ul>	<ul style="list-style-type: none"> <li>Best Practices / Knowledges</li> <li>Guidelines and procedures</li> </ul>
Social and Relationship	<ul style="list-style-type: none"> <li>License to operate</li> <li>Community</li> <li>Suppliers / Contractors</li> <li>Government / local authorities</li> </ul>	<ul style="list-style-type: none"> <li>License to operate</li> <li>Community Satisfaction</li> <li>Social Betterment : safety culture</li> <li>Compliant / Stakeholder engaged</li> <li>Brand / Reputation / Trust</li> </ul>
Human	<ul style="list-style-type: none"> <li>Ethic values</li> <li>Specialized knowledge and skills</li> <li>Training and development</li> <li>Engaged workforce</li> </ul>	<ul style="list-style-type: none"> <li>Specialized knowledge and skills</li> <li>Social Betterment : safety culture</li> </ul>
Natural	-	<ul style="list-style-type: none"> <li>Environmental impact</li> </ul>

## What Still Went Wrong in 2015 Today on Samet Island



PTTGC continues to monitor impacts following the oil spill incident in 2013 on Samet Island, as specified in the economic, social and environmental rehabilitation plan. According to a report published by the Pollution Control Department, Ministry of Natural Resources and Environment, the situation has been restored to a normal state since 2014.

To prevent these incidents from reoccurring, PTTGC has been developing and upgrading technological systems, tools and operational equipment to increase the efficiency of internal operations. International standards have also been adopted to evaluate the readiness of these systems and tools. Additionally, internal oil spill emergency preparedness and response trainings are provided for all employees, as well as an oil spill response drill in coordination with government agencies. In 2015, PTTGC operated according to a long-term recovery strategy that covers economic, social and environmental aspects.



### ECONOMY

One of the concerns following the incident was the impact to Samet Island's reputation for tourism. PTTGC collaborated with national and local government agencies to organize public relations projects to boost tourism and spending, which result in generating income for Samet Island local business operators and communities.



### SOCIETY

In order to enhance understanding between communities and the company, PTTGC initiated two-way communication channels by developing engagement of more than 30 projects with communities surrounding the area that were directly and indirectly impacted by the incident.



### ENVIRONMENT

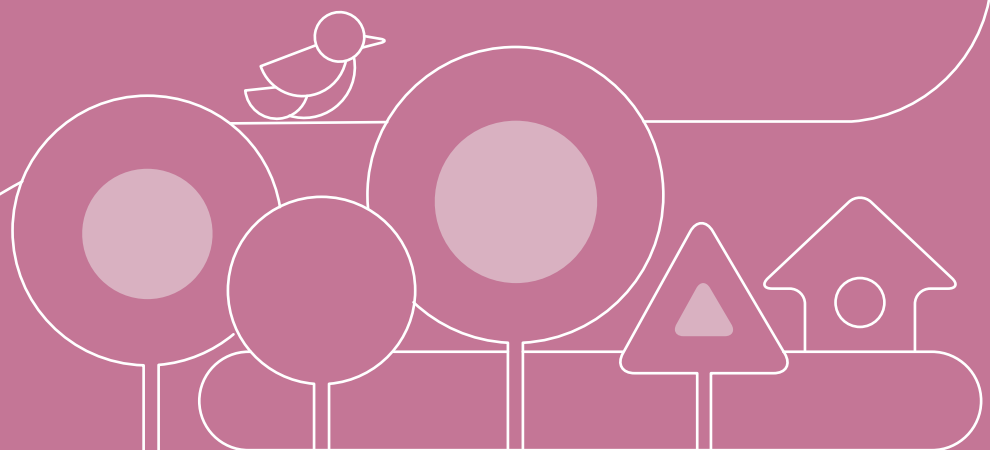
With our social responsibility, PTTGC continues to monitor direct and indirect impacts to natural resources by working with government agencies to evaluate oceanographic parameters. Results indicated that oceanographic conditions were within standard, including water quality, sand and silt, aquatic animals, seagrass, sandy beaches and rocky shores and abundance of coral reefs. Furthermore, it was found that sea water quality is no longer contaminated and coral reefs have been restored. Four sandy beaches and rocky shores demonstrated an increase in the type and quantity of species present.

Moreover, in 2016, PTTGC plans to collaborate with relevant government entities by using its expertise and experience in resolving oil spill responses to reduce the impacts of potential incidents in an appropriate and timely manner.





# Employee Readiness



# Employee Readiness

## Key Figures



Benefits received from the support in the PI-ChEPs training program was equivalent to **55** million Baht in 2015

Cost-savings in recruiting external candidates more than **19** million Baht

to **69%** of vacant positions

Budget for employee development: **123** million Baht in 2015





## TARGET AND PERFORMANCE

PLAN	TARGET FOR 2015	PERFORMANCE IN 2015	TARGET FOR 2016
1. Average training hours (Hours per person per year)	54	44	44
2. Total expenses for employee training and development (Baht per person per year)	30,000	18,220	20,000
3. Employee engagement survey results (percent)	80	85.76	80

PTTGC realizes the importance of our employees as valuable resources in driving the business forward. Thus, we are committed to recruit and retain quality employees as well as developing and building capacity of all employees, in order to support the main business operations and potential businesses in the future. Through our long-term employee development strategy, we aim to become an efficient organization and to work toward sustainable growth.

**COMMITMENT •**

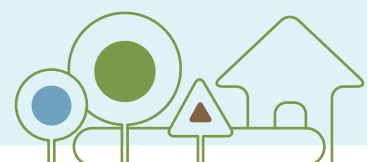
The continuous development of the quality and readiness of employees corresponds to the PTTGC growth strategy, which will help in reaching long-term business objectives. Owing to this, employees will be able to adapt to changes and receive necessary development. This is a model of PTTGC's sustainability framework, which is delivered to the future and for better quality of life

**GOAL •**

PTTGC aims to strengthen our employees' potential to align with the business growth strategy and plans to expand a group of high potential employees throughout PTTGC Group companies.

**CHALLENGES AND BUSINESS OPPORTUNITIES •**

The current fast-changing economy, especially in technological changes and population growth, poses a significant challenge as well as an opportunity for PTTGC to develop and build the capacities of our employees; to prepare for their readiness and establish a strategy for human capital development. PTTGC uses this opportunity to respond to sustainable growth of the company in accordance with the United Nations Sustainable Development Goals, including, ensuring inclusive and equitable quality education and lifelong opportunities for all, and achieving gender equality and empowering women. This demonstrates PTTGC's commitment in creating a quality and sustainable community.



## Human Capital Development Strategy

Human capital development not only ensures that the company has the appropriate skill set in order to execute the business strategy, but also improves talent attraction and retention, and employee motivation; and, as a result, productivity and the potential for innovation.

In increasingly knowledge-based industries, intellectual capital is also an important part of a company's intangible assets. Human and intellectual capital is maintained and improved by integrating knowledge management systems and implementing procedures for organizational learning. PTTGC has a comprehensive approach to identifying skill gaps, measuring human capital management, and developing systems to share knowledge across the organization.

Human capital development is one of the most financially material sustainability factors. The quality of employees that companies are able to attract and retain differentiates those that are well-positioned to succeed in their respective industries from those that are not, so strong human capital development practices are considered an important source of competitive advantage.

The Human Capital Return on Investment provides a means of measuring your company's profitability in relation to total employee costs. It is derived by removing non-employee costs from overall operating costs and deriving the resulting operating profitability. This metric provides a view into the degree to which economic value is derived looking at profitability solely in relation to human capital costs.

## PTTGC Performance

In seeking an opportunity to expand the business through innovation and an expansion into international countries, PTTGC has developed our employees through Individual Development Plans (IDP), which aims for supervisors to develop with their employees and provide suitable guidances and methods. This approach intends to provide real work experiences through three aspects, consisting of, 70 percent of works and project assignment, systematic job rotation (Experience), 20 percent development through coaching and mentoring system (Exposure) and 10 percent through training (Education).

In order to support and develop employees' potential to match the needs of PTTGC'S business operations, both today and in the future, PTTGC has organized training sessions for employees within and outside the organization. These trainings include preparation of employees for PTTGC's expansion into international markets, executive coach development programs with external consultations and the leadership development program.

PTTGC has commenced new business in the United States, and in 2015 has prepared 23 employees through the "Overseas Readiness Program – for US Petrochemical Project Team" in order to support the new business. This program equipped our employees with the necessary skills for PTTGC's new business in the United States, such as understanding of the language, local culture and working environment. Result illustrated that our employees were able to perform efficiently with the given tasks and helped in reducing training costs from overseas organizations by 3.45 million Baht. In preparation for business growth in 2016, PTTGC has set a strategy to develop a database system and recruitment process in order to respond to new business needs, with the purpose of developing and recruiting 100% skilled and competent potential employees.

Besides the aforementioned employee development, PTTGC also has a job shadow policy for senior management to pass down their accumulated professional knowledge to next generation of successors. This policy will prepare

the new management generation to be competent for their new positions by assigning them to learn and understand their future functions for three to six months.

## IN FOCUS

## PI-ChEPs PROGRAM •

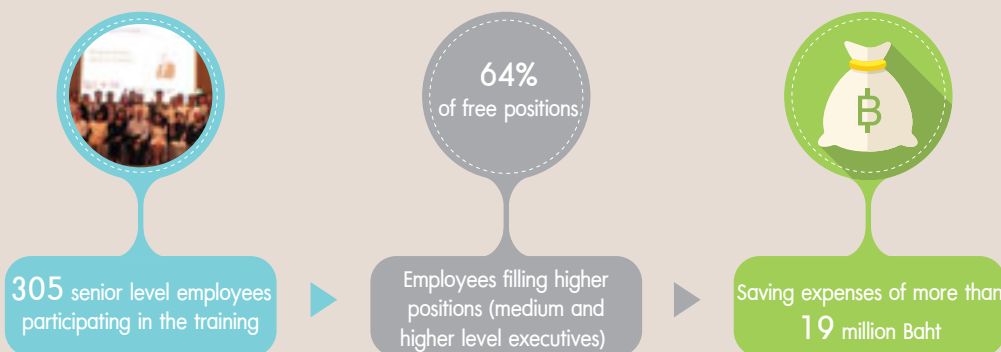
The PI-ChEPs program was developed to enhance learning processes, skills and knowledge about chemical engineering for employees working in production (operators), in order to help improve production efficiency. The PI-ChEPs program was launched in 2007 and still on-going. In 2015, PTTGC was able to save 55 million Baht on production cost from six projects of this program implemented in process since 2012.



## IN FOCUS

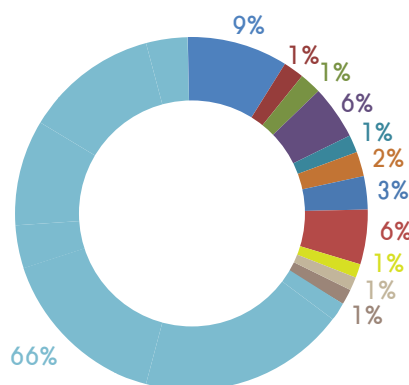
## LEADERSHIP DEVELOPMENT PROGRAM •

PTTGC has implemented the Leadership Development Program to develop leadership skills for all employees in order to work efficiently as supervisors and to prepare them to become successors for middle and senior management positions. With the intention to develop leadership skills of 300 employees from all levels in 2015, PTTGC discovered that 64 percent of 305 participants have been promoted to vacant positions, which helped to reduce recruitment costs by a total of 19 million Baht.



## TRAINING

➤ Training hours for employees from each working section



- Group Performance Center
- Corporate Affairs and Corporate Secretary
- CEO
- EO-Based Performance Business Unit
- External Affairs
- Finance & Accounting
- Green Chemicals Business Unit
- Organizational Effectiveness
- International Business Operations
- Science and Innovation
- Marketing, Commercial and Supply
- Others

## Next Step

PTTGC continues to invest in human resources presented by the year-over-year increase in total related expense and to motivate the employee by performance based pay and benefits. We also capitalize in human capital to attract talent people and retain human asset by enhancing the capacity to recruit personnel, building capability and managing career growth.

PTTGC is currently developing a means of measuring the economic benefits of its employee development investments. For the ROI of a particular program, PTTGC considers analyzing training programs; however, the data collection is now during the development phase to support the assessment.

This metric is applied to manage human capital together with the results from the Organizational Health Index, which is assessed by surveying employees and includes the criteria of employee behavior in order to improve employee performance and enhance work related skills. This assessment also identifies the needs for specific skills, such as leadership and management skills for the employee to be promoted to the next level.

PTTGC measures overall return on employee development and investment. It consequently provides a more granular insight into the benefits achieved through investments in training, education and incentive programs.

## Link to Capitals

Capital	Input	Output
Financial	• Training and Development Cost	• Human Capital Return on Investment (HC-ROI)
Manufactured	-	• Productivity
Intellectual	• Knowledge Management	• Specialized Knowledge and Skills • Innovation
Social and Relationship	-	-
Human	• Specialized Knowledge and Skills	• Turnover Rate • Talent Attraction and Retention
Natural	-	-

**COMMITMENT •**

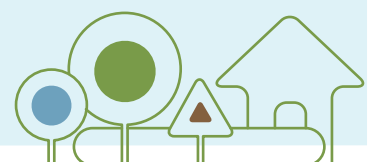
The attraction and retention of quality employees is one of PTTGC's objectives as we strive to become one of the top choices for personnel with potential and ability.

**GOAL •**

PTTGC strives to develop ourselves to become employer of choice, in order to attract top graduates and to retain talented employees.

**CHALLENGES AND BUSINESS OPPORTUNITIES •**

The rapid growth and development of the economy, accessibility to quality education, globalization of businesses and changing attitudes towards work are among the key issues and challenges which PTTGC faces in the attraction and retention of quality employees. PTTGC is aware of these issues and continues to develop recruitment processes and working to retain quality employees. This represents an opportunity for PTTGC in the creation of a positive image for personnel recruitment and mechanisms for increasing employee loyalty. These issues are consistent with the United Nations Sustainable Development Goals in various aspects, such as promoting sustainable economic growth in all areas, productive employment and decent work place.





## Talent Attraction and Retention Strategy

PTTGC responds to sustainable growth of the company including to ensure inclusive and equitable quality education and lifelong opportunities for all. PTTGC further supports equal opportunities for employees. Promotions and compensations are merit-based and designed to be competitive to attract quality candidates and to retain talented employees. Remunerations and benefits are set with transparency and fairness.

According to PTTGC's corporate responsibility policy for a successful business and happiness in the working life of all employees, the concept that success and happiness are supporting each other is applied. There are a number of programs that are created and implemented in organization to promote employee relations and raising the employee's engagement during the year. Success resulting from happiness in the workplace helps the organization towards sustainable growth. Moreover, it improves the employee retention rate.

PTTGC strives to be the employer of choice in the industry; employee engagement is set as one of the corporate KPIs. The company annually holds employee engagement surveys. Based on the employee engagement survey, employees stated that the reasons for them to consider lifelong employment with PTTGC stem from a combination of high job security, engaging company culture, rewarding career with competitive remuneration that includes long and short-term incentives, as well as excellent benefits. These aspects are the foundations of PTTGC's HR Strategy and it is the responsibility of the HR Department to ensure policies, measures, and systems are developed to ensure these aspects are maintained if not improved upon.

## PTTGC Performance

PTTGC recognizes the importance of the attraction and retention of quality employees, in order to drive toward sustainable growth and strives to maintain a work-life balance for its employees. Not only does PTTGC care for and treat its employees equally without discrimination, but also looks out for their families during their tenure with the company, up until retirement. This is achieved via welfare and benefits programs; for example, the Happy Workplace Program, a program which focuses on workplace satisfaction for all employees, and the Happy Retirement Program, which enhances and improves the happiness and quality of life for employees who are soon to be retired.

In the area of labor and human rights, in the past year, PTTGC has established a policy of accepting people with disabilities into the workforce, and has supportive programs to enhance the quality of life for people with disabilities. Therefore, in 2015, PTTGC began recruiting people with disabilities, with plans to improve facilities to support their specific needs.

PTTGC has created a database for personnel management (HR Analytics), consisting of four main subjects: 1) Reporting overtime work, 2) Employee information, 3) Employee turnover rate and 4) Individual expertise. The goal of this database is to find correlations between various employee issues in order to analyze the causes, prevent potential problems and to create solutions. In addition, this helps maximizing effectiveness of human resources planning and management for PTTGC.

### IN FOCUS

#### EMPLOYEE ASSISTANCE PROGRAM: EAP ●

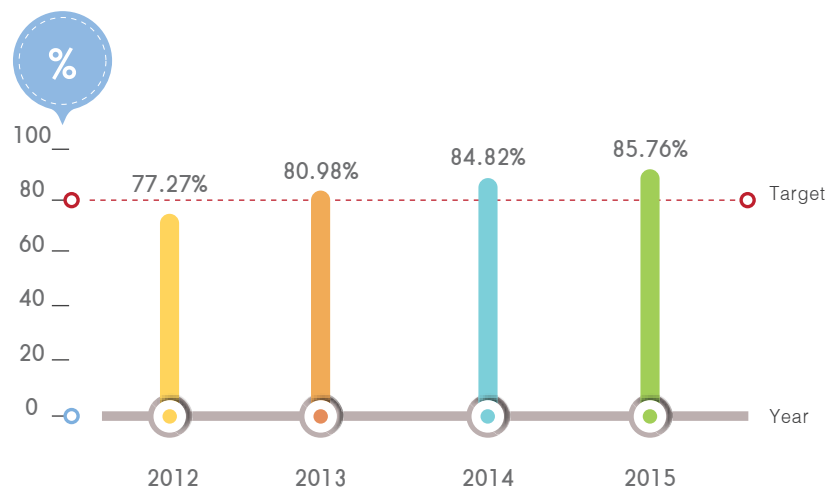
EAP is a program under the “Happy Work Place” concept, in which employees receive mental health care from external experts in sociology who will listen and provide consultation, as well as other useful advices. EAP is also a model program of employee care for other companies among PTT Group.



Furthermore, PTTGC has plans to implement programs in alignment with the Organizational Health Index (OHI), an index used to measure company performance and to provide perspectives on the growth and education of the organization. With compliance to OHI, PTTGC can ensure the stability of all its functions in order to achieve sustainable growth. In 2015, PTTGC carried out management development for leadership skills and other aspects, such as marketing and sales and English language learning, to prepare employees for the company's growth. To ensure efficient and stable operations, PTTGC employees are also expected to develop and improve their behaviour according to GC SPIRIT – the organization's values. Not only that, PTTGC has formulated human resource communication and execution strategies, and later on set up the HR Communication Working Team to oversee the project. Following the team's establishment, employees have a new communication channel that enhances their understanding of PTTGC's human resource management.

The HR Guru System has been set up to answer any employees inquiries regarding human resource, management through the internal intranet, where PTTGC can also gain insight into employee satisfaction and needs. Finally, PTTGC conducts annual employee engagement surveys, where the findings are integrated into improvements in employee programs and activities.

#### EMPLOYEE ENGAGEMENT SURVEY



PTTGC has set a goal to maintain the level of employee engagement at 80 percent. In 2015, the level of employee engagement was 85.76 percent from 3,880 participated employees or accounted as 97 percent of total 3,995 employees.

## IN FOCUS

## SHARED SERVICES •

PTTGC has developed an innovative Shared Service Management System by centralizing support functions that are able to provide services to other companies within the Group. PTTGC is able to manage costs and provide equivalent standards, whereby every service provider will sign a “Service Level Agreement (SLA)” contract between PTTGC and service recipients to establish the nature, types and purposes of the services and fees. This focuses on improving the efficiency of working relationships and supports new businesses, such as human resource management, capacity building and development, employee information management, welfare, recruitment and employee selection. In 2015, the Shared Service generated revenue approximately 253 million Baht.



## Next Step

PTTGC will increase trend for employee satisfaction and OHI surveys, and also continually record and report employee satisfaction by gender in order to gather more information and to analyze satisfaction differentiation and concerned issues by gender. Hence, PTTGC can respond the employee expectations/feedbacks more specifically in the concerned issues and gender.

PTTGC aims to become most admired, innovative, and employee-friendly workplace in 2020. Therefore, some physical changes to the workplace for more women-friendly are required, such as adequate security, nurseries, proper health care and sanitation. Additionally, PTTGC also makes workplaces to support disabled people working with PTTGC such as providing slope way, widening a doorway.

PTTGC is taking efforts to increase diversity in the workplace by continuing to provide equal opportunities in hiring, capacity development and career path planning. Furthermore, PTTGC realizes the essential to retain well-qualified employees over time. Some long-term incentive programs is under developing to orient key decisions throughout the organization around longer-term goals and strategic objectives, giving companies a greater likelihood of being successful over time.

## Link to Capitals

Capital	Input	Output
Financial	<ul style="list-style-type: none"> <li>Salaries and Wages</li> <li>Employee Relationship Activities Investment</li> </ul>	<ul style="list-style-type: none"> <li>Cost saving from retention</li> </ul>
Manufactured	<ul style="list-style-type: none"> <li>D2M System</li> </ul>	-
Intellectual	<ul style="list-style-type: none"> <li>HR Analytics System</li> <li>Knowledge Management</li> </ul>	<ul style="list-style-type: none"> <li>HR Guru System</li> <li></li> </ul>
Social and Relationship	<ul style="list-style-type: none"> <li>Employee Relationship Activities</li> <li>Welfare Committee</li> </ul>	<ul style="list-style-type: none"> <li>Turnover Rate</li> </ul>
Human	<ul style="list-style-type: none"> <li>Ethic Value</li> <li>Specialized Knowledge and Skills</li> </ul>	<ul style="list-style-type: none"> <li>Employee Engagement Score</li> <li>Complaint</li> </ul>
Natural	-	-





The graphic features a solid yellow background. On the left side, there is a vertical blue strip containing a white line graph and some faint, illegible text. Overlaid on the yellow background are several concentric circles. The innermost circle is a solid, darker yellow. Surrounding it are three more circles, each defined by a dashed yellow line. The text "Financial Excellence" is centered within the solid innermost circle.

# Financial Excellence

# Report of the Audit Committee

## Dear Shareholders,

The Audit Committee of PTT Global Chemical Public Company Limited (PTTGC) consists of three independent directors who are experienced in the fields of management, finance, accounting, economics, and law. Mr. Somchai Kuvijitsuwan presides over the committee as chairman. The other two directors are Mr. Amnuay Preemonwong and Ms. Ruenwadee Suwanmongkol. Each of them meets all requirements and criteria set forth by the Stock Exchange of Thailand.

The Audit Committee performs its duties as laid out by PTTGC's Board of Directors and in its Charter; these are consistent with announcements from the Stock Exchange of Thailand and the Securities and Exchange Commission. In performing its duties, the Audit Committee has emphasized the adherence to principles of Good Corporate Governance and compliance with related laws, rules and regulations in both domestic and international operations including given precedence to the adequacy and effectiveness of the Company's internal control and internal audit systems, as well as reviewing operating results of all business groups and major investments.

In 2015, the Audit Committee held a total of eight meetings. While Mr. Somchai Kuvijitsuwan and Mr. Amnuay Preemonwong attended all eight, Ms. Ruenwadee Suwanmongkol attended four. The following is a summary of opinions and key activities undertaken by the Audit Committee:

- 1. Review of Financial Reports:** The Audit Committee reviewed PTTGC's quarterly and annual financial statements for the year 2015, as well as any transactions that could have led to a conflict of interest. The reviews were attended by related members of management and auditor, to give explanations and clarify any questions that arose related to the accuracy, completeness, significant adjusted entries that affected the financial statements, sufficiency of the information disclosure, and audit results. The Audit Committee has opinion that PTTGC's financial reports present fairly in all material respect in accordance with Thai Financial Reporting Standards. In addition, the meeting between the Audit Committee and auditors without the presence of management was held to make independent discussion on the preparation process of financial statement and reporting, namely the auditor's annual audit plan and framework, risks, internal control, internal audit, allegation, fraud, and other related issues. The Audit Committee realized that auditor received good cooperation and supported from management, independently performed his duties with sufficient knowledge, experience and appropriate audit approach.
- 2. Review of Risk Management:** The Board of Directors, the Risk Management Committee, and management in general has given precedence to risk management. Internal and external risk factors have been identified and assessed for their impacts and likelihoods, risk mitigation plans were developed, implemented and regularly monitored to ensure those risks were mitigated down to the acceptable level. Key risk indicators were set to monitor changing factors and enhance the effectiveness and timeliness of the risk responses. The Management reported the progress of risk management activities to the Board of Directors on a regular basis. Additionally, the Audit Committee reviewed the effectiveness of risk management based on business groups' performance reports, internal audit reports and auditor reports. These could reasonably assure that the Company would be able to mitigate potential risks down to acceptable level.



3. **Review of Internal Control Systems' Effectiveness:** The Audit Committee reviewed PTTGC's internal control system by reviewing the result of internal control assessment performed by the management in accordance with the guidelines set forth by the Securities and Exchange Commission (SEC), the internal audit reports and auditor reports. From this review, no major irregularity that could significantly affect the Company was discovered. Moreover, management continuously improves internal control system based on suggestions from the Audit Committee, the auditor, and the internal auditor. These lead to the conclusion that the Company has given precedence to internal control, which could be reasonably assured in its adequacy and effectiveness.
4. **Oversight of Internal Auditing:** The Audit Committee approved an improvement of internal audit charter, risk based internal audit plan covering significant controls of company and its subsidiaries, the internal audit strategic plan which focused on the development of internal audit capabilities, alignment with company strategies, and built good relations with stakeholders including the key performance indicators (KPIs) of Internal audit. From monitoring and assessing the execution of those plans, the Audit Committee found that Internal Audit succeeded in carrying out its tasks as described in the plans and International Standards for the Professional Practice of Internal Auditing and international leading practice were applied. Internal audit has emphasized the adherence to the Code of Ethics, is independent according to the defined structure and has well collaboration with management and auditor. These indicate that the Company has independent and effective internal audit which operate in accordance with the international practices.
5. **Compliance with Related Laws and Regulations set by Stock Exchange of Thailand and other applicable Laws:** Internal audit was assigned by the Audit Committee to review the compliance of applicable laws, rules and regulations that effect the company's operation. The review result indicates that the Company had laid down a system to ensure compliance, including compiling applicable laws and monitoring changes and new laws. The Company had also appointed responsible persons to oversee compliance. No non-compliance that would significantly affect the Company was found. Furthermore, the Audit Committee did not receive any reports from the auditor, allegation from outsiders, or management's information disclosure which indicated that the Company had breached any law and regulations that would significantly affect it. It could be concluded that the Company has effective control of legal compliance and there is no non-compliance that would significantly affect it.
6. **Review of Connected Transactions or Other Transactions that may result in Conflicts of Interest to comply with law and Stock Exchange of Thailand's regulation :** Internal audit was assigned by the Audit Committee to randomly review feedstock and service purchase and sale transactions between company and related parties. The review result indicated that there was no connected transaction which irregularities from approved contracts those were processed in accordance with the announcements of the Securities and Exchange Commission (SEC).

Moreover, the Audit Committee reviewed connected transactions related to acquisition and disposition of assets in regard to the adjustment of stock held in PTT Polymer Marketing Co., Ltd. (PTTPM), and PTT Polymer Logistics Co., Ltd. (PTTPL): The Company bought shares in PTTPM from IRPC Public Company Limited (IRPC) and bought part of PTTPL's stock from PTT Public Company Limited. It is Audit Committee's opinion that the Company processed these transactions in accordance with applicable laws and the SEC's regulations. The aforementioned transactions were reasonable, just, and beneficial to the Company.

7. **Appointment of 2016 Auditor:** The Audit Committee selected auditors to nominate from auditors who proposed their service to the Company. Taken into consideration were their qualifications, capabilities, and service fees. The Audit Committee nominated the following auditors to the Board of Directors, who then proposed these names to the shareholder meeting to be appointed as the 2016 auditor: Mr. Charoen Phosamritlert (Auditor #4068), or Mr. Winij Silamongkol (Auditor #3378), or Mr. Niran Lilamethawat (Auditor #2316) from KPMG Phoomchai Auditors Co., Ltd. All of the nominees were from the list approved by the SEC; they possessed sufficient experience and hadn't audited or expressed their opinions on PTTGC's financial statements for more than five fiscal years.
8. **Review of Company's Self-Assessment on Anti-Corruption Measures according to The Collective Action Coalition against Corruption (CAC):** The Audit Committee reviewed the result of anti-corruption program review and fraud risk assessment performed by company in 2015, the Audit Committee found that the Company has improved its fraud risk assessment program. These improvements included implementation of control self-assessment (CSA) and fraud risk assessment based on the tools recommended by the Association of Certified Fraud Examiners (ACFE). Moreover, the Company implements many activities to promote and communicate anti-corruption stance. Among these were knowledge sharing from outside speakers and informative exhibitions for executives and employees to increase their understanding, and awareness. The Audit Committee believes that these are testaments to the Company's commitment to the battle against corruption and its dedication to improving the effectiveness of existing measures.
9. **Reviews of Audit Committee Charter:** The Audit Committee proposed amendments to its Audit charter by adding the duty and responsibility to terminate an auditor, as well as launching an investigation into an executive director's suspicious activities upon receiving information from the auditor. The amendments were approved by the Board at the board meeting number 3/2015 held on March 23<sup>rd</sup>, 2015.
10. **Assessments of Audit Committee Performance:** The Audit Committee evaluated its 2015 performance as a whole and of each individual director. The result of the assessment was reported to the Board and is disclosed in this annual report.
11. **Performance Reports of Audit Committee:** The Audit Committee provided reports on its operations and activities to the Board of Directors on a regular basis. In 2015, a total of four reports were made.

From the above-mentioned activities throughout 2015, the Audit Committee believes that the Company has good corporate governance, sufficient internal control that is suitable for its business, effective risk management, credible accounting, and financial reporting, as well as compliance with laws, rules, and regulations applicable to its business.

The Audit Committee received good collaboration throughout 2015 from the Board of Directors, management, the auditor, and relevant parties. As such, we'd like to express our gratitude to all of them.

On behalf of the Audit Committee

*(Signed) Somchai Kuvijitsuwan*

(Mr. Somchai Kuvijitsuwan)

Chairman of the Audit Committee

## Report of the Board of Directors' Accountability to Financial Report

The consolidated financial statements of PTT Global Chemical Public Company Limited and its subsidiaries was prepared in accordance with the Securities Exchange Commission under the Securities and Exchange Act B.E. 2535 and Department of Business Development, issued under the Accounting Act B.E. 2543 Section 11 paragraph 3 in accordance with the Federation of Accounting Professions' Thai Financial Reporting Standards.

The Company's Board of Directors is responsible for financial report of PTT Global Chemical Public Company Limited and its subsidiaries in providing reasonable assurance that the financial report present fairly financial position, financial performance and cash flows. The accounting data is sufficiently and accurately recorded to preserve the Company's assets and prevent fraud and irregularity. The financial report has been prepared accordingly to appropriate accounting policy and consistency practices, and in accordance with Thai Financial Reporting Standards. Significant information has been sufficiently disclosed in notes to financial statements, where the auditor expressed an opinion on the financial statements of PTT Global Chemical Public Company Limited and its subsidiaries in the auditor's report.

*(Signed) Prasert Bunsumpun*  
(Mr. Prasert Bunsumpun)  
Chairman

*(Signed) Supattanapong Punmeechaow*  
(Mr. Supattanapong Punmeechaow)  
President & Chief Executive Officer

# Independent Auditor's Report

## To the Shareholders of PTT Global Chemical Public Company Limited

I have audited the accompanying consolidated and separate financial statements of PTT Global Chemical Public Company Limited and its subsidiaries (the "Group"), and of PTT Global Chemical Public Company Limited (the "Company"), respectively, which comprise the consolidated and separate statements of financial position as at 31 December 2015, the consolidated and separate statements of income and comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

### Management's Responsibility for the Consolidated and Separate Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated and separate financial statements in accordance with Thai Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated and separate financial statements that are free from material misstatement, whether due to fraud or error.

### Auditor's Responsibility

My responsibility is to express an opinion on these consolidated and separate financial statements based on my audit. I conducted my audit in accordance with Thai Standards on Auditing. Those standards require that I comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated and separate financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

### Opinion

In my opinion, the consolidated and separate financial statements present fairly, in all material respects, the financial position of the Group and the Company, respectively, as at 31 December 2015 and their financial performance and cash flows for the year then ended in accordance with Thai Financial Reporting Standards.

### Emphasis of Matter

Without qualifying my opinion, I draw attention to notes 3 and 5 to the financial statements which describe the effect of the Company's adoption from 1 January 2015 of certain new accounting policies and business combination under common control. The corresponding figures presented are based on the audited financial statements as at and for the year ended 31 December 2014 after making the adjustments described in notes 3 and 5.



(Vairoj Jindamaneepitak)  
Certified Public Accountant  
Registration No.3565  
KPMG Phoomchai Audit Ltd.  
Bangkok  
15 February 2016

# Management's Discussion and Analysis

## Executive Summary

In 2015 PTT Global Chemical Public Company Limited ("the Company") had a net profit of 20,502 MB with earning per share (EPS) of 4.55 baht per share, increased 33% from year 2014 with a net profit 15,372 MB or 3.41 baht per share.

Table : Performance Summary

(Unit: Million Baht)	2014**	2015	YoY % + /(-)
Sales Revenue	550,909	400,128	-27%
EBITDA	34,220	44,740	31%
EBITDA Margin (%)	6%	11%	5%
Net Profit	15,372	20,502	33%
EPS (Baht/Share)	3.41	4.55	33%
Adjusted EBITDA*	52,369	50,873	-3%
Adjusted EBITDA Margin (%)	10%	13%	3%

Note: \* Adjusted EBITDA refers EBITDA excluding impact of inventory value (Inventory and NRV) and extraordinary items

\*\* Restated FY 2014 Financial Statements from the implementation of Thai Financial Reporting standards (TFRS) no.10 regarding consolidated financial statements and no.11 regarding joint arrangements.

Under the oil market volatility coupled with region economic uncertainty situations in the year 2015, the Company has managed its production and sales to minimize the impact external factors. This has resulted in 2015 performance to improve. The adjusted EBITDA margin of 2015 increased to 13% from 10% in year 2014. An increase in the operating performance was due from an increase in performance of refinery and aromatics business units. For refinery business unit, the spread between petroleum products and its feedstock improved, especially for the gasoline and fuel oil that has increased due to the demand of the market. For aromatics business, although the spread between product price and condensate of main aromatics product as paraxylene and benzene decreased, but the spread of aromatics unit by-products which accounts for about 41% increased following petroleum product spread. However, the performance of olefins and derivatives business declined due to a decrease in polyethylene product price. This has resulted in olefins and

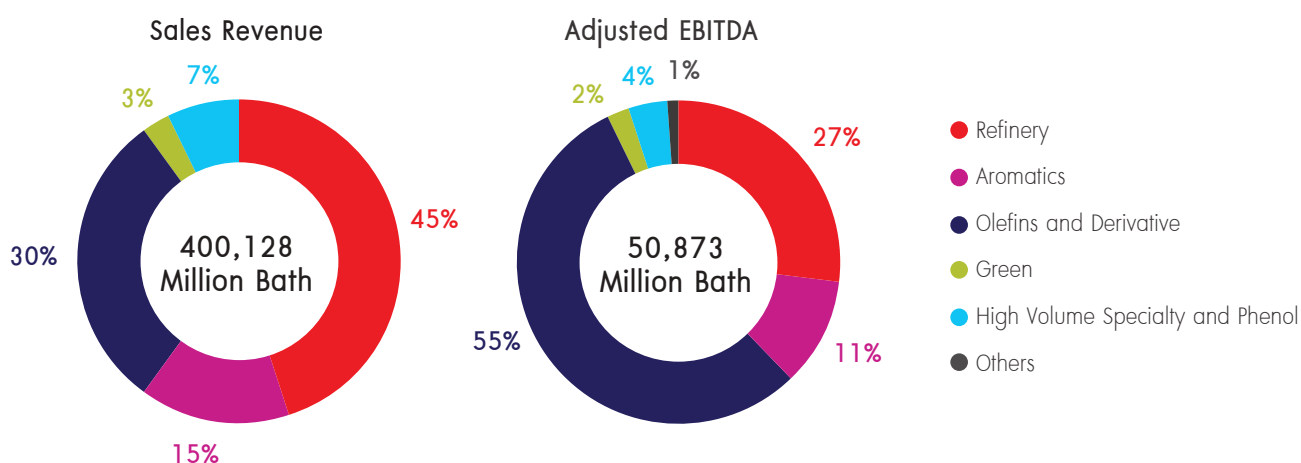
derivatives units adjusted EBITDA margin to drop to 24% in 2015 from 26% in the previous year.

In 2015 Dubai crude oil price opened at 60 USD per bbl and closed at 35 USD per bbl in December 2015. Although Dubai crude price continued to decrease, but the Company was able to mitigate the impact of stock loss using commodity hedging. This resulted in net impact from stock loss of Baht 957 million (stock loss of Baht 6,504 million, NRV gain of Baht 2,902 million and commodity hedging gain of Baht 2,645 million)

Also in 4Q/2015, the Company has recognized an impairment loss of Myriant totaling Baht 2,531 million (or Baht 2,056 million after tax deduction), an impairment of Succinic Acid Plant at Lake Providence, the US as the plant is in the process of the quality of product testing. As a result, the plant cannot utilize its full capacity, therefore, the Company had to recognize the impairment as such.

Table : Adjusted EBITDA Margin

% Adj. EBITDA Margin	2014	2015
Business Unit :		
Refinery	4	8
Aromatics	3	9
Olefins and Derivative	26	24
Green	4	6
High Volume Specialty and Phenol	5	7
Average	10	13



### Summary of Core Business Performance

The performance of refinery business unit rose in 2015 from last year. The Adjusted EBITDA increased by 33%, which was mainly due to an increase in some petroleum product spread over crude oil price. The spread of gasoline over Dubai crude oil price in year 2015 increased 28%, and the spread of fuel oil price with Dubai crude oil price increased 40% meanwhile the spread of jet fuel and diesel fuel over Dubai crude oil price dropped 13% and 15% respectively. The Company's refinery has CDU utilization rate of 100%, slightly decreased from last year. As a result, CDU GRM stood at 5.45 USD per bbl, increased 24% from last year. However, the Company realized stock loss, NRV, and commodity hedging of refinery product and feedstock net to Baht 827 million. (Comprising of stock loss of Baht 4,570 million, NRV gain of Baht 1,352 million and net profit from Commodity Hedging of Baht 2,391 million baht)

In 2015, the performance of aromatics business unit increased from last year. The main reason was due to an increase in spread of by-product over condensate coupled with the decrease in crude oil price which led to lower energy value used in aromatics plants. This has resulted in better performance of aromatics units despite the lower spread of main products price over condensate such as paraxylene and benzene. In 2015, the aromatics plant had aromatics utilization rate at 74% dropped from last year and this was due to planned and unplanned shutdown of Aromatics II plant. As a result, the Company reported product to feedstock margin per unit of Aromatics product at 217 USD per ton of aromatic products, increased 25% from last year. The Company also realized stock loss, NRV gain, and commodity hedging gain of net Baht 468 million. (Comprising of stock loss of Baht 1,934 million, NRV gain of Baht 1,431 million and Baht 35 million profit from commodity hedging).

For olefins and derivatives business unit, the performance decreased from previous year. This was due a drop in polyethylene price of approximately 20% when compared to year 2014 which resulted in a drop in olefins and derivatives adjusted EBITDA margin to 24% from 26% in previous year. However, the utilization rate of olefins crackers increased from 91% in 2014 to 94% in 2015.

### Change in Accounting Standard

- Federation of Accounting Professions has announced five new and revised accounting standards relating to financial reporting (Pack 5) which has been effective since January 1, 2015. In order to comply with new standards, the comparative financial statements for the period of 2014 needed to be restated accordingly.
- On June 29, 2015, the Company acquired additional 25% shares of PTT Polymer Marketing Company Limited (PTTPM) from IRPC Public Company Limited (IRPC), which resulted in the increment of shareholding interest in PTTPM from 25% to 50% as well as the change in an investment position from associate to joint venture. In addition, on July 2, 2015, the Company acquired 50% shares in PTT Polymer Logistics Company Limited (PTTPL) from PTT Public Company Limited (PTT), which resulted PTTPM being a joint venture company. These business combinations are under common control transaction, therefore, the Company required to restate previous financial statements for comparison purpose, however, the adjustment does not impact the Company's net profit.

### 2015 Petroleum and Petrochemical Market Overview.

#### Petroleum Market Overview

Table : Crude Price & Petroleum Product Spreads

Unit : USD per bbl	2014	2015	YoY % + /(-)
Dubai Crude Oil	96.61	50.91	-47%
Jet-Dubai	15.88	13.88	-13%
Diesel-Dubai	16.06	13.66	-15%
Fuel Oil-Dubai	-8.30	-5.02	40%
Gasoline-Dubai	14.31	18.28	28%

Dubai crude price for 2015 has been continually volatiled from ending of last year at 52.9 USD per bbl to close at 31.8 USD per bbl at the end of 2015. The average Dubai crude price for 2015 stayed at 50.9 USD per bbl, decreased by 45.7 USD per bbl or 47% comparing to last year. This was because crude oil price was pressured by supply surplus from Shale Oil production in the US. Meanwhile, OPEC continued to maintain production at around 30 million barrel/day to keep its market share. In addition, Iran and six world powers concluded nearly ten years of negotiations with a landmark nuclear deal in July 2015. Therefore, market perceived additional capacity from Iran after lifting the sanction. In

term of demand, it is still uncertain due to global economic slowdown especially in China.

In 2015, price and spread of petroleum product was fluctuated as a result of sharp drop in crude oil price. This increased the demand for gasoline used in vehicle and therefore spread of gasoline over Dubai crude oil price in 2015 averaged at 18.28 USD per bbl, 3.97 USD per bbl increase from previous year. However, an increase in utilization rate of refineries to serve increased demand for gasoline also increased the production of jet and diesel, while the demand for jet and diesel was still uncertain



due to weaken economic put pressure on demand in industrial sector. Hence spread of jet over Dubai crude oil price averaged at 13.88 USD per bbl, decreased 2.00 USD per bbl from previous year and the spread of diesel over Dubai crude oil price averaged at 13.66 USD per bbl, decreased 2.40 USD per bbl from previous year. On the

other hand, demand for fuel oil increased in shipping sector as decreasing in fuel oil price boosted demand of fuel oil for floating storage, so the spread of fuel oil over Dubai crude oil price increased 3.30 USD per bbl from previous year to averaged at -5.02 USD per bbl in 2015.

### Aromatics Market Overview

Table : Aromatics Product Prices and Spreads over Condensate

Unit: USD per ton	2014	2015	YoY % + /(-)
Condensate	836	447	-47%
Paraxylene (FECP)	1,236	829	-33%
Paraxylene (FECP)-Condensate	400	383	-4%
Benzene (Spot Korea)	1,211	685	-43%
Benzene (Spot Korea)-Condensate	375	238	-36%
Naphtha-Condensate	25	44	74%

Paraxylene market has remained in a down cycle since 2014 from large number of new paraxylene capacities pressured paraxylene price to stay at low level. In 2015, spread of paraxylene over condensate averaged at 383 USD per ton, decreased 4% from last year. This year, supply addition for paraxylene was still higher than its demand addition. World supply for paraxylene was 48.7 million ton per year, increased 2.8 million ton per year whereas world demand was 38.4 million ton per year, increased only 1.7 million ton per year. It derived from concerns on global economics especially in China which caused seasonal demand to decline. Moreover, according to uncertainty of crude oil price polyester and PTA players slowdown their orders. However, there had been factors supporting the price of paraxylene. First, Aromatics plants shutdown during the year caused a tight in paraxylene supply in some period of time such as the shutdown of Dragon Aromatics in China with total capacity of 1.6 million ton per year,

the shutdown of FCFC in Taiwan with total capacity of 580,000 ton per year and the shutdown of Jurong Aromatics Corp. in Singapore with total capacity of 800,000 ton per year. Furthermore, reformat, which is the feedstock for aromatics products, had been use for blending gasoline because of its high demand, helped supporting paraxylene spread over condensate.

In 2015, benzene spread over condensate averaged at 238 USD per ton, decreased 36% from last year. The major reasons were from a decline in crude oil price, China economics slowdown caused demand for downstream products of benzene to decline, and supply surplus in Asia due to the US can produced more benzene and reduced the import from Asia. These reasons pressured benzene spread over condensate to remain low throughout the year.

## Olefins and Derivatives Market Overview

Table : Prices and Spreads of Olefins and Derivatives

Unit : USD per ton	2014	2015	YoY % + /(-)
Naphtha (MOPJ)	861	491	-43%
Ethylene (SEA)	1,395	1,104	-21%
HDPE	1,544	1,237	-20%
HDPE-Naphtha	682	747	9%
LLDPE	1,543	1,234	-20%
LLDEP-Naphtha	681	743	9%
LDPE	1,571	1,249	-21%
LDPE-Naphtha	710	758	7%
MEG (ACP)	1,113	948	-15%
MEG-0.65 Ethylene	206	230	12%

In 2015, overall olefins and derivatives products price declined following crude oil price. Ethylene price averaged at 1,104 USD per ton, decreased 21% from 2014, as a result of declined crude oil price. Another factor came from abnormal ethylene market in 2014 which was extremely tight due to many ethylene producers in Asia including China, Japan, Taiwan, Singapore and Thailand had major turnaround and many plants reduced operating rate in 2Q/2015 because of technical problems.

Polyethylene prices in 2015 decreased from previous year following a decline in crude oil price. HDPE price averaged at 1,237 USD per ton, decreased 20%, LLDPE price averaged at 1,234 USD per ton, decreased 20%, LDPE price averaged at 1,249 USD per ton, decreased 21% from previous year. In addition, the effect of Yuan devaluation made manufacturers extremely concern about a decline in China's import. Such devaluation also had the impact on Asian currencies to weaken when compared to the US dollar which is the currency used to purchase polymer. As a result, downstream producers

were more careful in importing raw materials to reduce the impact of the change in the value of money. They, therefore, leaned their inventory in order to minimize the risk of instability of oil prices as well as the economics. However, spread of HDPE over Naphtha remained strong at 747 USD per ton, increased 9%. This was because Naphtha price sharply dropped by 43% following crude oil price whereas demand for polymer remained stable.

In 2015, demand and supply of MEG market was quite balance. Some major producers had maintenance shutdown so the supply was lower for period of time. Nonetheless, due to MEG is the main feedstock for polyester industrial, in which will become main feedstock for textile and PET. Thus, MEG market trend was in the same direction as polyester business that was sluggish because of crude oil price instability and economics weakness. MEG price averaged at 948 USD per ton, decreased 15% from 2014. Yet, ethylene price declined 21%, due to soften crude oil price and tighten ethylene, caused spread of MEG-0.65Ethylene improved.

## Performance Analysis by Business Unit

### Refinery Business Unit

Table : Refinery Intake

	2014	2015	YoY % + /(-)
Crude (M.BBL)	53.83	53.04	-1%
(KBD)	147.48	145.31	-1%
Condensate Residue & Others (M.BBL)	20.52	21.89	7%
(KBD)	56.21	59.98	7%
Total Intake (M.BBL)	74.35	74.93	1%
(KBD)	203.69	205.29	1%
CDU Utilization Rate	102%	100%	

The performance of refinery business unit increased in 2015 compared to 2014, adjusted EBITDA increased at 33% mainly due to the better petroleum spread of some products along with the higher demand. In 2015, the spread of gasoline over Dubai crude increased 28%, the spread of fuel oil over Dubai crude increased 40% while the spread of Jet/Kero and that of Diesel decreased 13% and 15%, respectively.

In 2015, the Company refinery operated with a full CDU utilization rate at 100% decreased from 2014 at 102% along with the decreasing in imported crude demand at 1%. However, the total intake increased at 1% due to the increasing in demand for cracker bottom, one of the Synergy project, which was completed in 2015. This project helps produce by product from olefins plants such as cracker bottom to be feedstock for aromatics plants.

Table 7 : Petroleum Sales Volume

Product	2014		2015		YoY % + /(-)
	'000 barrels	%	'000 barrels	%	
Naphtha	4,902	7%	5,086	7%	4%
Reformate	4,955	7%	6,081	9%	23%
Jet/Kero	8,995	13%	7,774	11%	-14%
Diesel	34,038	50%	33,652	49%	-1%
Fuel Oil	9,213	14%	9,111	13%	-1%
Others	5,342	8%	6,297	9%	18%
Total	67,446	100%	68,002	100%	1%

In 2015, the Company sales volume of petroleum products was 68Mbbbl slightly increased from previous year along with an increase in total intake mainly from increased in sales volume of reformate at 23%. This was due to the Company's product management to take an opportunity and choose

to sell reformate gasoline blending rather than to use as a feedstock due to an increase in spread of gasoline. Moreover, the Company's refinery business unit gained benefits from an decreasing in crude price in 2015 at 47% resulting in lower cost of utilities used in operation.

Table : Gross Refinery Margin

Unit: USD per bbl	2014	2015	YoY % + /(-)
Market GRM	4.41	5.45	24%
CDU GRM	5.61	7.13	27%
CRS GRM	2.77	2.95	7%
Hedging Gain/(Loss)	0.94	0.93	0%
Stock Gain/(Loss) Net NRV	-3.73	-1.78	52%
Accounting GRM	0.98	5.13	421%

In 2015, the Company reported market GRM from CDU (CDU GRM) at 5.45 USD per bbl, increased 27% from 2014 at 4.41 USD per bbl. In 2015, the Company realized stock loss of Baht 4,570 million or -1.78 USD per bbl from a decreasing in crude oil price from 60 USD per bbl in the beginning of the year to 35 USD per bbl in the end of the year. At the end of 2015, product price did not significantly decrease so the Company did not have to revalue the ending inventory.

### Aromatics Business Unit

The performance of aromatics business unit in 2015 increased comparing to previous year due to an increase in spread of naphtha over condensate at 74%. Even spread of paraxylene

However, there was the reversal of NRV Loss last year, therefore, the Company reported net NRV Gain of Baht 1,352 million or 0.53 USD per bbl. In 2015, the Company had gain from commodity hedging of Baht 2,391 million or 0.93 USD per bbl mainly from inventory hedging. The accounting GRM in 2015 concluded at 5.13 USD per bbl, 4.1 USD per bbl increased from 2014 accounting GRM at 0.98 USD per bbl.

over condensate and spread of benzene over condensate decreased 4% and 36%, respectively from previous year. The company gained benefits from lower utilities cost due to a decrease in crude oil price at 47%.

Table : Aromatics Intake and Production

	2014	2015	YoY % + /(-)
Condensate ('000 tons)	4,666	4,697	1%
Others ('000 tons)	936	517	-45%
Total Intake ('000 tons)	5,602	5,214	-7%
Aromatics Production ('000 tons)	1,892	1,720	-9%
Aromatics Utilization Rate	81%	74%	

\*Aromatics capacity 2.259 Mton per year

In 2015, aromatics utilization rate averaged at 74% decreased from 81% due to maintenance shutdown plan and unplanned shutdown of Aromatic II plant since July 28, 2015 for 75 days to fix compressor motor at platforming unit. In order to maximize benefits from plants shutdown, the Company rescheduled maintenance shutdown plan and debottlenecking project of

Aromatics II plant to the same period. In 2015, the total intake decreased 7% due to the Company's product management to take an opportunity and choose to sell reformat gasoline blending rather than to use as aromatics feedstock resulting in less reformat gasoline as feedstock for aromatics.

Table : Aromatics Sales Volume

Product	2014		2015		YoY % + /(-)
	'000 tons	%	'000 tons	%	
Benzene (BZ)	552	17%	493	17%	-11%
Cyclohexane	162	5%	157	5%	-4%
Paraxylene (PX)	1,092	34%	1,003	34%	-8%
Other Aromatics Products	53	2%	60	2%	12%
<b>Total Aromatics Products</b>	<b>1,860</b>	<b>59%</b>	<b>1,712</b>	<b>59%</b>	<b>-8%</b>
Naphtha and Raffinate	945	30%	898	31%	-5%
Other By-Products	351	11%	310	11%	-12%
<b>Total</b>	<b>3,176</b>	<b>100%</b>	<b>2,920</b>	<b>100%</b>	<b>-8%</b>

BTX sales volume in 2015 decreased 8% comparing to previous year following a reduction in capacity. The Company sales volume of reformat at 38,908 ton or 5% of total

aromatics products and byproducts to capture the favorable market condition.

Table 11 : Aromatics market P2F

Unit: USD per ton	2014	2015	YoY % + /(-)
Market P2F	174	217	25%
NRV	-23.6	24.4	N/A
Hedging Gain/(Loss)	-0.1	0.6	N/A
Stock Gain/(Loss)	-62.3	-33.0	N/A
Accounting P2F	88	209	137%

Resulting from product spreads and production factors in 2015, the Company reported P2F margin 217 USD per ton, increased 25% or 174 USD per ton from previous year. Aromatics business unit reported a stock loss in 2015 of Baht 1,934 million or

-32.97 USD per ton while reversal of NRV Loss last year of Baht 1,431 million or 24.40 USD per ton resulting in an increase in accounting P2F at 209 USD per ton BTX comparing to previous year at 88 USD per ton BTX.

### Olefins and Derivatives Business Unit

Table : Adjusted EBITDA of Olefins and Derivatives

(Unit: Million Baht)	2014	2015	YoY % + /(-)
Adj. EBITDA	34,910	28,032	-20%
Adj. EBITDA Margin	26%	24%	-7%

Table : Sales volume and utilization rate of Olefins and Derivatives

Product	2014		2015		YoY % + /(-)
	Sales Volume '000 tons	Utilization Rate	Sales Volume '000 tons	Utilization Rate	
Olefins *	708	91%	760	94%	7%
HDPE	873	107%	868	108%	-1%
LLDPE	407	100%	365	91%	-10%
LDPE	323	105%	333	111%	3%
Total PE	1,603	105%	1,566	104%	-2%
MEG	382	95%	420	96%	10%

Note: \* Sales Volume of Olefins is external volume.

The performance of Olefins and Olefins derivatives declined in 2015 following a decline in crude oil price and polyethylene price decreased by 20% from previous year. The utilization rate of olefins plants averaged at 94% increased from previous year at 91%.

#### Performance: HDPE

Overall HDPE performance in 2015 declined comparing to 2014. HDPE sales revenue decreased 15% from previous year due to a decrease in HDPE price at 20%. In 2015, the total utilization rate of all 3 HDPE plants averaged at 108%, increased from 2014 at 107% while the sales volume decreased due to a boosting sales at year end 2014 when crude oil price decreased dramatically.

#### Performance: LLDPE

Overall LLDPE performance in 2015 declined comparing to 2014. LLDPE price decreased in accordance with the crude oil price. In 2015, LLDPE price averaged at 1,234 USD per ton decreased 20% from previous year. The utilization rate of LLDPE plant averaged at 91% in 2015 decreased from that of 2014 at 100%. LLDPE sales volume in 2015 decreased 10% from previous year due to 35 days unplanned shutdown in 2Q/2015 and 16 days shutdown plan in 4Q/2015.

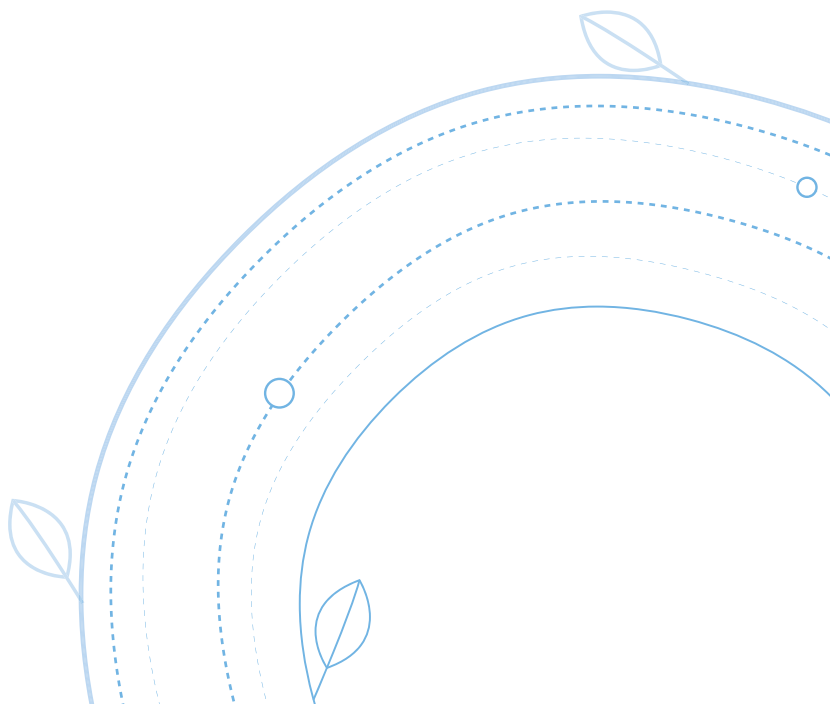
#### Performance: LDPE

Overall LDPE performance in 2015 declined comparing to 2014. Sales revenue of LDPE decreased 13% from previous year. LDPE price averaged at 1,249 USD per ton decreased 21% from previous year. The utilization rate of LDPE plant averaged at 111% increased from previous year at 105% while sales volume increased 3%.

In 4Q/2015, the Company had Ethylene Oxide (EO) plant improvement, EO capacity from 336 Kton per year to 426 Kton per year and MEG capacity from 395 Kton per year to 425 Kton per year.

#### Ethylene Oxide Business Unit

The performance of ethylene oxide business unit in 2015 declined comparing to 2014 even the spread of products increased due to the expansion in Ethylene Oxide (EO) plant resulting in increasing in sales volume in 4Q/2015 while the spread of product, feedstock price decreased in accordance with the crude oil price. The utilization rate of MEG plant in 2015 averaged at 96% slightly increased from previous year at 95%.



## Operating Performance

	2014**		2015		YoY	
	MB	%	MB	%	MB	%
Sales Revenue	550,909	100	400,128	100	(150,781)	(27)
Feedstock Cost	(449,497)	(82)	(304,672)	(76)	(144,825)	(32)
Product to Feed Margin	101,412	18	95,456	24	(5,956)	(6)
(1) Variable Cost	(28,433)	(5)	(25,752)	(6)	(2,681)	(9)
(2) Fixed Cost	(16,389)	(3)	(16,143)	(4)	(246)	(2)
(3) Stock Gain/(Loss) & NRV	(15,910)	(3)	(3,602)	(1)	12,308	77
(4) Gain/(Loss) Commodity Hedging	2,249	0	2,645	1	396	18
(5) Other Income	4,353	1	5,023	1	670	15
(6) SG&A	(10,823)	(2)	(10,356)	(3)	(467)	(4)
(7) Extra Item:						
Provision for business restructuring	(2,239)	(0)	0	0	(2,239)	N/A
Impairment loss	0	0	(2,531)	(1)	2,531	N/A
EBITDA	34,220	6	44,740	11	10,520	31
Depreciation & Amortization	(15,890)	(3)	(16,382)	(4)	492	3
EBIT	18,330	3	28,358	7	10,028	55
(8) Finance Cost	(4,452)	(1)	(3,967)	(1)	(485)	(11)
(9) FX Gain/(Loss)	618	0	(2,338)	(1)	(2,956)	(478)
(10) Shares of profit/(loss) from investments	177	0	711	0	534	302
(11) Income Tax Expense	(581)	(0)	(1,984)	(0)	1,403	241
Net Profit	14,092	3	20,780	5	6,688	47
Profit/(loss) attributable to:						
Owners of the Company	15,372	3	20,502	5	5,130	33
Non-controlling interests	(1,280)	(0)	278	0	1,558	122
Adjusted EBITDA*	52,369	10	50,873	13	(1,496)	(3)

Note: \* Adjusted EBITDA refers to EBITDA excluding impact of inventory value (excludes Inventory gain/(loss) and NRV) and extraordinary items

\*\* Restated FY 2014 Financial Statements from the implementation of Thai Financial Reporting standards (TFRS) no.10 regarding consolidated financial statements and no.11 regarding joint arrangements.



## Performance Comparison

### (1) Variable Cost

Variable cost decreased by Baht 2,681 million or 9% from last year. Even depreciation of Baht caused variable cost per unit to increase but fuel gas price declined following crude oil price, therefore overall variable cost per unit declined. Moreover, for refinery business, LPG and fuel oil had been more internally used as fuel instead of buying natural gas externally to optimize benefit resulting in a decline in variable cost per unit.

### (2) Fixed Cost

Fixed cost decreased by Baht 246 million or 2% from FY2014 which was insignificant change.

### (3) Stock Gain/(Loss) and NRV

In 2015, the Company reported Stock Loss of Baht 6,504 million and NRV Gain of Baht 2,902 million, whereas in 2014, there was Stock Loss of 12,835 million and NRV Loss of Baht 3,075 million.

Stock Loss in 2015 of Baht 6,504 million came from Refinery business by Baht 4,570 million and from Aromatics business by Baht 1,934 million. This was resulted from a decline in crude oil price from 60 USD per bbl at the beginning of the year to 35 USD per bbl in December 2558. At the end of 2015, product price did not significantly decrease so the Company did not have to revalue the ending inventory. However, there was the reversal of NRV Loss last year, therefore, the Company reported net NRV Gain for the whole year.

### (4) Gain/(Loss) Commodity Hedging

In order to manage risk, the Company has done Crack Spread Hedging, Fuel Loss Hedging, Polyethylene Spread Hedging and Inventory Hedging to hedge the margin and ending inventory value to the targeted level. In 2015, the Company reported gain from Commodity Hedging of Baht 2,645 million which mainly came from Inventory Hedging for Refinery business. The hedging value was 19 USD per bbl higher than the actual value settlement, with the volume of 4.3 million barrels.

### (5) Other Income

Other income increased by Baht 670 million or 15% from last year, which mainly came from profit generated from the decrement in investment in GPSC after IPO from 30.31% to 22.73%. The Company recorded profit of GPSC IPO at Baht 432 million in 2Q/2015.

### (6) SG&A

Selling, General & Administrative Expense (SG&A) decreased by Baht 467 million or 4% from last year which was insignificant change.

### (7) Extraordinary Item

In 2015, the Company realized impairment loss of Succinic Acid production plant of Myriant at Lake Providence, the US totaling to Baht 2,531 million (or Baht 2,056 million after tax deduction). This comprised asset impairment of Baht 2,151 and goodwill impairment of Baht 380 million. Due to the product is under quality test, this plant cannot operate at full capacity, therefore, the Company had to realize such impairment loss.

### (8) Finance Cost

Finance cost decreased by Baht 485 million or 11% from last year. This came from the increment in interest income totaling to Baht 215 million and the increment in interest expense totaling to Baht 270 million. Interest expense increased as this year the Company invested more in short term investment. On the other hand, interest expense decreased due to the repayment of USD 300 million-debenture in June 2015.

### (9) Gain/(Loss) from Foreign Exchange

In 2015, the Company reported a loss from foreign exchange of Baht 2,338 million, comparing to gain from foreign exchange of Baht 618 million in 2014. Loss this year mainly resulted from revalue of foreign currencies loan. At the end the year, the Company had loan in foreign currencies of USD 1,100 million. Depreciation of Baht by 3.14 Baht/USD or 9% caused the Company to realized loss from foreign currencies (based on average sales BOT, end of 2015 at 35.26 Baht/USD against end of 2014 at 33.11 Baht/USD). However, according to

hedging policy, the Company had done forward contract to minimize the impact of Baht depreciation. In addition, weaken of Baht also caused sales revenue to increase.

### (10) Share of Profit/(Loss) from investment

In 2015, the Company realized a total share of profit from investments of Baht 711 million, increased by Baht 534 million from last year. This was mainly resulted from increment in profit of Emery due to its expense control policy. Moreover, Emery realized gain from

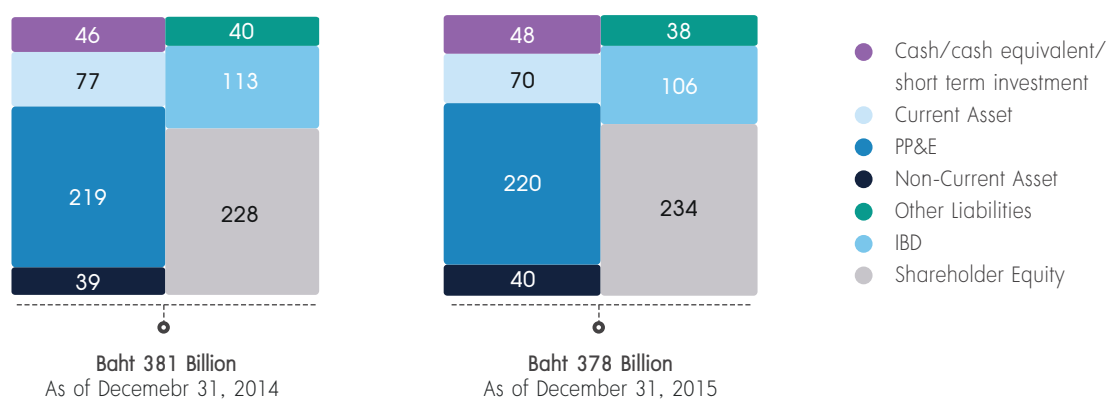
selling its factory at Dusseldorf, Germany according to the Company's strategy to focus on Specialty Oleochemicals.

### (11) Income Tax

In 2015, the Company recognized income tax expense totaling at Baht 1,984 million, increased by Baht 1,403 million from last year. This was resulted from an increase in overall performance in 2015.

## Statement of Financial Position

Unit: Billion Baht



### Asset

As of December 31, 2015, the Company had total asset of Baht 377,545 million, decreased by Baht 3,898 million or 1% from December 31, 2014 which came from a decrease in current asset of Baht 5,230 million, while there was an increase non-current asset of Baht 1,332 million.

#### 1) Current asset decreased by Baht 5,230 million or 4% mainly due to the following reasons

- Cash and cash equivalents and current investments increased by Baht 1,953 million or 4% which was mainly due to cash received from operation of Baht 50,822 million, net cash received from long term loan of Baht 3,635 million and cash received from interest income and dividend received of Baht 1,716 million. However, there was cash used in purchasing assets and investment activities totaling of Baht 20,309

million, repayment of debenture of Baht 14,643 million and payment of dividend and interest of Baht 17,132 million, and cash received from share buy back of Baht 2,105 million.

- Accounts receivable decreased by Baht 6,358 million or 17%, mainly due to a decrement in product prices when compare with last year. However, sales volume did not significantly change from last year.

	2014 (day)	2015 (day)	+ / (-) (day)
AR Turnover	30	30	-

- AR Turnover for 2015 averaged at 30 days, same as 2014. In addition, AR Turnover of all business units was not significantly different from last year.
- Inventory decreased by Baht 1,647 million or 5%. At the end of last year when crude oil price sharply dropped, the Company had policy to manage inventory level to minimize loss from NRV, thus, inventory at the end of 2014 was lower than normal level. Eventhough inventory level increased from last year, decrease in feedstock and product cost caused ending inventory to decline.

	2014 (day)	2015 (day)	+ / (-) (day)
Inventory Turnover	18	20	2

- Inventory Turnover for 2015 averaged at 20 days, increased from the end of year 2014 by 2 days. This was primarily due to the minimization of inventory level policy at the end of 2014. Therefore, during the end of last year the Company tried to decrease purchasing volume and increase sales volume which caused ending inventory and inventory turnover in 2014 to stay in a low level.

- Other current assets increased by Baht 822 million or 11% mainly due to the following reasons

Other receivable increased by Baht 1,191 million

- which significantly included the increasing in receivables from commodity hedging of Baht 1,670 million. Nevertheless, prepaid income taxes decreased by Baht 624 million. This was due to performance of 2H14 sharply dropped which made income tax payment at first half higher than yearly income tax and therefore the Company reported prepaid income tax at year end. Yet, this year did not occur such an event. Receivables from oil fund decreased by Baht 399 million because of a reduction in compensation rate of LPG Fund from 7.71 Baht/kilogram to 1 Baht/kilogram.

- Non-current asset increased by Baht 3,541 million or 1% which was mainly due to

- Property, plant and equipment increased by Baht 868 million or 0.4%. This was from an increase in assets cost

and assets under construction by Baht 17,771 million. The increment in assets cost was mainly from completed and on-going projects such as Phenol II, TOCGC plant improvement, and Aromatics II debottlenecking project. Moreover, there was an increase in plant turnaround recognized as asset during the period. However, PPE decreased during the period from depreciation and assets disposal of Baht 14,454 million and Baht 292 million, respectively. Additionally, there had been impairment of Myriant's Succinid Acid factory by Baht 2,151 million.

- Other non-current asset increased by Baht 464 million or 1% mainly from an increase in investment in the associates and joint ventures by Baht 315 million which was caused by gain recognized from a reduction in GPSC's investment portion and share of profit from investment during 2015. Moreover, intangible asset increased by Baht 737 million mainly from license for Phenol II and TOCGC plant improvement projects. However, in 2015, the Company impaired the goodwill of Myriant's Succinid Acid factory by Baht 380 million.

## Liability

As of December 31, 2015, the Company had total liability of Baht 143,280 million, decreased by 9,713 million or 6% from December 31, 2014 which was resulted from decreasing in current liability by Baht 14,898 million whereas non-current liability increased by Baht 5,185 million.

- Current liability decreased by Baht 14,898 million or 27% from the following reasons

- Bank overdraft and short-term loans from financial institutions decreased by Baht 186 million or 24%. This was mainly due to Vencorex decreased the amount of AR factoring sold to financial institutions as Vencorex had better performance and better cash flow as a result of less working capital needed from the reduction in product and raw material price.
- Accounts payable decreased by Baht 2,029 million or 9%. Even purchase volume declined at year end 2014 according to inventory control during crude oil price volatility, significant drop in feedstock price caused accounts payable to decline.
- Other accounts payable decreased by Baht 360 million or 4%. The main reason was due to a decrease in accrued expenses for the Aromatics II

Debottlenecking and HDI Derivatives projects that almost complete.

- ❖ Payables to contractors decreased by Baht 319 million or 13% from payment during the period according to time schedule.
- ❖ Current portion of long term loan decreased by Baht 13,410 million or 59% due mainly to a repayment of debenture by USD 300 million in June 2015, repayment of Baht bond by Baht 4,500 million in October and December 2015 and loan repayment of Baht 7,500 million. However, there was the reclassification of long term loan and long term debenture to current portion around Baht 8,400 million.
- ❖ Corporate income tax payable increased by Baht 575 million or 846% due to the recognition of income tax for the second half of 2015 as a result of the improvement performance. While in 2014, income tax of the first half of the year was higher than full year actual income tax so there is no corporate income tax payable.
- ❖ Other current liability increased by Baht 831 million or 264% due mainly to the classification of liabilities originally recorded as other liability as it will be paid within the year 2016. This included liability from the amount expected to be paid for 34% increment in Vencorex shares (holding stake increased from 51% to 85%) and reserve expense for Vencorex's restructuring, etc.

## 2) Non-current liability increased by Baht 5,185 million or 5% which was mainly due to

- ❖ Long-term loan increased by Baht 6,301 million or 7% due to the additional loan drawn down during the period totaling to Baht 11,590 million. Moreover, value of USD debenture increased by 3,141 million as a result of Baht depreciation. However, there had been the reclassification of long term loan and long term debenture to current portion totaling to Baht 8,400 million.
- ❖ Deferred tax liability (net with deferred tax asset) decreased by Baht 336 million or 13%. This was mainly due from the impairment of Myriant's asset so that deferred tax liability of such asset needed to cancel out accordingly.

- ❖ Other liability decreased by Baht 910 million or 49% as a result of the reclassification to other current liability as mentioned above.

## Shareholder's Equity

As of December 31, 2015, the Company reported total shareholders' of Baht 234,265 million, increased by Baht 5,815 million or 3% from December 31, 2014. This included an increased in the Company's portion of Baht 6,793 million, a decrease in former shareholder before business restructuring portion of Baht 1,513 million, and an increase in non-controlling interest portion of Baht 535 million.

The Company's portion increased by Baht 6,793 million or 3% from the Company's net profit of Baht 20,502 million. On the other hand, the Company's portion decreased from 1) dividend payment of Baht 11,270 million 2) share buy back in 2015 presented as negative in equity of Baht 2,105 million 3) increment in investment in Myriant during the period resulted in additional recognition of net loss by Baht 480 million (including loss carried forward of Baht 485 million and loss from translation of Baht 5 million).

Former shareholder before business restructuring arose from the purchasing of PTTM's shares from IRPC which made the Company's sharing interest in PTTM increased from 25% to 50% and the purchasing of 50% PTTPL's shares from PTT. These transactions were accounted for business combination under common control, thus, the comparing financial statements needed to be restated as if they were bought from the beginning. As a result, former shareholder before business restructuring portion of Baht 1,513 million was adjusted to present in 2014 financial statements.

Non-controlling interest's portion increased by Baht 535 million or 25% from the profit recognized during the year of Baht 173 million and a recognition of an increase in non-controlling interest portion of Vencorex by Baht 374 million, and increase in non-controlling interest portion of Myriant by Baht 481 million. In addition, there was gain from translation of Baht 2 million, while, there was dividend payment of Baht 495 million.

## Statement of Cash Flows

For statement of cash flows for the year ended December 31, 2015, the Company had net cash from operating activities of Baht 50,822 million, net cash used in investment activities of Baht 22,344 million which was mainly from investment in on-going projects such as Phenol II, TOCGC plant improvement and Aromatics II Debottlenecking project, etc. In addition, the Company had net cash paid from financing

activities of Baht 30,028 million from loan repayment, debenture repayment, interest paid, treasury stock project, and dividend paid. Adding up together with beginning cash and cash equivalents and the effect of exchange rate changes on balances held in foreign currencies of Baht 13,033 million, the Company had cash and cash equivalents at the end of 2015 of Baht 11,483 million. Including current investments, the Company reported cash and cash equivalents and current investments totaling to Baht 47,741 million.

## Key Financial Ratio

Financial Ratios	2014	2015
Current Ratio (Times)	2.19	2.86
EBITDA to sales revenue (%)	6.21%	11.18%
Net Profits to sales revenues (%)	2.79%	5.12%
Return on total assets (%)	5.09%	7.36%
Return on equity (%)	6.86%	8.99%
Interest Bearing Debt to equity (Times)	0.50	0.45
Net interest bearing debt to equity (Times)	0.29	0.25
Net interest bearing debt to EBITDA (Times)	1.97	1.30

### Note:

Current ratio	=	Current assets divided by current liabilities
EBITDA to sales revenue	=	EBITDA divided by sales revenue
Net profit on sale revenue	=	Net profit divided by sales revenue
Return on total assets	=	Net profit divided by average total assets
Return on equity	=	Net profit divided by average total shareholder's equity
Interest Bearing Debt to Shareholders' Equity	=	Interest Bearing Debt divided by shareholder's equity
Net Interest Bearing Debt to Shareholders' Equity	=	Interest Bearing Debt net from cash and cash equivalent and current investments divided by shareholder's equity
Net Interest Bearing Debt to EBITDA	=	Interest Bearing Debt net from cash and cash equivalent and current investments divided by EBITDA





# Sustainability Performance Data



# 2015 Sustainability Performance Data

## FINANCIAL CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
G4-EC1	<b>DIRECT ECONOMIC VALUE GENERATED</b>					
	Sale revenues	Million Baht	572,018	549,189	574,010	403,440
	Net sales plus revenues from financial investments and sales of assets	Million Baht	566,415	554,440.38	575,022.87	404,652.53
	<b>ECONOMIC VALUE DISTRIBUTED</b>					
	Employee wages <sup>1</sup> and benefits <sup>2</sup>	Million Baht	10,658.00	12,076.00	13,110.00	12,190
	Operating cost	Million Baht	528,501.34	514,703.84	558,212.41	377,591.53
	<b>PAYMENT TO PROVIDER OF CAPITAL</b>					
	Gross taxes	Million Baht	1,991.87	1,975.91	559.36	1,984.09
	Dividend payments	Million Baht	10,139.00	19,104.42	15,096.04	11,764.92
	Community investments	Million Baht	13.00	26.10	307.50	50.35
	Economic value retained	Million Baht	15,111.79	6,554.11	-12,262.44	1,0712.64
G4-EC9	Proportion of spending on local suppliers in Thailand	%	98.59	97.55	98.21	98.12

<sup>1</sup> Total Wages comprise of employee salaries, including amounts paid to government institutions (such as employee taxes, levies and unemployment funds) on behalf of employees. Non-employees working in an operational role are normally not included here, but rather under operating costs as a service purchased.

<sup>2</sup> Total benefits include regular contributions (such as to pensions, insurance, company vehicles and private health), as well as other employee supports, such as housing, interest free loans, public transport assistance, educational grants and redundancy payments. They do not include training, costs of protective equipment, or other cost items directly related to the employee's job function.

## MANUFACTURED CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
G4-EN31	<b>RETURN ON ENVIRONMENTAL INVESTMENT</b>					
	Total expenditures	Million Baht	958	574	1,144	1,550
	Waste disposal, emission treatment and remediation costs	Million Baht	-	-	7	125
	Prevention and environmental management costs	Million Baht	4	2	7	42
-*	Capital investments	Million Baht	954	572	1,130	1,383
	Operating expenses	Million Baht	4	2	14	167
	Savings, cost avoidance, income, tax incentives, etc.	Million Baht	446	1,253	580	855
	Operations covered (by revenue, production volume or employees, etc.)	% of operation covered	48	50	50	80



## HUMAN CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD							
			2012		2013		2014		2015	
			MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
G 4 - 10 , G4-LA12	<b>WORKFORCE</b>									
	Total Workforce <sup>1</sup>	Person	3,307		4,772		5,489		5,738	
			2,483	824	3,682	1,090	4,223	1,266	4,422	1,316
	<b>WORKFORCE BY AREA</b>									
	Rayong	Person	2,320	539	3,502	763	4,001	885	4,185	901
	Bangkok	Person	163	285	180	337	222	381	225	409
	Other provinces	Person	0	0	0	0	0	0	12	6
	<b>WORKFORCE BY AGE</b>									
	<30 years	Person	499	223	760	311	852	335	795	305
	30 - 50 years	Person	1,817	560	2,648	724	2,998	857	3,117	899
	>50 years	Person	167	41	274	55	373	74	510	112
	<b>EMPLOYEE BY EMPLOYMENT TYPE</b>									
	Permanent <sup>2</sup>	Person	2,483	824	2,698	931	2,801	980	3,760	1,258
	Full-time	Person	2,483	824	2,698	931	2,801	980	3,760	1,258
	Part-time	Person	0	0	0	0	0	0	0	0
	On contract <sup>3</sup>	Person	0	0	231	22	436	37	662	58
	<b>EMPLOYEE BY EMPLOYEE CATEGORY</b>									
	Executive (Level 13-18)	Person	87	20	97	24	100	26	48	7
	Middle Management (Level 10-12)	Person	261	87	283	95	290	100	451	149
	Senior (Level 8-9)	Person	472	190	565	217	592	242	859	313
	Employee (Level 7 and Below)	Person	1,655	525	1,745	593	1,808	611	2,402	789
	Unclassified	Person	8	2	8	2	11	1	662	58
G4-LA1	<b>NEW EMPLOYEE</b>									
	New employee	Person	121		462		578		528	
			60	61	331	131	449	129	430	98
	New hire rate	% of total employees	1.81	1.84	6.94	2.75	8.18	2.35	7.49	1.71
	<b>NEW EMPLOYEE BY AREA</b>									
	Rayong	Person	48	28	308	87	434	104	417	72
		% of total employees	1.45	0.85	6.45	1.82	7.91	1.89	7.27	1.25
	Bangkok	Person	12	33	23	44	15	25	13	25
		% of total employees	0.36	1.00	0.48	0.92	0.27	0.46	0.23	0.44
	Other provinces	Person	0	0	0	0	0	0	0	1
		% of total employees	0	0	0	0	0	0	0	0.02
	<b>NEW EMPLOYEE HIRE BY AGE GROUP</b>									
	<30 years	Person	47	42	174	90	217	76	180	61
		% of total employees	1.45	0.85	6.45	1.82	7.91	1.89	3.14	1.06

<sup>1</sup> Employees and supervised workers working for the reporting organization at the end of the reporting period. Supply chain workers are not included in this Indicator.

<sup>2</sup> A permanent contract of employment is a contract with an employee for full-time or part-time work for an indeterminate period.

<sup>3</sup> Employees which are hired under a direct contract with PTTGC, excluded secondment.

## HUMAN CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD							
			2012		2013		2014		2015	
			MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
	30 - 50 years	Person	11	16	148	41	206	52	227	36
		% of total employees	0.33	0.48	3.10	0.86	3.75	0.95	3.96	0.63
	>50 years	Person	2	3	12	1	26	1	23	1
		% of total employees	0.06	0.09	0.25	0.02	0.47	0.02	0.40	0.02
	TURNOVER									
	Total	Person	37	18	127	56	130	49	121	63
		% of total employees	1.12	0.54	2.66	1.17	2.37	0.89	2.11	1.10
	Voluntary employee turnover rate	Person	37	18	127	56	130	49	121	63
		% of total employees	1.12	0.54	2.66	1.17	2.37	0.89	2.11	1.10
	TURNOVER RATE BY AGE GROUP									
	< 30 years	Person	11	14	43	23	43	29	41	18
		% of total employees	0.33	0.42	0.90	0.48	0.78	0.53	0.71	0.31
	30 - 50 years	Person	24	4	79	33	76	20	57	36
		% of total employees	0.73	0.12	1.66	0.69	1.38	0.36	0.99	0.63
	> 50 years	Person	2	0	5	0	11	0	23	9
		% of total employees	0.06	0.00	0.10	0.00	0.20	0.00	0.44	0.59
	TURNOVER BY AREA									
	Rayong	Person	33	5	118	34	122	31	96	29
		% of total employees	1.00	0.15	2.47	0.71	2.22	0.56	1.67	0.51
	Bangkok	Person	4	13	9	22	8	18	25	34
		% of total employees	0.12	0.39	0.19	0.46	0.15	0.33	0.44	0.59
G4-LA3	PARENTAL LEAVE									
	Number of employees entitled to parental leave	Persons	2,483	824	3,682	1,090	4,223	1,266	4,422	1,316
	Number of employees taking parental leave	Persons	0	27	0	28	0	29	92	47
	Number of employees returning to work after parental leave	Persons	0	27	0	28	0	29	92	47
	Number of employees returning to work after parental leave who are still employed for the next 12 months	Persons	0	27	0	28	0	29	92	47
	Retention rate	%	0	100	0	100	0	100	100	100
G4-LA9	TRAINING AND DEVELOPMENT									
	Average hours per FTE of training and development	Hours	13,051	3,931	14,616	6,069	16,254	8,020	17,958	6,398
	Average amount spent per FTE on training and development	Baht	55.33	16.67	66.42	27.58	75.00	37.00	63.75	22.55
	Percentage of open positions filled by internal candidates	%	16.5	4.4	10.7	6.3	40.6	11.4	12.2	24.8
	Average hours of training per year per employee	Hour /person /year	32.00	27.00	85.46	90.45	37.84	26.39	48.00	37.00
	Executive (Level 13-18)	Hour /person /year	19	23	31	44	51	69	85	49
	Middle Management (Level 10-12)	Hour /person /year	44	35	43	34	42	33	39	35
	Senior (Level 8-9)	Hour /person /year	42	30	56	44	60	48	49	45
	Employee (Level 7 and Below)	Hour /person /year	32	39	44	42	54	42	42	29

## HUMAN CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD							
			2012		2013		2014		2015	
			MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
G4-LA11	EMPLOYEE RECEIVING REGULAR PERFORMANCE AND CAREER DEVELOPMENT REVIEWS (EXCL. PEOPLE IN UNCLASSIFIED GROUP)									
	Executive (Level 13-18)	Person	87	20	111	25	122	28	48	7
		%	100	100	100	100	100	100	100	100
	Middle Management (Level 10-12)	Person	261	87	312	97	336	108	451	149
		%	100	100	100	100	100	100	100	100
	Senior (Level 8-9)	Person	472	190	624	222	696	263	859	313
		%	100	100	100	100	100	100	100	100
	Employee (Level 7 and Below)	Person	1,655	525	2,395	722	2,622	829	2,402	789
		%	100	100	100	100	100	100	100	100
G4-LA12	GENDER DIVERSITY AND EQUAL REMUNERATION									
	Women in workforce	Persons		824		1,090		1,173		1,316
		%		24.9		22.8		21.4		22.9
	Women in top management positions	Persons		20		25		27		7
		%		0.60		0.50		0.49		0.12
	Women in junior management positions	Persons		630		722		754		789
		%		19.1		15.1		13.7		13.8
	COMPOSITION OF GOVERNANCE BODIES									
	Board of directors	Persons	19	1	19	1	17	3	16	4
	Executives	Persons	90	32	111	25	114	27	48	7
	Middle management	Persons	275	87	312	97	327	101	451	149
	Senior	Persons	507	194	624	222	671	253	859	313
	Employee	Persons	2,258	630	2,395	722	2,457	754	2,402	789
	G4-LA13 Ratio basic salary women/men	Ratio	1.00	0.33	1.00	0.33	1.00	0.33	1.00	0.35

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
HEALTH AND SAFETY						
G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees	%	100	100	100	100
G4-LA6	FATALITIES					
	Total workforce	Case	0	0	0	1
	Independent contractor	Case	0	0	0	0
	TOTAL RECORDABLE INJURY CASE					
	Total workforce	Case	2	1	8	7
	Independent contractor	Case	16	11	7	9
	INJURY RATE (IR)					
	Total workforce	Case/1 Million Manhours	0.51	0.43	0.47	0.37
	Independent contractor	Case/1 Million Manhours	1.42	0.71	0.52	0.37
	LOST-TIME INJURY FREQUENCY RATE (LTIFR)					
	Total workforce	Case/1 Million Manhours	0.29	0.14	0.12	0.05
	Independent contractor	Case/1 Million Manhours	0.28	0.10	0.26	0.12
	OCCUPATIONAL DISEASES RATE (ODR)					
	Total workforce	Case/1 Million Manhours	0	0	0	0
	Independent contractor	Case/1 Million Manhours	0	0	0	0

## HUMAN CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
	<b>LOST WORKDAY CASE (LWD)</b>					
	Total workforce	Case	1	1	2	1
	Independent contractor	Case	5	3	4	3
	<b>LOST DAY RATE (LDR)</b>					
	Total workforce	Day/1 Million Manhours	2.75	3.25	1.71	0.27
	Independent contractor	Day/1 Million Manhours	4.82	2.13	4.91	6.90
	<b>ABSENTEE RATE</b>					
	Total workforce	Case/1 Million Manhours	NA	NA	NA	NA
	Independent contractor	Case/1 Million Manhours	NA	NA	NA	NA

## SOCIAL AND RELATIONSHIP CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
G4-SO4	<b>ANTI-CORRUPTION</b>					
	Governance body members that the organization's anti-corruption policies and procedures have been communicated to	Person	20	20	20	20
		%	100	100	100	100
	Percentage of employees that anti-corruption policies and procedures have been communicated to	%	100	100	100	100
	Total number of employee training on Anti-Bribery and Corruption (ABC)	Person	0	873	813	661
	-Senior executive	Person	0	15	22	10
	-Management	Person	0	450	684	66
	-Non-management	Person	0	408	314	575
G4-SO5	Confirmed incidents of corruption and actions taken	Case	0	0	0	0
-*	<b>CODES OF CONDUCT/ANTI-CORRUPTION&amp;BRIBERY: BUSINESS RELATIONSHIPS</b>					
	Coverage of codes of conduct and anti-corruption and bribery policy relative to the total number of employees	%	100	100	100	100
	Coverage of codes of conduct and anti-corruption and bribery policy relative to the total number of contractors/suppliers/ service providers	%	100	100	100	100
	Coverage of codes of conduct and anti-corruption and bribery policy relative to the total number of subsidiaries	%	100	100	100	100
	Coverage of codes of conduct and anti-corruption and bribery policy relative to the total number of joint ventures	%	100	100	100	100
-*	<b>CODES OF CONDUCT/CORRUPTION&amp;BRIBERY: REPORTING ON BREACHES</b>					
	Code of conduct number of alleged breaches reported	Case	0	0	0	0
-*	<b>ANTITRUST POLICY: REPORTING</b>					
	Number on breaches of antitrust policy	Case	0	0	0	0
G4-EN34	<b>GRIEVANCE</b>					
	Number of grievance about environmental impacts through formal grievance process	Case	0	0	0	0
G4-HR12	Number of grievance about human rights through formal grievance process	Case	0	0	0	0
G4-LA16	Number of grievance about labor practices through formal grievance process	Case	0	0	0	0
G4-SO11	Number of grievance about impacts on society through formal grievance process	Case	0	0	0	0

## SOCIAL AND RELATIONSHIP CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
G4-HR	<b>HUMAN RIGHTS</b>					
	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening	%	100	100	100	100
G4-HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	% of total employee	0	6	10	11.5
		Hours	0	697	1,768	1,3590
G4-HR3	Total number of incidents of discrimination and corrective actions taken	Cases	0	0	0	0
G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk and actions taken to support these rights	Cases	0	0	0	0
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor and measures taken to contribute to the effective abolition of child labor	Cases	0	0	0	0
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor and measures to contribute to the elimination of all forms of forced or compulsory labor	Cases	0	0	0	0
G4-EN32	<b>SUPPLY CHAIN</b>					
	Percentage of new suppliers that were screened using environmental criteria	%	100	100	100	100
G4-LA12	Percentage of new suppliers that were screened using labor practices criteria	%	100	100	100	100
G4-HR10	Percentage of new suppliers that were screened using human rights criteria	%	100	100	100	100
G4-SO4	Percentage of new suppliers that were screened using criteria for impacts on society	%	100	100	100	100
-*	<b>PHILANTHROPIC ACTIVITIES</b>					
	Total contribution	Million Baht	60.15	108	121.20	222.73
	- Charitable donations	Million Baht	69.00	58.40	90.68	31.32
	- Cash contribution	Million Baht	36.18	89.9	87.46	26.53
	- Products or services donations	Million Baht	0.55	2.34	3.22	5.02
G4-CC1	- Community investments	Million Baht	13.00	26.10	307.50	50.35
	- Commercial initiatives	Million Baht	18.00	15.50	360	140.83
	- Management overheads	Million Baht	0.25	0.62	0.19	0.42
	Employee volunteering time during paid working hours	Million Baht	0.84	2.03	1.41	2.10
	Volunteer during work hour	Hours	NA	8,108	11,255	10,332
G4-SO1	Volunteer during personal time	Hours	NA	0	0	0
	<b>LOCAL COMMUNITY</b>					
G4-SO1	Percentage of operations with implemented local community engagement, impact assessments and development programs	%	100	100	100	100
	Customer satisfaction survey	Point	NA	8.57	8.49	8.86

## NATURAL CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
G4-EN1	<b>MATERIALS</b>					
	Material Used	Million ton	16.91	18.59	19.17	21.55
	Non Renewable Material	Million ton	16.55	18.16	18.78	21.07
	Renewable Material	Million ton	0.36	0.43	0.39	0.39
G4-EN2	Percentage of materials used that are recycled input materials	%	12.89	12.05	12.62	12.64
G4-EN3	<b>ENERGY CONSUMPTION</b>					
	Total energy consumption	GJ	49,230,000	112,035,795	129,424,065	115,254,497
	Direct energy consumption	GJ	17,300,000	79,923,862	104,815,157	101,135,414.46
	- Natural Gas	GJ	48,610,000	29,280,698	32,741,421	32,394,278.39
	- LPG	GJ	0	937,725	1,131,207	2,794,994.77
	- Diesel	GJ	0	319	0.291	505.51
	- Pyrolysis Gas Oil	GJ	0	667,324	646,231	337,758.00
	- Oligomer	GJ	-	-	2,460	1,667.54
	- Recovered Volatile (RV)	GJ	-	21,362	15,300	18,810.20
	- Fuel Oil	GJ	NA	12,976	141,920	1,047,021.86
	- Fuel Gas	GJ	NA	49,053,157	70,147,239	64,540,378.19
	Total indirect energy consumption by primary energy source	GJ	12,700,000	24,465,933	30,034,651	20,546,252
	- Electricity purchased	GJ	2,140,000	6,672,213	8,535,308	5,148,325
	- Steam	GJ	9,720,000	25,390,019	21,489,934	15,397,927
	Total Energy Sold	GJ	NA	5,662,207	5,414,743	6,427,169
	- Electricity	GJ	NA	3,684,650	3,692,739	4,920,986.1
	- Steam	GJ	NA	1,977,558	1,807,297	1,506,183.0
G4-OG3	<b>RENEWABLE ENERGY</b>					
	- Solar cell	GJ	-	-	28	30
	- Wind turbine	GJ	-	-	43	39
G4-EN4	Total energy consumption outside organization	GJ	NA	-	-	-
G4-EN5	Total energy intensity <sup>1</sup>	GJ/ton production	NA	43.72	5.76	5.07
G4-EN6	Total energy saved by efforts to reduce energy use and increase energy efficiency					
	- Fuel Saving	GJ	NA	1,181,866	295,886	719,531
	Total indirect energy saved from initiative to reduce indirect energy use					
	Electricity Saving	GJ	NA	91,065	213,102	277,837
	Steam Saving	GJ	NA	601,839	513,423	713,127
G4-EN8	<b>WATER</b>					
	Total Water Withdrawal by Source	Million m <sup>3</sup>	34.71	38.87	38.61	40.45
	Surface Water	Million m <sup>3</sup>	11.17	12.72	13.15	13.74
	- Seawater	Million m <sup>3</sup>	7.19	5.35	5.52	8.14
	- Once Through Cooling Water	Million m <sup>3</sup>	0	0	0	0
	- Municipal Water	Million m <sup>3</sup>	16.35	20.79	19.93	18.57
	- Groundwater	Million m <sup>3</sup>	0	0	0	0
	- Total salt/brackish water	Million m <sup>3</sup>	0	0	0	0
	- Water from all other sources	Million m <sup>3</sup>	0	0	0	0

<sup>1</sup> All types of energy included in the intensity ratio are consumed within the organization

## NATURAL CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
	- Water returned to the source of extraction at similar or higher quality as raw water extracted	Million m <sup>3</sup>	0	0	0	0
	Water intensity	m <sup>3</sup> / ton of production	1.73	1.76	1.72	1.78
G4-EN10	Water reused and recycled	% of total water withdrawal	1.53	6.47	6.31	7.13
		Million m <sup>3</sup>	0.53	2.52	2.43	2.88
G4-EN15	<b>GREENHOUSE GAS EMISSIONS (GHGs)<sup>1,2</sup></b>					
	Direct GHGs Emissions (Scope 1)	Million ton CO <sub>2</sub> equivalent	5.80	5.87	5.75	5.77
G4-EN16	Indirect GHGs Emissions (Scope 2)	Million ton CO <sub>2</sub> equivalent	1.86	1.82	1.71	1.62
G4-EN17	Other Indirect GHGs Emissions (Scope 3 <sup>3</sup> )	Million ton CO <sub>2</sub> equivalent	2.50	2.82	3.83	3.11
G4-EN18	GHGs Emission intensity <sup>4</sup>	Ton CO <sub>2</sub> equivalent/ton production	0.39	0.35	0.33	0.33
G4-EN21	<b>EMISSIONS<sup>5</sup></b>					
	Volatile Organic Compounds (VOCs)	Ton VOCs	3,214	1,599	1,595	1,543
	VOCs intensity	Ton VOCs/ million ton production	160	72	71	68
	Nitrogen oxides (NO <sub>x</sub> )	Ton NO <sub>x</sub>	3,613	3,248	3,613	3,606
	NO <sub>x</sub> intensity	Ton NO <sub>x</sub> / million ton production	180	147	161	159
	Sulfur dioxides (SO <sub>2</sub> )	Ton SO <sub>x</sub>	1,484	1,077	968	913
	SO <sub>x</sub> intensity	Ton SO <sub>x</sub> / million ton production	74	49	43	40
	Total Suspended Particulate Matter (TSP)	Ton	103	16	24	3
	TSP Intensity	Ton/ million ton production	5	1	1	<1
G4-EN22	<b>WATER DISCHARGE<sup>6</sup></b>					
	Total water discharge to surface water	Million m <sup>3</sup>	4.57	5.31	4.92	4.65
	- BOD Loading	Ton	10	20	11	10
	- COD Loading	Ton	181	238	237	227
	- TSS Loading	Ton	34	49	40	37
	- Oil and Grease Loading	Ton	2	3	2	2

<sup>1</sup> GHGs emissions based on report of i) GHGs calculation standard, methodology, emission factors and GWP referred to IPCC 2006, WRI GHG protocol and ISO 14064. ii) the operational control approach for emissions

<sup>2</sup> All greenhouse gases included in the report,

<sup>3</sup> Indirect GHGs emission scope 3 categories and activities reported include the air travel of employees, use of jet and diesel fuel sold, end-of-life industrial waste treatment and pipeline transportation of feedstock.

<sup>4</sup> Types of GHGs emissions, which are direct (scope 1) and energy indirect (scope 2), included in the intensity ratio.

<sup>5</sup> Standards, methodologies, source of emission factors and assumptions used are identified relevant regulations. The measurement approaches include direct and/or continuous measurement.

<sup>6</sup> Treatment methods were Reverse Osmosis (R.O.) systems and biological treatment and discharged water was not reused by another organization. In addition, information sources about the volume of water discharge include flow meters and regulatory permits.

## NATURAL CAPITAL

GRI	REQUIRED DATA	UNIT	DATA COLLECTION PERIOD			
			2012	2013	2014	2015
G4-EN22	Total water discharge to external facility	Million m <sup>3</sup>	2.84	4.23	3.59	2.80
	- BOD Loading	Ton	55	156	61	44
	- COD Loading	Ton	185	392	251	168
	- TSS Loading	Ton	38	103	45	29
	- Oil and Grease Loading	Ton	9	20	13	12
G4-EN23	<b>WASTE DISPOSAL</b>					
	Total Hazardous waste <sup>7</sup> from routine operations	Ton	21,790	25,236	29,388	26,946
	- Sorting <sup>8</sup>	Ton	118	2	1	<1
	- Reuse	Ton	0	0	24	137
	- Recycle	Ton	20,536	21,775	22,734	16,985
	- Recovery	Ton	< 1	186	192	189
	- Treatment	Ton	0	1,067	2,283	1,442
	- Landfill	Ton	449	225	56	0
	- Incineration	Ton	58	942	3,851	6,894
	- Other Management Method	Ton	629	1,039	247	1,300
	- Total Non-Hazardous waste <sup>1</sup> from routine operation	Ton	10,271	11,908	8,604	6,014
	- Sorting <sup>2</sup>	Ton	2,004	1,420	1,511	1,408
	- Reuse	Ton	10	0	0	15
	- Recycle	Ton	2,562	1,596	1,592	1,057
	- Recovery	Ton	109	216	233	183
	- Treatment	Ton	599	4,404	1,145	45
	- Landfill	Ton	365	386	78	0
	- Incineration	Ton	< 1	162	58	853
	- Other Management Method	Ton	4,621	3,725	3,988	2,381
	Waste from non-routine operation	Ton	NA	25,206	7,324	10,105
	Municipal Waste	Ton	2,054	2,067	2,248	2,217
	On-site Storage	Ton	NA	NA	665	173
G4-EN24	<b>SIGNIFICANT SPILLS</b>					
	Oil Spills	Case	0	1	0	0
		m <sup>3</sup>	0	54	0	0
	Fuel Spills	Case	0	0	0	0
		m <sup>3</sup>	0	0	0	0
	Waste Spills	Case	0	0	0	0
		m <sup>3</sup>	0	0	0	0
	Chemical Spills	Case	0	0	0	0
G4-OG6	Volume of flared and vented hydrocarbon	Million m <sup>3</sup>	36.40	57.58	26.68	27.05

<sup>7</sup> As defined by National Legislation and there is no on-site storage during reporting year.

<sup>8</sup> Sorting is defined an authorized waste disposal method as prescribed by the Notification of Ministry of Industry under waste disposal code "011 Sorting for Resale".

Since 2013, PTTGC acquired PTT Phenol Co., Ltd. in PTTGC group. Performance data for YEAR 2013 and 2014 were gathered from Group Performance Center (Olefins, Aromatics and Refinery) and Business Units ( Polymers, EO-Based Performance, Green Chemicals, High Volume Specialties, and Services and others.) The data measurement method used in this report remained the same as the previous year.

This report remains focus on materiality aspects in Thailand as the operational control. The information on PTTGC subsidiaries and affiliates as well as join ventures can be found in the Annual Report.

NA : Data not available

-\* : Other voluntary disclosure





This report has been prepared in accordance with the Global Reporting Initiative Guidelines, Version G4 (GRI G4) and was submitted for the GRI Materiality Disclosure Service. GRI confirmed the correctness of the locations of the G4 materiality disclosure (G4-17 to G4-27).



# GRI Content Index


## GENERAL STANDARD DISCLOSURES

GENERAL STANDARD DISCLOSURES	PAGE	OMISSIONS	EXTERNAL ASSURANCE
STRATEGY AND ANALYSIS			
G4-1	6-9	-	-
ORGANIZATIONAL PROFILE			
G4-3	31	-	-
G4-4	31	-	-
G4-5	27	-	-
G4-6	31	-	-
G4-7	31	-	-
G4-8	31-33	-	-
G4-9	31, 114-115 Annual Report: Statement of financial position (Liabilities and equity, p.130)	-	-
G4-10	115	-	-
G4-11	Omit	Reporting on this indicator is not applicable because PTTGC does not have trade union. PTTGC respects and fully supports the rights of employee in freedom of association in accordance with laws.	-
G4-12	32-33	-	-
G4-13	27	-	-
G4-14	39-41, 47, 85	-	-
G4-15	36-37	-	-
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IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES			
G4-17	16	-	/ (page 146-147)
G4-18	24-25	-	/ (page 146-147)
G4-19	25-28	-	/ (page 146-147)
G4-20	26-28	-	/ (page 146-147)
G4-21	26-28	-	/ (page 146-147)
G4-22	29	-	/ (page 146-147)
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STAKEHOLDER ENGAGEMENT			
G4-24	17, 18, 20	-	/ (page 146-147)
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GENERAL STANDARD DISCLOSURES	PAGE	OMISSIONS	EXTERNAL ASSURANCE
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REPORT PROFILE			
G4-28	14	-	-
G4-29	14	-	-
G4-30	14	-	-
G4-31	27	-	-
G4-32	14	-	-
G4-33	22-23	-	-
GOVERNANCE			
G4-34	35 AR2015 (Governance structure) <a href="http://www.pttgcgroup.com/en/aboutus/organization-structure">http://www.pttgcgroup.com/en/aboutus/organization-structure</a> <a href="http://www.pttgcgroup.com/en/aboutus/director-roles">http://www.pttgcgroup.com/en/aboutus/director-roles</a>	-	-
G4-40	34	-	-
ETHICS AND INTEGRITY			
G4-56	30, 36	-	-
G4-58	<a href="http://www.pttgcgroup.com/en/governance/whistleblower-policy-policy">http://www.pttgcgroup.com/en/governance/whistleblower-policy-policy</a>	-	/

Note:  This report is included external verification on Limited Assurance (GRI G4 in accordance with "CORE")

 OGSD = Oil and Gas Sector Disclosure

 / = Received external assurance, - = No external assurance

## SPECIFIC STANDARD DISCLOSURES

MATERIAL ASPECTS	DMA AND INDICATORS (PAGE/LINK)	PAGE	OMISSIONS	EXTERNAL ASSURANCE
CATEGORY: ECONOMIC				
Economic Performance	G4-DMA	30	-	-
	G4-EC1 (OGSD)	31, 114, 119	-	-
	G4-EC2 (OGSD)	84-85, 87-88	-	-
	G4-DMA (OGSD)	58	-	-
	G4-EC7 (OGSD)	61 <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>	-	-
Indirect Economic Impact	G4-EC8 (OGSD)	60-61 <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>	-	-
Procurement Practices	G4-DMA (OGSD)	66	-	-
	G4-EC9	114	-	-

## SPECIFIC STANDARD DISCLOSURES

MATERIAL ASPECTS	DMA AND INDICATORS (PAGE/LINK)	PAGE	OMISSIONS	EXTERNAL ASSURANCE
CATEGORY: ENVIRONMENTAL				
Materials	G4-DMA	46-47	-	
	G4-EN1 (OGSD)	120	-	
	G4-EN2	120	-	
Energy	G4-DMA (OGSD)	84-85	-	
	G4-EN3	120	-	/
				(page LRQA assurance)
	G4-EN4	120	-	
	G4-EN5 (OGSD)	120	-	/
				(page LRQA assurance)
	G4-EN6	120	-	
	G4-EN7	Omit	Not applicable to PTTGC due to the nature of business	
Water	G4-OG3 (OGSS)	120	-	
	G4-DMA	78-79	-	
	G4-EN8 (OGSD)	120	Omission on rainwater collected directly and stored, because this data is currently unavailable. It is expected to be report in 2016.	/
				(page LRQA assurance)
	G4-EN10	77, 79, 121	-	/
				(page LRQA assurance)
Biodiversity	G4-DMA (OGSD)	95	-	
	G4-EN12	95	-	
Emission	G4-DMA	78, 82	-	
	G4-EN15 (OGSD)	85-86, 121	-	/*
				(page LRQA assurance)
	G4-EN16 (OGSD)	85-86, 121	-	/*
				(page LRQA assurance)
	G4-EN17 (OGSD)	86, 121	-	/*
				(page LRQA assurance)
	G4-EN18 (OGSD)	121	-	/*
				(page LRQA assurance)
	G4-EN19 (OGSD)	77, 87	-	/*
				(page LRQA assurance)
	G4-EN21 (OGSD)	82, 121	-	/
				(page LRQA assurance)
Effluent and Waste	G4-DMA (OGSD)	78, 81	-	
	G4-EN22	121, 122	-	/
				(page LRQA assurance)
	G4-EN23 (OGSD)	81, 122	-	/
				(page LRQA assurance)
	G4-EN24 (OGSD)	122	-	
	G4-OG6 (OGSD)	122	-	
Product and Services	G4-DMA	46-48	-	
	G4-EN27	47-48	-	
	G4-OG8 (OGSD)	47	-	
Compliance	G4-DMA	78	-	
	G4-EN29	83	-	
Overall	G4-DMA	77-78, 83		
	G4-EN31	114		

## SPECIFIC STANDARD DISCLOSURES


MATERIAL ASPECTS	DMA AND INDICATORS (PAGE/LINK)	PAGE	OMISSIONS	EXTERNAL ASSURANCE
Supplier	G4-DMA	65, 69-70	-	
Environmental Assessment	G4-EN32	119	-	
CATEGORY: SOCIAL				
SUB-CATEGORY: LABOUR PRACTICE AND DECENT WORK				
Employment	G4-DMA (OGSD)	101, 106	-	
	G4-LA1	115	-	
	G4-LA2	107	-	
	G4-LA3	116	-	
Occupational Health and Safety	G4-DMA (OGSD)	89	-	
	G4-LA5	117		
	G4-LA6 (OGSD)	117	-	/
				(page LRQA assurance)
	G4-LA8	Omit	Reporting on this indicator is not applicable as PTTGC does not have trade unions. PTTGC fully supports health and safety programs as H&S of our employees is our first priority.	
Training and Education	G4-DMA	102	-	
	G4-LA9	116	-	
	G4-LA10	103-105	-	
	G4-LA11	117	-	
Diversity and Equal Opportunity	G4-DMA	106-107	-	
	G4-LA12	117	-	
Equal Remuneration for Women and Men	G4-DMA	106-107	-	
	G4-LA13	117	-	
Supplier Assessment for Labor Practices	G4-DMA (OGSD)	71	-	
	G4-LA14	119	-	
SUB-CATEGORY: HUMAN RIGHTS				
Investment	G4-DMA (OGSD)	<a href="http://www.pttgcgroup.com/en/sustainability/sustainability-society">http://www.pttgcgroup.com/en/sustainability/sustainability-society</a>	-	
	G4-HR2	119	-	
Non-discrimination	G4-DMA (OGSD)	<a href="http://www.pttgcgroup.com/en/sustainability/sustainability-society">http://www.pttgcgroup.com/en/sustainability/sustainability-society</a>	-	
	G4-HR3	119	-	
Child labor	G4-DMA (OGSD)	-	-	
	G4-HR5	119	-	
Forced or Compulsory Labor	G4-DMA (OGSD)	-	-	
	G4-HR6	119	-	
Supplier Human Rights Assessment	G4-DMA (OGSD)	71	-	
	G4-HR10	119	-	
SUB-CATEGORY: SOCIETY				
Local communities	G4-DMA (OGSD)	58-59	-	
	G4-SQ1	119	100% operation in Rayong implemented local community engagement impact assessment and development program.	

## SPECIFIC STANDARD DISCLOSURES

MATERIAL ASPECTS	DMA AND INDICATORS (PAGE/LINK)	PAGE	OMISSIONS	EXTERNAL ASSURANCE
Anti-Corruption	G4-DMA (OGSD)	36-37 <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a> <a href="http://www.pttgcgroup.com/th/governance/anti-corruption-policy">http://www.pttgcgroup.com/th/governance/anti-corruption-policy</a>	-	
	G4-SO3	<a href="http://www.pttgcgroup.com/src/misc/cg/20120227-PTTGC-CGHandbook-TH.pdf">http://www.pttgcgroup.com/src/misc/cg/20120227-PTTGC-CGHandbook-TH.pdf</a> <a href="http://www.pttgcgroup.com/src/misc/cg/20130514-PTTGC-codeOfContact-TH.pdf">http://www.pttgcgroup.com/src/misc/cg/20130514-PTTGC-codeOfContact-TH.pdf</a>	PTTGC group is required to be compliance with Code of Conduct and Risk Assessment. Then, it was 100% and total number of operational controls assessed for risks related to corruption. No significant risk related to corruption was identified through the risk assessment in 2015.	
	G4-SO4	118	-	
	G4-SO5	118	-	
Anti-Competitive Behaviour	G4-DMA (OGSD)	36-37 <a href="http://www.pttgcgroup.com/en/sustainability/sustainability-compliance-policy">http://www.pttgcgroup.com/en/sustainability/sustainability-compliance-policy</a>	-	
	G4-SO7	37 <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a>	-	
Compliance	G4-DMA	36-37 <a href="http://www.pttgcgroup.com/en/sustainability/sustainability-economic">http://www.pttgcgroup.com/en/sustainability/sustainability-economic</a>	-	
	G4-SO8	37 <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a>	There is no monetary value of significant fines and non-monetary sanctions for non-compliance with laws and regulations in 2015.	
Supplier Assessment for Impacts on Society	G4-DMA	71	-	
	G4-SO9	64	-	
Emergency Preparedness	G4-DMA (OGSD)	77, 87	-	
Asset Integrity and Process Safety	G4-DMA (OGSD)	89	-	
	G4-OG13 (OGSD)	91	-	
SUB-CATEGORY: PRODUCT RESPONSIBILITY				
Customer Health and Safety	G4-DMA	46, 52	-	
	G4-PR1	48	-	
Product and Service Labelling	G4-DMA	66	-	
	G4-PR5	66, 119	-	

Note:  This report is included external verification on Limited Assurance (GRI G4 in accordance with "CORE")

 OGSD = Oil and Gas Sector Disclosure

 GHG data verification and 3<sup>rd</sup> party assurance based on ISO 14064-1 for G4-EN15 - G4-EN19 is expected to be completed in April, 2016.

 / = Received external assurance, - = No external assurance



# United Nations Global Compact:

## COMMUNICATION ON PROGRESS FOR THE LEAD LEVEL



United Nations Global Compact

PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
Implementing the Ten Principles into Strategies and Operation		
1. The COP describes mainstreaming into corporate functions and business units	PTTGC pursues sustainability through a range of sustainability management policies, covering the environment, society and corporate governance. These policies are then integrated into strategic operations in each business department. PTTGC's a Sustainable Development Committee is responsible for driving sustainability policy, strategy and planning in accordance with PTTGC targets and international standards. These strategies and targets are implemented in every department and group of companies in PTTGC. PTTGC aims to increase its efficiency and become an exemplary corporation in sustainable development through implementation of the sustainability management framework to execute and monitor results; risk assessment at business line and corporate level; and through operational planning and target-setting in each department to promote sustainability management.	A Message from Our President & CEO/ About PTTGC/ Role Model in Product Stewardship/ Sustainable Value Chain/ Operational Responsibility/ Employee Readiness
2. The COP describes value chain implementation	<p>The company conducts risk management and implements systems to manage partners and all contractors in all work areas. This includes setting a Supplier's Code of Conduct as a clear part of the value chain. In order to push for responsible business operations and operational results, PTTGC assesses and monitors results in the environmental, social and corporate governance aspects. Such issues are integrated into business decision-making, and at the same time, for exchanging expectations with partners, including organize training to increase the potential of partners to meet the standards of the company.</p> <p>PTTGC also continues to focus on reducing its impact on the environment through implementation of Green Procurement Policy for products and services. PTTGC has subjected this policy to a thorough life cycle analysis, and has also shown its intention to be certified as a green network in the Green Industry Level 5 led by the Ministry of Industry. Additionally, PTTGC is an active member of EcoVadis, an international organization that specializes in sustainable development throughout the supply chain.</p>	About PTTGC/ Sustainable Value Chain <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a>
Robust Human Rights Management Policies and Procedures		
3. The COP describes robust commitments, strategies or policies in the area of human rights	PTTGC operates in line with the highest standards of the United Nations Global Compact (UNGC), in terms of both business operations and upholding human rights. PTTGC is adhere of the UN Universal Declaration of Human Rights (UDHR), and has developed a Business Code of Conduct and Corporate Compliance Policy, which conforms to current legislation on good corporate governance, human rights, labor rights, fair hiring practices and social responsibility. PTTGC's policies are	About PTTGC/ Employee Readiness <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>



PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
	therefore in line with international standards, with indicators for management practices in both environmental and social issues. Additionally, PTTGC sets policies on governance practices related to Human Rights Policy, including human trafficking, and calls on employees to recognize the importance of these policies and to fully comply with them.	
4. The COP describes effective management systems to integrate human rights principles	PTTGC has introduced human rights principles to its risk management procedures. All employees are trained in human rights and other related issues, especially in human trafficking which the company has taken as highly important along with its Business Code of Conduct and the company's business policy. PTTGC also maintains a complaints procedure, which are extended to partners and contractors through the procurement stipulations team. The procedure requires partners to register and act in accordance with PTTGC policies. PTTGC continues to set targets and monitor human rights performance according to its sustainability management guidelines and its Security, Safety, Health and Environment Operational Excellence Management System (SSHE OEMS). Additionally, PTTGC is consistently assessed for the ISO14001 certification and the Thai Labor Standard for certificate 8001-2553.	About PTTGC/ Employee Readiness/ Sustainable Value Chain <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>
5. The COP describes effective monitoring and evaluation mechanisms of human rights integration	PTTGC's human rights management covers risk assessment based on the Ruggie Framework on human rights principles, which includes performance monitoring in relation to human rights. PTTGC also has a grievance mechanism for both internal and external stakeholders, which can be accessed through a range of communications channels, such as email, online forms, PTTGC website or telephone. PTTGC has created a tracking and fair resolutions system, in which all information received is kept confidential. PTTGC has also arranged for tracking and fair resolution to become a company performance indicator. The implementation of these systems also extends to partners, along with a Vendor Criticism Process for receiving comments, fact-checking and problem resolution.	About PTTGC/ Employee Readiness/ Sustainable Value Chain <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>
Robust Labour Management Policies and Procedures		
6. The COP describes robust commitments, strategies or policies in the area of labor	PTTGC understands and respects the labor rights of its employees and contractors by complying with both Thai labor laws and the stipulations of the International Labor Organization Convention (ILO Convention). The company's governance covers human rights and is subject to the company strategy. Labor rights are upheld through various processes, such as PTTGC's Business Code of Conduct, Corporate Compliance Policy and its management indicators.  PTTGC has a policy of recruiting disabled persons as company employees. In 2015, PTTGC began to recruit disabilities and plans to recruit more disabilities in the future.	About PTTGC/ Employee Readiness <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>

PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
7. The COP describes effective management systems to integrate the labor principles	PTTGC assesses and manages risks in accordance with a range of standards, such as ISO14001, OHSAS/TIS18001, ISO26000 and CSR-DIW. PTTGC has also been assessed for the Thai Labor Standard 8001-2553 certification every three years. Additionally, all PTTGC employees must complete a training course on labor rights and adhere to PTTGC's Corporate Governance Policy and its Business Code of Conduct. This course also familiarizes employees with communication channels for receiving complaints or recommendations, via email, online forms, website and telephone. PTTGC has also developed communications policies and Supplier's Code of Conduct for partners and contractors, which shall be carried out in accordance with PTTGC standards and Thai labor laws.	About PTTGC/ Employee Readiness <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>
8. The COP describes effective monitoring and evaluation mechanisms of labor principles integration	PTTGC has created a Welfare Committee to be responsible for receiving complaints from employees, via a range of communications channels, such as email, online forms or directly via a superior. The Welfare Committee also conducts fact-finding activities before responding to and resolving issues involving employees. In addition to PTTGC's complaints procedure, PTTGC also has monitoring and evaluating procedures for labor issues, stakeholders engagement activities, an employee satisfaction survey and monitoring and assessment of business partners' performance to assure that they operate in accordance with labor rights policies.	About PTTGC/ Employee Readiness/ Sustainable Value Chain <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a>
<b>Robust Environmental Management Policies and Procedures</b>		
9. The COP describes robust commitments, strategies or policies in the area of environmental stewardship	<p>PTTGC operates in accordance with its sustainability management guidelines and adheres to the United Nations Sustainable Development Goals. PTTGC has also set out targets for resources management and environment protection, covering every aspect of the environment, such as eco-friendly operations, product responsibility, research and eco-friendly innovations, procurement and building a green network throughout the value chain, while also taking into account impacts on PTTGC's stakeholders.</p> <p>Thus, PTTGC is committed to a management procedure that incorporates environmental aspects as an important strategy in business conduct. This includes clear policy and regulations, behavioral changes among staff throughout the company and participation from internal and external stakeholders.</p> <p>For details on Quality, Safety, Health, Environment and Business Continuity Policy (QSHEB policy), is available on the PTTGC website.</p> <p>For targets and other environmental policies, please see the section entitled "Operational Responsibility."</p>	A Message from Our President & CEO/ About PTTGC/ Role Model in Product Stewardship/ Sustainable Value Chain/ Operational Responsibility/ Employee Readiness <a href="http://www.pttgcgroup.com/th/sustainability/qsheb-policy">http://www.pttgcgroup.com/th/sustainability/qsheb-policy</a>

PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
<p>10. The COP describes effective monitoring and evaluation mechanisms for environmental stewardship</p>	<p>PTTGC has combined environmental policy for performance, innovation, partners, potential environmental impact, health and safety into PTTGC integrated environmental system. The system has been certified with ISO14001 and ISO50001:2001 (Energy Management System Certification). PTTGC has also assigned monitoring responsibilities for its employees on every level, from the Board of Directors to the operational level. This also includes water management in cooperation with the PTT Group Water Management Team (PTTWT) and Water War Room Rayong. These water projects adhere to the 3Rs principle, Reduce, Reuse and Recycle.</p> <p>PTTGC has developed a Climate Strategy Long Range Plan, which emphasizes on reducing environmental impacts and protection from climate change risks. The Long Range Plan also includes targets on reducing greenhouse gas emissions (scopes 1 and 2), which aims for a ten percent voluntary reduction in emissions from business operations. This emission reduction is targeted to be achieved in 2022 compared to the baseline year of 2012. To meet the targets, projects to increase energy efficiency and reduce greenhouse gas are to be implemented in accordance with the COP21.</p> <p>To launch new PTTGC projects, reports on environmental impact and risk assessment must be produced at every stage of implementation. Additionally, to increase PTTGC's efficacy in environmental conservation, PTTGC has laid down guidelines for improving production processes and the use of alternative raw materials, which includes plans for discovering and producing eco-friendly products by studying environmental impact through LCA principles. For management details please see the section entitled "Operational Responsibility."</p>	<p>Operational Responsibility  <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-environment">http://www.pttgcgroup.com/th/sustainability/sustainability-environment</a></p>
<p>11. The COP describes effective monitoring and evaluation mechanisms for environmental stewardship</p>	<p>PTTGC has set clear environmental targets, therefore able to monitor and track the outcome of its environmental performance systematically. This is achieved by setting performance indicators at the corporate level and the department level, along with establishing a Special Working Committee for greater efficiency in monitoring performance. PTTGC also employs an eco-efficiency indicator index in accordance with the UNCTAD Manual, which acts as a framework for effective environmental performance.</p> <p>In addition to reduce the environmental impact of its business operations, PTTGC is committed to environmental monitoring and preparation. This includes reporting on PTTGC's environmental impact and monitoring the quality of the environment for government regulators every six months and also Business Continuity Management, Early Warning Systems and surveys of local social opinion and social satisfaction.</p>	<p>Operational Responsibility  <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-environment">http://www.pttgcgroup.com/th/sustainability/sustainability-environment</a></p>

PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
<b>Robust Anti-corruption Management Policies and Procedures</b>		
12. The COP describes robust commitments, strategies and policies in the area of anti-corruption	PTTGC's Business Code of Conduct and Corporate Compliance with its good corporate governance practices covering anti-corruption are crucial to PTTGC's overall performance. PTTGC is committed to operate as a transparent and accountable organization by having policies and operational procedures that comply with anti-corruption and anti-bribery laws and against conflicts of interest. Accordingly, PTTGC has identified related aforementioned issues in its Corporate Governance & Business Code of Conduct Handbook and Corporate Compliance Policy.	About PTTGC <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a>
13. The COP describes effective management systems to integrate the anti-corruption principle	All PTTGC employees must complete an anti-corruption knowledge and awareness course, which includes PTTGC policy on receiving gifts. This training course is provided during orientation for new employees. These policies fall under PTTGC's guidelines for good corporate governance, which can be read in detail at the PTTGC website and in PTTGC's Annual Report. PTTGC's Business Code of Conduct and Corporate Compliance Policy, as mentioned above, are applied to cover the entire value chain. PTTGC obliges partners to acknowledge and implement best practices for anti-corruption, in compliance with PTTGC's standards.	About PTTGC/ Sustainable Value Chain <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a>
14. The COP describes effective monitoring and evaluation mechanisms for the integration of anti-corruption	Through the Board of Directors, PTTGC has conducted a performance evaluation and assessment in line with Corporate Governance & Business Code of Conduct Handbook. The Board of Directors has received the Anti-Corruption for Executive Program training and has also established an Audit Committee to examine operational implementation and to offer comments and suggestions particularly to the Board of Directors, in order to increase the efficiency and effectiveness of anti-corruption activities.  In doing so, PTTGC has compiled a range of information obtained through stakeholder engagement activities, the internal and external complaints systems and the results of the PTTGC satisfaction survey. These initiatives provide additional channels through which stakeholders can communicate with PTTGC executives about corporate governance issues.	About this Report/ About PTTGC/ Sustainable Value Chain <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a> <a href="http://www.pttgcgroup.com/th/sustainability/commitments-overview">http://www.pttgcgroup.com/th/sustainability/commitments-overview</a>
<b>Taking Action in Support of Broader UN Goals and Issues</b>		
15. The COP describes core business contribution to UN goals and issues	PTTGC is committed to the development of good governance, with the aim of being an organization with sustainable development. PTTGC recognizes the importance of upholding international sustainability standards, such as the 17 UN Sustainable Development Goals (SDG), ISO 26000, Global Reporting Initiative G4 Guidelines and Integrated Reporting. At present, PTTGC operates according to the highest standards of the UNGC LEAD Program, after becoming a UNGC Advanced Level member since 2013. Moreover, PTTGC has been ranked among the top ten highest-rated companies for sustainable development, and has also been awarded Silver Class by the RobecoSAM. Additionally, PTTGC has been selected as	A Message from Our President & CEO/ Awards and Recognitions <a href="http://www.pttgcgroup.com/th/sustainability/awards">http://www.pttgcgroup.com/th/sustainability/awards</a>

PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
	<p>one of the companies featured in The Global Compact 100 Index Constituents, which evaluates company compliance with UN regulations. By evaluating its business performance results, and by giving back the highest value to society, PTTGC demonstrates its commitment to sustainability management in compliance with international standards and procedures.</p> <p>Additionally, PTTGC has participated in the Caring for Climate and Water Action Hubs at COP 21, which was organized by the UN. PTTGC is also committed to the Carbon Disclosure Project (CDP) to reveal information on climate change in PTTGC's main report.</p>	
16. The COP describes strategic social investments and philanthropy	<p>PTTGC's targets for developing social responsibility projects are not limited to the company's ability to corporate with society, but also focused on building strength and Creating Shared Value, both locally and nationally. PTTGC runs continuous social projects for building sustainable shared value covering five dimensions: the environment, economic, health, social and education. With these developments and assistance to upgrade Thailand's economy and society, PTTGC and local communities are able to join forces and prosper together sustainably. With this goal in mind, PTTGC has created a system for assessing public satisfaction with PTTGC's business projects and performance. In 2015, PTTGC received a satisfaction rate of 86.02 percent, which represents an increase from 2014. Suggestions that were received through the satisfaction assessments have been given further considerations and will be used to improve PTTGC's operational performance and activities, such as continuous development and building of innovation for society.</p>	<p>Role Model in Product Stewardship <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-society">http://www.pttgcgroup.com/th/sustainability/sustainability-society</a></p>
17. The COP describes advocacy and public policy engagement	<p>PTTGC supports policies related to sustainable development, particularly on the improvement of manufacturing process efficiency, reduction of greenhouse gas emissions and conservation of resources. In doing so, PTTGC partners with various organizations such as the Thailand Greenhouse Gas Management Organization (Public Organization), the Thailand Business Council for Sustainable Development (TBCSD), the Federation of Thai Industries in the accounting and reporting of greenhouse gas emissions and the Office of the National Economic and Social Development Board (NESDB) for the support of green growth or a bio-economy. At the same time, PTTGC has also participated in two Carbon Disclosure Projects: 1) the Climate Change Program to support the reduction of greenhouse gas emissions internationally, and 2) the Water Program to preserve water resources and reduce the global water crisis. PTTGC has been rated for the third consecutive year in the leadership group for Climate Change from the Carbon Disclosure Project (CDP) at a rating of 100 A- in 2015, and has also joined in registration of product carbon footprints; global warming labelling and carbon offset certification labelling.</p>	<p>Operational Responsibility</p>

PRINCIPLES OF ADVANCE PROGRAM	IMPLEMENTED BY PTT GLOBAL CHEMICAL	POSITION IDENTIFIED IN THE REPORT
18. The COP describes partnerships and collective action	PTTGC supports building relationships and partnering with representatives from community, educational institutions, government agencies, as well as business partners and shareholders. The relationship building also extends to supporting affiliates and joint development of various projects and activities. Initiatives include the exchange of knowledge, joint research, volunteering, receiving stakeholder feedback and participating in social projects as an industry leader. In addition, PTTGC, together with companies in PTT Group, are committed to building alliances in both business and society, in order to enhance sustainable business practices.	About PTTGC/ Role Model in Product Stewardship/ Sustainable Value Chain/ Operational Responsibility
Corporate Sustainability, Governance and Leadership		
19. The COP describes CEO commitment and leadership	Annually, PTTGC presents a "A Message from Our President & CEO" in the Sustainability Report and the Annual Report.	A Message from Our President & CEO
20. The COP describes Board adoption and oversight	<p>The structure and operations of PTTGC's board that are responsible for the corporate governance and administration for business sustainability are in consistent with the United Nations Global Compact Advance Level. Consequently, the components and characteristics of persons taking up positions as company board members, including their roles, duties and responsibilities, have been clearly defined as per the size and business conditions of PTTGC.</p> <p>PTTGC has set up four special committees, including the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee and the Risk Management Committee, to help consider specific key practices thoroughly in all aspects. The company discloses the process for recruiting committee members who have the knowledge and ability to replace those who are resigning or have finished their term. PTTGC also maintains up-to-date the Corporate Governance &amp; Business Code of Conduct Handbook that are consistent with international practices.</p>	About PTTGC <a href="http://www.pttgcgroup.com/th/sustainability/sustainability-economic">http://www.pttgcgroup.com/th/sustainability/sustainability-economic</a> 2015 Annual Report
21. The COP describes stakeholder engagement	<p>PTTGC's stakeholders are divided into eight groups; shareholders, customers, partners, creditors, government sector, employees, communities, society and non-profit organizations. PTTGC engages with its stakeholders in a variety of ways and operates in this manner consistently throughout the year. The overall outcome of stakeholder engagement will be reported quarterly to Corporate Governance Committee meeting. The results of stated engagement process are disclosed in the "About this Report".</p> <p>PTTGC has also implemented a Whistleblower policy as another channel for receiving feedback, suggestions and complaints from all stakeholder groups.</p>	About this Report <a href="http://www.pttgcgroup.com/th/sustainability/commitments-overview">http://www.pttgcgroup.com/th/sustainability/commitments-overview</a>





## LRQA Assurance Statement

### Relating to PTT Global Chemical Public Company Limited's Sustainability Report for the calendar year 2015

This Assurance Statement has been prepared for PTT Global Chemical Public Company Limited in accordance with our contract but is intended for the readers of this Report.

#### Terms of Engagement

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by PTT Global Chemical Public Company Limited (PTTGC) to provide independent assurance on its Sustainability Report for the calendar year 2015 ("the Report") against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement of the verifier using LRQA's verification approach. LRQA's verification approach is based on current best practice and uses the principles of AA1000AS (2008) - Inclusivity, Materiality, Responsiveness and Reliability of performance data and processes defined in ISAE3000.

Our assurance engagement covered PTTGC's operations and activities in Thailand, including its subsidiary companies where PTTGC holds more than 50% of share capital, and specifically the following requirements:

- Confirming that the Report is in accordance with:
  - GRI G4's Reporting Guidelines and Core option
  - GRI G4's Oil and Gas Sector Supplement
- Reviewing the integrity of PTTGC's whistleblowing mechanisms for internal and external parties (G4-58)
- Evaluating the reliability of data and information for selected specific standard disclosures: energy consumption within the organization (G4-EN3), energy intensity (G4-EN5), total water withdrawal by source as water consumption (G4-EN8), percentage and total water recycled & reused (G4-EN10), SOx, NOx and other significant air emission (G4-EN21), total water discharge by quality and destination (G4-EN22), total weight of waste by type and disposal method (G4-EN23), and type of injury and rates of injury as LTIFR, occupational diseases, lost days, and absenteeism and total number of work-related fatalities (G4-LA6)

Our assurance engagement excluded the data and information of PTTGC's operations and activities outside of Thailand.

LRQA's responsibility is only to PTTGC. LRQA disclaims any liability or responsibility to others as explained in the end footnote. PTTGC's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the Report and for maintaining effective internal controls over the systems from which the Report is derived. Ultimately, the Report has been approved by, and remains the responsibility of PTTGC.

#### LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that PTTGC has not:

- Met the requirements above
- Disclosed reliable performance data and information for the selected specific standard disclosures
- Deployed robust and confidential whistleblowing mechanisms. However, there is a shortfall in the Report describing fully these mechanisms.
- Covered all the issues that are important to the stakeholders and readers of this Report.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the Verifier.

Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites.

#### LRQA's Approach

LRQA's assurance engagements are carried out in accordance with LRQA's Report Verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing PTTGC's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this by reviewing documents and associated records.
- Reviewing PTTGC's process for identifying and determining material issues to confirm that the right issues were included in their Report and updated overtime. We did this by benchmarking reports written by PTTGC and its peers to ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to evaluate whether PTTGC makes informed business decisions that may create opportunities which contribute towards sustainable development.





- Auditing PTTGC's data management systems to confirm that there were no significant errors, omissions or mis-statements in the Report. We did this by reviewing the effectiveness of data handling process, and systems, including those for internal verification. We also spoke with key people in various facilities responsible for compiling the data and drafting the Report.
- Visiting the Olefins business unit of PTTGC2&3, Aromatic business unit of PTTGC5, Refinery business unit of PTTGC6&8 and Polymer business unit of PTTGC12 in Rayong to sample evidence for the selected specific standard disclosures to confirm its reliability.

Note: LRQA did not verify the data back to its original sources, nor did it assess the accuracy and completeness of the data reported by individual locations.

### Observations

Further observations and findings, made during the assurance engagement, are:

- **Stakeholder Inclusivity:**  
We are not aware of any key stakeholder groups that have been excluded from PTTGC's stakeholder engagement process. However, we believe that future reports should further explain how PTTGC engages with its other under-represented social groups; for example - with independent contractors.
- **Materiality:**  
We are not aware of any material aspects concerning PTTGC's sustainability performance that have been excluded from the Report. PTTGC has processes for identifying and determining their material aspects; the evaluation process considers factors such as stakeholder concerns, business risk, legal compliance and issues addressed by peers. However, future reports should provide context as to how PTTGC's sustainable development policies and practises are impacted by fluctuations in the oil price.
- **Responsiveness:**  
PTTGC and its subsidiaries have processes for responding to various stakeholder groups. We believe that these communication processes are effective in explaining PTTGC's aim in contributing towards sustainable development as we found nothing that would cause us to contradict this conclusion.
- **Reliability:**  
PTTGC's uses a well-defined, centralized, system to collect and calculate its data and information associated with the selected specific standard disclosures listed above. PTTGC should maintain its own internal data verification process to ensure the quality of its reported data and information.

### LRQA's competence and independence

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

This verification, together with the ISO 14064-1 assurance engagement, and TGO TVETS (Thailand Voluntary Emission Trading Scheme of Thailand Greenhouse Gas Management Organization (Public Organization)) assurance engagement are the only work undertaken by LRQA for PTTGC and as such does not compromise our independence or impartiality.

Signed

Dated: 14 February 2016

Opart Charuratana  
LRQA Lead Verifier  
On behalf of Lloyd's Register Quality Assurance Ltd.  
Lloyd's Register International (Thailand) Limited  
14th Floor, Sirinrat Building, 3388/46 Rama IV Road  
Klongton, Klongtoey, Bangkok 10110 THAILAND  
LRQA Reference: BGK6030198

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## แบบสอบถาม

### รายงานการพัฒนาอย่างยั่งยืน



1. ท่านคิดอย่างไรกับรายงานการพัฒนาอย่างยั่งยืน ประจำปี 2558 ของบริษัท พีทีที โกลบอล เคมิคอล จำกัด (มหาชน) ฉบับนี้

ความเข้าใจในเนื้อหา (ส่วนภาษาที่ใช้)

☐ เข้าใจได้ง่าย ☐ ปานกลาง ☐ เข้าใจได้ยาก

ความน่าสนใจของเนื้อหา

☐ น่าสนใจ ☐ ปานกลาง ☐ ไม่น่าสนใจ

การจัดหมวดหมู่ของเนื้อหา

☐ เป็นหมวดหมู่ ☐ ปานกลาง ☐ กระจัดกระจาย

2. ท่านคิดอย่างไรกับการดำเนินงานด้านความรับผิดชอบต่อสังคมของบริษัท พีทีที โกลบอล เคมิคอล จำกัด (มหาชน)

ความเข้าใจในเนื้อหา (ส่วนภาษาที่ใช้)

☐ ดีมาก ☐ ดี ☐ ปานกลาง ☐ ควรปรับปรุง ☐ แย่

3. ท่านคิดว่าเนื้อหาหัวข้อไหนน่าสนใจมากที่สุด (สามารถเลือกได้มากกว่า 1 คำตอบ)

- |   |  |
|---|--|
| <input type="radio"/> 01 นโยบายการบริหารจัดการความยั่งยืน                     | <input type="radio"/> 15 ห่วงโซ่คุณค่าที่ยั่งยืน                                 |
| <input type="radio"/> 02 สารจากประธานเจ้าหน้าที่บริหารและกรรมการผู้จัดการใหญ่ | <input type="radio"/> 16 การบริหารลูกค้าสัมพันธ์                                 |
| <input type="radio"/> 03 รางวัลแห่งความสำเร็จ                                 | <input type="radio"/> 17 การบริหารห่วงโซ่อุปทาน                                  |
| <input type="radio"/> 04 เกี่ยวกับรายงานฉบับนี้                               | <input type="radio"/> 18 ความรับผิดชอบต่อการดำเนินงาน                            |
| <input type="radio"/> 05 การประเมินประเด็นที่สำคัญ                            | <input type="radio"/> 19 การดำเนินงานที่มีประสิทธิภาพเชิงนิเวศเศรษฐกิจ           |
| <input type="radio"/> 06 การดำเนินธุรกิจของเรา                                | <input type="radio"/> 20 การเปลี่ยนแปลงสภาพภูมิอากาศ และประสิทธิภาพการใช้พลังงาน |
| <input type="radio"/> 07 วิสัยทัศน์และพันธกิจ                                 | <input type="radio"/> 21 อาชีวอนามัยและความปลอดภัย                               |
| <input type="radio"/> 08 ธุรกิจของเรา   | <input type="radio"/> 22 ความพร้อมของพนักงาน                                     |
| <input type="radio"/> 09 การกำกับดูแลกิจการที่ดี                              | <input type="radio"/> 23 การพัฒนาศักยภาพพนักงาน                                  |
| <input type="radio"/> 10 การบริหารความเสี่ยงและสภาวะวิกฤติ                    | <input type="radio"/> 24 การสรรหาและรักษาพนักงานที่มีคุณภาพ                      |
| <input type="radio"/> 11 ผู้นำด้านการมีความรับผิดชอบต่อผลิตภัณฑ์              | <input type="radio"/> 25 ประสิทธิภาพการดำเนินงาน ปี 2558                         |
| <input type="radio"/> 12 ความรับผิดชอบต่อผลิตภัณฑ์                            | <input type="radio"/> 26 GRI Content Index                                       |
| <input type="radio"/> 13 การสร้างนวัตกรรมใหม่แก่ผลิตภัณฑ์                     | <input type="radio"/> 27 การรายงานความก้าวหน้า (COP)                             |
| <input type="radio"/> 14 ความรับผิดชอบต่อสังคม                                |  |

4. กรุณาให้ข้อเสนอแนะเพื่อการพัฒนาปรับปรุง

- ท่านมีข้อคิดเห็น/เสนอแนะเพิ่มเติมอื่นๆ เกี่ยวกับรายงานฉบับนี้ และการดำเนินงานด้านความรับผิดชอบต่อสังคมของ บริษัท พีทีที โกลบอล เคมิคอล จำกัด (มหาชน) อย่างไรบ้าง

- ข้อมูลหรือเนื้อหาอะไรบ้างที่ท่านต้องการให้รายงานในรายงานของเรา

5. ในฐานะผู้อ่านรายงานของเรา กรุณาระบุว่าท่านผู้อ่านจากมุมมองไหน

- |   |  |   |   |
|---|--|---|---|
| <input type="radio"/> คู่ธุรกิจ   | <input type="radio"/> ลูกค้า               | <input type="radio"/> ผู้ถือหุ้น/นักลงทุน | <input type="radio"/> พนักงานที่ทำงานด้านสิ่งแวดล้อมขององค์กร |
| <input type="radio"/> นักเรียน/นักศึกษา                                 | <input type="radio"/> สื่อ                 | <input type="radio"/> หน่วยงานราชการ      | <input type="radio"/> หน่วยงานวิจัย หรือ สถาบันการศึกษา       |
| <input type="radio"/> พนักงานที่ทำงานด้านความรับผิดชอบต่อสังคมขององค์กร | <input type="radio"/> อื่นๆ โปรดระบุ ..... |   |   |

กรุณากรอกข้อมูลดังต่อไปนี้ (ตามความประสงค์)

ชื่อ - นามสกุล ..... อายุ ☐ ต่ำกว่า 25 ปี ☐ 26-33 ปี ☐ 34-41 ปี ☐ 42-49 ปี ☐ 50 ปีขึ้นไป  
ที่อยู่ .....

E-mail ..... อาชีพ .....

ขอคิดเห็นและข้อเสนอแนะอื่นๆ ในช่วงต้นๆ นำไปใช้เพื่อพัฒนาปรับปรุงรายงานการพัฒนาอย่างยั่งยืนฉบับต่อไป เราจะรักษาข้อมูลส่วนตัวของท่านเป็นความลับ และด้วยความระมัดระวังเป็นอย่างสูง  
โดยจะนำไปใช้เพื่อติดต่อกลับในกรณีมีคำถามเท่านั้น เราจะไม่เปิดเผยข้อมูลของท่านต่อบุคคลอื่นไม่ว่ากรณีใดๆ



บริการธุรกิจตอบรับ

ใบอนุญาตเลขที่ ปช. 2/191 ปณ. มาบตาพุด  
ถ้าฝากส่งภายในประเทศไม่ต้องฉีกตราไปรษณียากร

กรุณาส่ง

หน่วยงานบริหารความยั่งยืนองค์กร

บริษัท พีทีที โกลบอล เคมิคอล จำกัด (มหาชน)

555/1 ศูนย์เอนเนอร์ยี่คอมเพล็กซ์ อาคารเอ ชั้น 14-18

ถนนวิภาวดีรังสิต แขวงจตุจักร เขตจตุจักร

กรุงเทพฯ 10900



พิมพ์ตรงรอยประทับ





PTT Global Chemical Public Company Limited  
555/1 Energy Complex Building A, 14<sup>th</sup>-18<sup>th</sup> Floor,  
Vibhavadi Rangsit Road, Chatuchak, Chatuchak,  
Bangkok 10900 Thailand  
Tel : 66 (0) 2265-8400 Fax : 66 (0) 2265-8500  
[www.pttgcgroupp.com](http://www.pttgcgroupp.com)



This report is certified with zero greenhouse gas emission  
by Thailand Greenhouse Gas Organization (Public Organization),  
which is one of our environmental impact reduction goal.