

BALANCE TO GOAL



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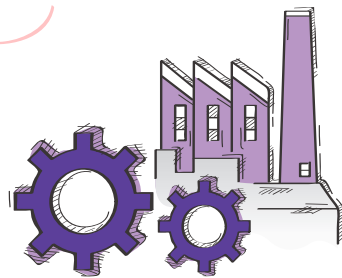


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Message from the President

It was a very challenging year in 2018 for the business, Oil price fluctuation, Trade war between the US and China, Aggravating climate change, and Human Rights violation. All these issues are material to IRPC's operations and thus constantly managing in order to become more responsive to all stakeholders

In terms of Economic, built after the success of EVEREST, EVEREST Forever (E4E) and GDP has been initiated. The 3 powers of GDP will offer IRPC better competitiveness and transform IRPC to digitized organization with sustainable business growth.

Environmentally, IRPC is committed to operating in line with Eco-factory principles aiming at operational eco-efficiency and public participation. Furthermore, cooperating with Rayong province to level up to Eco Industrial Town. As for climate change adaptation, IRPC declared its intention and set up strategy to reduce GHG emission including impacts, at the same time, seeking for new business opportunity to develop environmentally friendly products

On social matters, IRPC still and always upholds the principle of "Care, Share, Respect" to grow side by side with the community and society. In 2018, a budget of 3% of 3 year averaged net profit is allocated to CSR projects in order to ensure continuity and build trust with the community and society. Several projects aiming at creating better living quality including Lam Sai Yong Model, From Bench to Community, Etc.

As a result of hard works, IRPC has been praised for its excellence and leadership in sustainable development receiving Thailand Quality Class (TQC) award from Office of Thailand Quality Award, the Best Sustainability Listed Company Award for 2018 from the Stock Exchange of Thailand and, on the international level, a member of the Dow Jones Sustainability Indices in the Oil and Gas Refining and Marketing Industry for the 5th consecutive year, being the industry leader with highest scores and Industry mover with most improved scores among global companies in the same industry

On behalf of IRPC, I would like to thank all stakeholders from every sectors who have taken part in driving IRPC's success in the past year. We will continue to strive towards our vision of becoming the leading integrated Petroleum Complex in Asia yet being environmentally conscious, whilst sustainably creating shared values for the society.



Mr. Sukrit Surabotsopon

President

(Appointed: 1 Oct 2013 - 30 Jan 2019)



Message from the President



Since the first day I stepped in as the CEO, I am confident that IRPC is an organization with vast potential, advanced manufacturing technologies, excellent management, as well as experienced and exceptional employees. This reflects through the success of the EVEREST Project under the leadership of Mr. Sukrit Surabotsopon. Building on that success, today IRPC implements the GDP strategy to drive growth and strengthen the business, in line with the company's vision of becoming "Leading integrated petrochemical complex in Asia by 2020".

By adhering to the Triple Bottom Lines principle, financial performance (Profit), environmentally friendly operation (Planet), and balance stakeholders (People), IRPC places utmost importance on being the organization with sustainable development in line with the United Nations Sustainability Development Goals (SDGs), being good corporate citizenship with environmental and social responsibility and good corporate governance. In 2018, Issues that are material to IRPC's operation include Eco Efficiency, Innovation and Product Development, Human Resource Management, Climate Change Adaption and Water Management, Occupational Health and Safety, Community Well-Being, and Customer Relationship Management, etc. These issues are prioritized and approved by the Management Committee to find the most effective management measures

As a result of the executives and all employees' continuous efforts on sustainable development in the past year, not only business success, IRPC has been acknowledged by renowned institutions at both national and international level, for example, Best Sustainability Awards from the Stock Exchange of Thailand and 2018 Thailand Quality Class award, NACC Integrity Award from National Anti-Corruption Commission, and being listed as Industry Leader of Dow Jones Sustainability Indices, showcasing outstanding sustainable development, in which IRPCs take pride in.

All success mentioned above would not have been possible without supports and collaborations from all stakeholders. Therefore, I would like to take this opportunity to express my sincere gratitude and I intend to carry on IRPC's way of work that balances all stakeholder and drive GDP to success as well as continue to build to achieve sustainable growth.

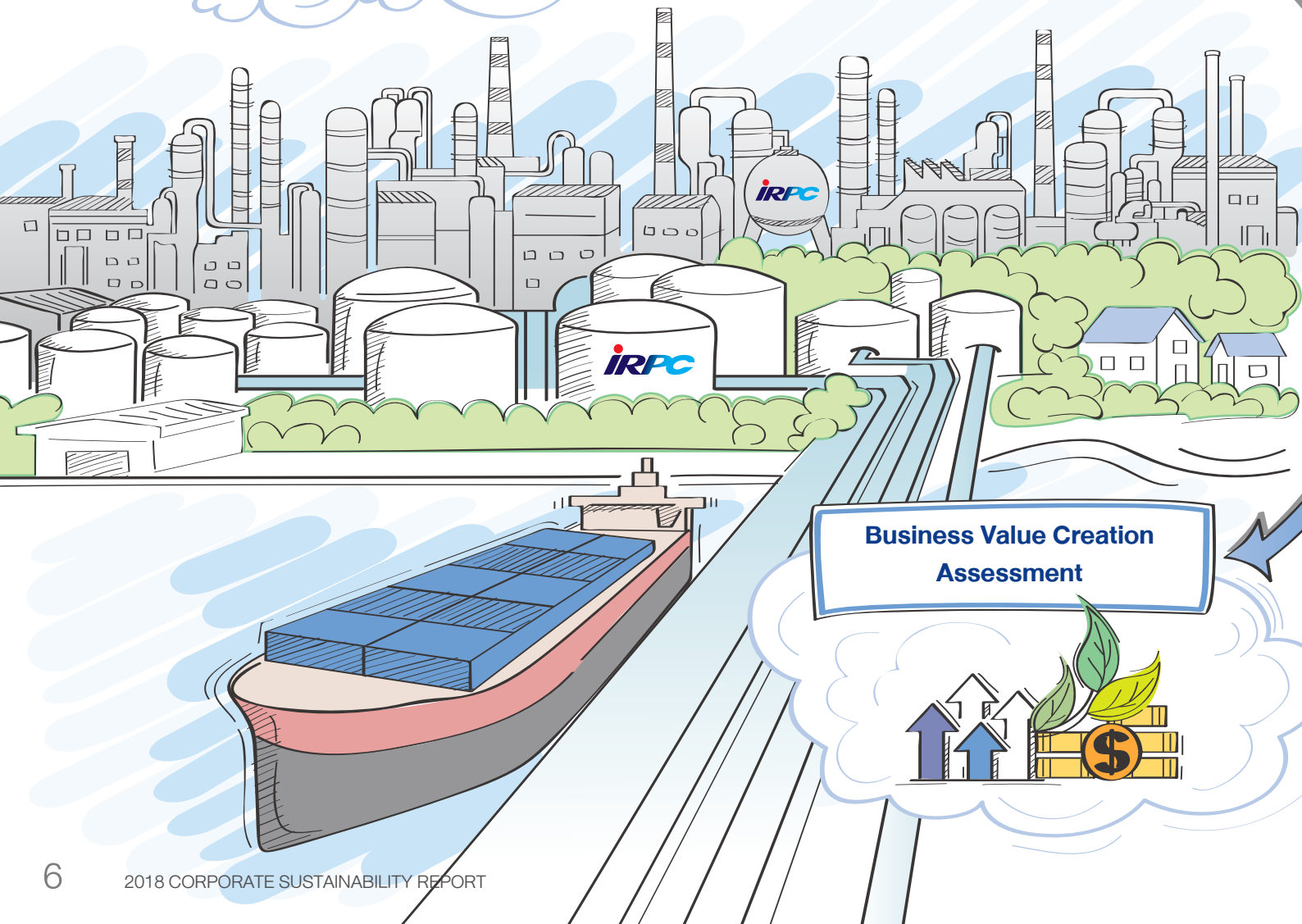
Mr. Noppadol Pinsupa
President

(Appointed: 1 Feb 2019 - Present)

ABOUT IRPC

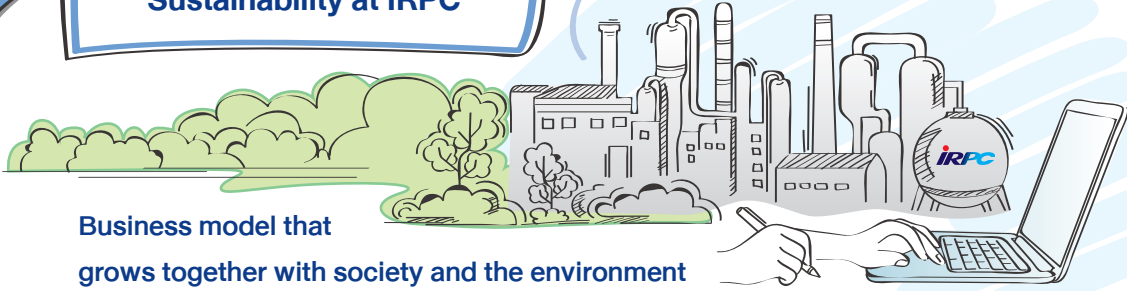


Entering 12th year as the first fully integrated petrochemical complex, IRPC aspires to continuously operate and develop our business to be a strongly growing organization along with creating shared values for our stakeholders sustainably.



Sustainability at IRPC

Business model that
grows together with society and the environment



Corporate Governance and Business Ethics

- Good corporate governance
- Business ethics
- Whistleblowing management
- Enhancement and awareness raising for good corporate governance



Risk and Crisis Management

- Crisis management
- Risk culture
- Anti-corruption risk
- Cyber risk management



Stakeholder Engagement

- Shareholder/ Investor
- Employee
- Customer/Consumer
- Supplier
- Community, social, and environment



Vision

Leading Integrated Petrochemical
Complex in Asia by 2020

Mission

Strive for Operational Excellence
Aspire towards High Performance Organization
Be Responsible for Community, Society and
Environment
Create Value-added Products
Foster Innovation and New Business

Values



INDIVIDUAL OWNERSHIP

Having Entrepreneurial Spirit
or Mindset



RESPONSIBILITY FOR SOCIETY

Growing with a Sense of Responsibility to
Society and the Environment, Committed
to Response all Stakeholders' needs



SYNERGY

Working Together to Reach
Common Goals



INTEGRITY AND ETHICS

Believing in Working with Honesty with
Transparent Management and Good
Governance



PERFORMANCE EXCELLENCE

Setting Challenging Targets, Work Hard
to Achieve a Better Result by Continuous
Development and Improvement Process



TRUST AND RESPECT

Building Trust and Confidence among
Customers, Employees, Suppliers and
Every Stakeholder



INNOVATION

Increasing Capability and Skills to Create
Innovation based on Knowledge about
Products, Services, Operations and
Processes

Strategic Goals



BIG

**5% pa Revenue
Growth with 10% pa
EBITDA Growth**

Achieving 5% Annual
Revenue Growth and 10%
Annual EBITDA Growth



STRONG

**1st Quartile ROIC
in Petroleum &
Petrochemical Industry**

Becoming a Top-Quartile
Petrochemical Company in
Terms of a Return on Invested
Capital (ROIC) by 2020.



LONG

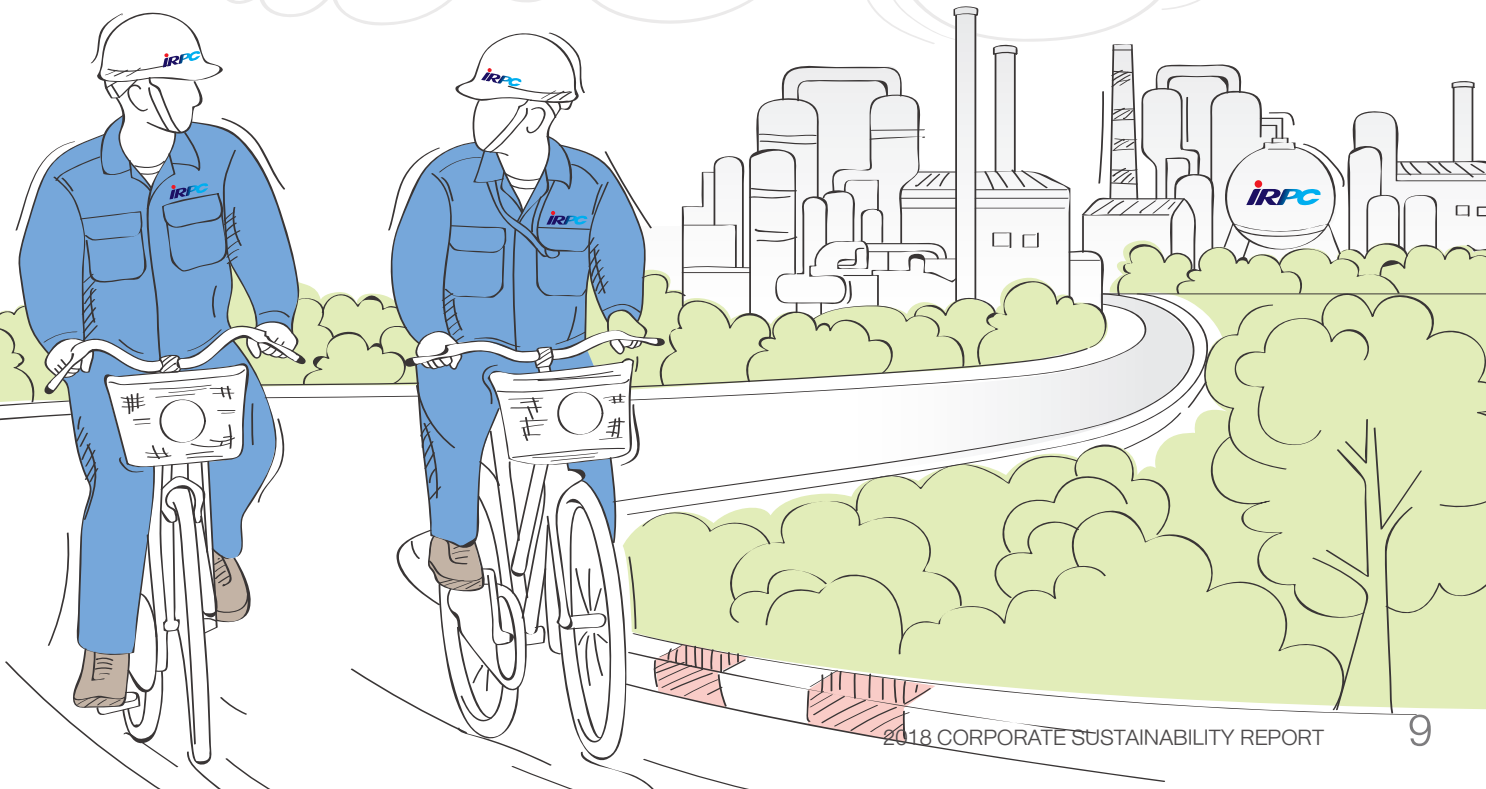
**Member of DJSI
Emerging Markets
Universe**

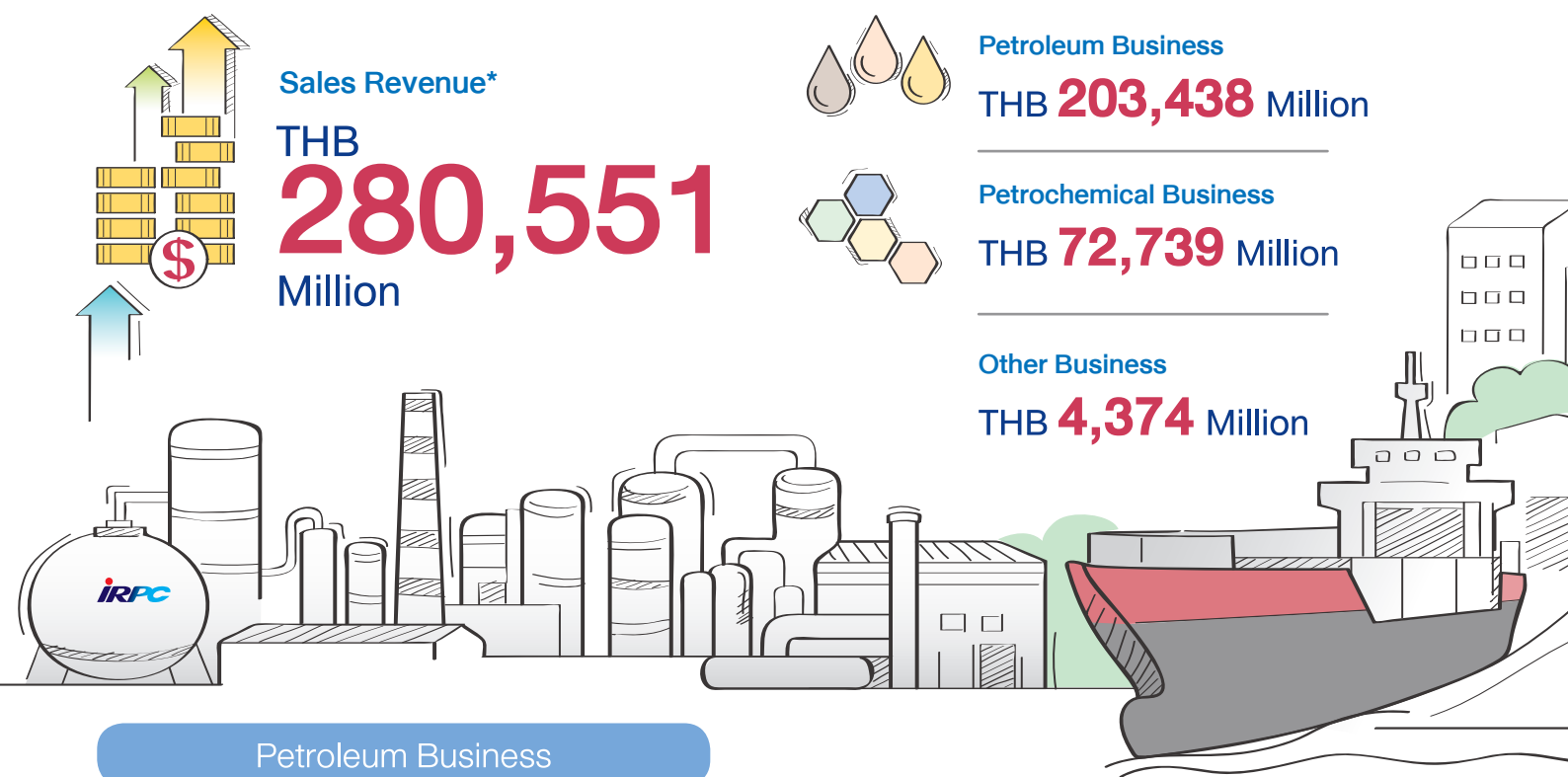
Maintaining a Member Status
of Dow Jones Sustainability
Indices (DJSI) in Emerging
Market of Oil & Gas Refining
and Marketing Industry.

IRPC Public Company Limited is the first fully integrated petrochemical complex in Southeast Asia, with petroleum business that can produce several types of petroleum products, including Naphtha, which will be used as feeds for its integrated petrochemical business. However, IRPC is mainly focused on improving its petrochemical business, since its products yield more added values and present more opportunity to grow. Apart from these, IRPC also operates other supporting business, namely industrial infrastructure, e.g. deep-sea port, steam and power plants, oil depots at 4 locations;

Samut Prakan, Rayong, Ayutthaya and Chumphon as a product distribution hub.

Moreover, IRPC also specializes in services, for examples plants and machines maintenance, system installation and IT training, testing and analysis, engineering, and logistics, etc.





IRPC's refinery has a total capacity of 215,000 barrels per day constituting of ADU1, ADU2, ranking as the third highest capacity in Thailand. Products of petroleum consisted of LPG, naphtha, benzene, diesel, and heavy oil. Furthermore, IRPC also has a base oil factory with the production capacity of 320,000 tons per year as well as an asphalt plant with the production capacity of 600,000 tons per year which is the highest capacity in Thailand. IRPC is also a producer of vehicle tires and rubber process oil which have been well-accepted internationally and certified for quality under the brand "Terramaxx"

Petrochemical Business

IRPC is a manufacturer of upstream petrochemical such as olefins (propylene, ethylene, acetylene, and butadiene) and aromatics (toluene, mixed xylene and benzene) and styrene monomer, with production capacity of 1,387,000 367,000 and 260,000 tons per year, respectively. These products are used as feedstock for downstream petrochemical manufacturing which includes polyolefin pellets (HDPE, PP) under production capacity of 140,000 and 775,000 tons per year, respectively, polyol 25,000 ton per year, Polystyrenics (ABS, SAN, EPS and PS) with production capacity of 352,000 tons per year. All these are supplied to plastic manufacturers for readymade plastic products both domestically and internationally under the brand called 'POLIMAXX'.

IRPC strives to adaptively move forward with global megatrends, improve people's life quality and raising our competitiveness internationally by conducting innovative research on styrenics product group i.e. Green ABS, ABS Powder, Impact modifier-MBS, Anti-dripping Additive, Anti-Bacteria; as well as polyolefins product group i.e. UHMW-PE, Polyolefin Catalyst, Baby Bottle Polypropylene, Antimicrobial Compound etc.

Other Supporting Businesses

IRPC provides basic infrastructures and public utilities for factories located in IRPC Industrial Zone and external customers, including deepwater port, storage tanks, steam and power plant, and asset management, all tailored to fully support business operations with the same standards as general industrial estates.

Deep-sea Port and Storage Tanks

IRPC operates deep-sea port business which provides harboring services for domestic and international freight forwarding. In doing so, we offer modern and internationally standardized infrastructure and public utilities as follows:

Remark: *Sales includes Petroleum Sales (including excise tax), Petrochemical Sales, Power and Utilities Sales, Sales of storage tank and port service, etc.



- **Bulk and Container Terminal (BCT)** - 6 ports with the capacity to support vessels sized of 800 - 150,000 tons. The terminal provides general cargo handling services such as steel, palm shell, coal, ore, etc. As of current, the terminal handles approximately 1.5 million tons of goods annually and harbors approximately 240 cargo ships per year.
- **Liquid & Chemical Terminal (LCT)** - consists of 6 large ports with the capacity to support vessels sized of 1,000-250,000 tons. This terminal provides cargo handling services for petrochemical products, liquid petroleum and gas. Currently, the terminal handles approximately 16.5 million tons of products annually and harbors approximately 2,100 ships per year
- **Petrochemical and petroleum storage tanks** IRPC has over 300 petrochemical and petroleum storage tanks with up to 2.9 million tons of storage capacity to support the selling of petroleum products and providing services to external customers. There are 5 oil depots including Rayong Oil Depot, Phra Pradaeng Oil Depot, Ayutthaya Oil Depot and Chumphon Oil Depot; all of which are company's properties except for Maeklong Oil Depot whereby the company rented for operation. Each of the oil depot contains harbor to provide cargo handling services that will facilitate efficient operation and distribution as well as to save costs and time for customer's product transportation.

Investor Support Services within IRPC'S Industrial Zone

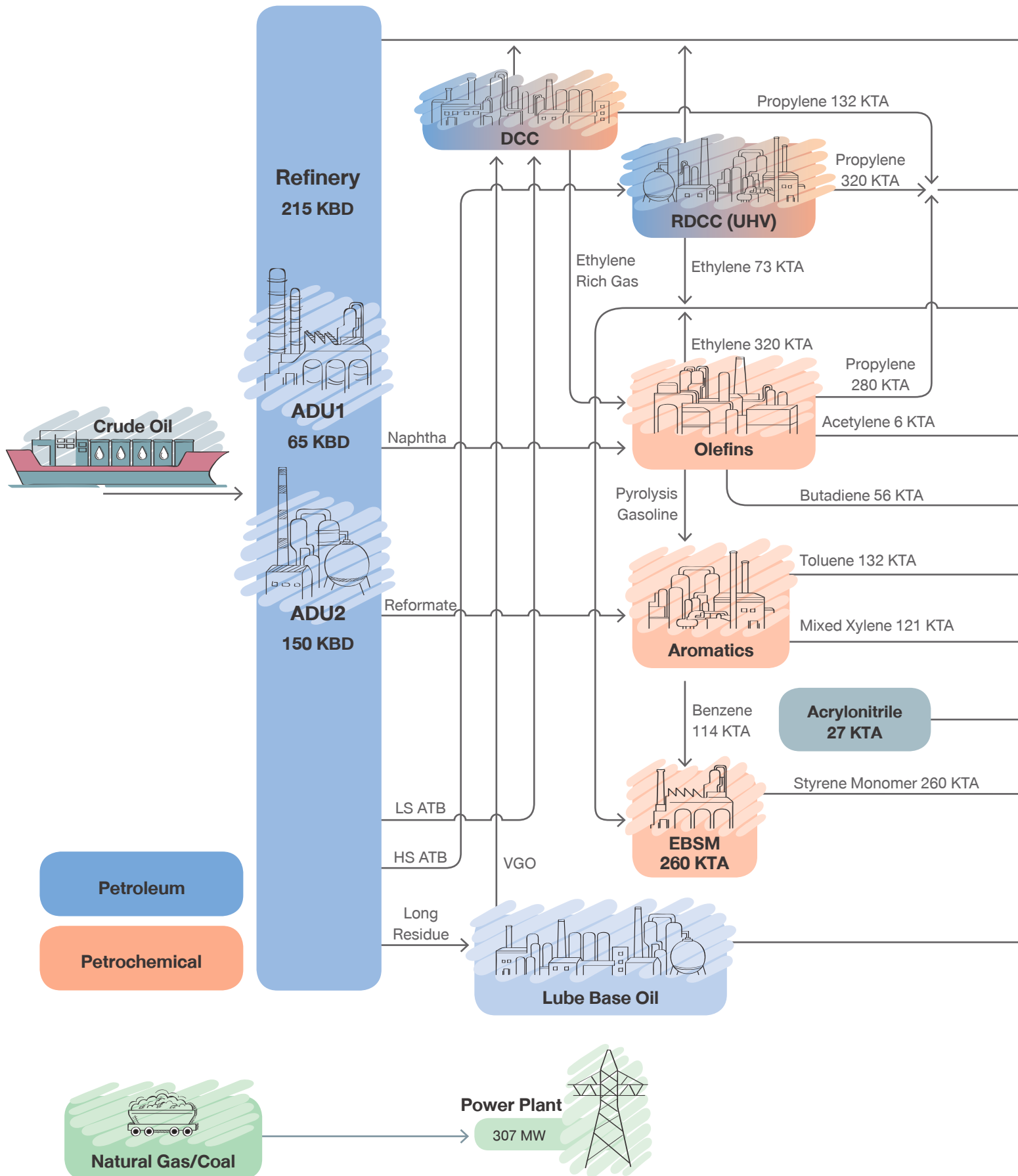
Based on the experience in petroleum and petrochemical business, IRPC creates services to support investor's businesses within IRPC's industrial zone which include factory and machinery maintenance service; system installation service and information technology trainings; laboratory testing and analysis services; metrology service center certified by ISO/IEC 17025; engineering services; logistics services; truck weighing service; industrial safety training services and metallurgical services.

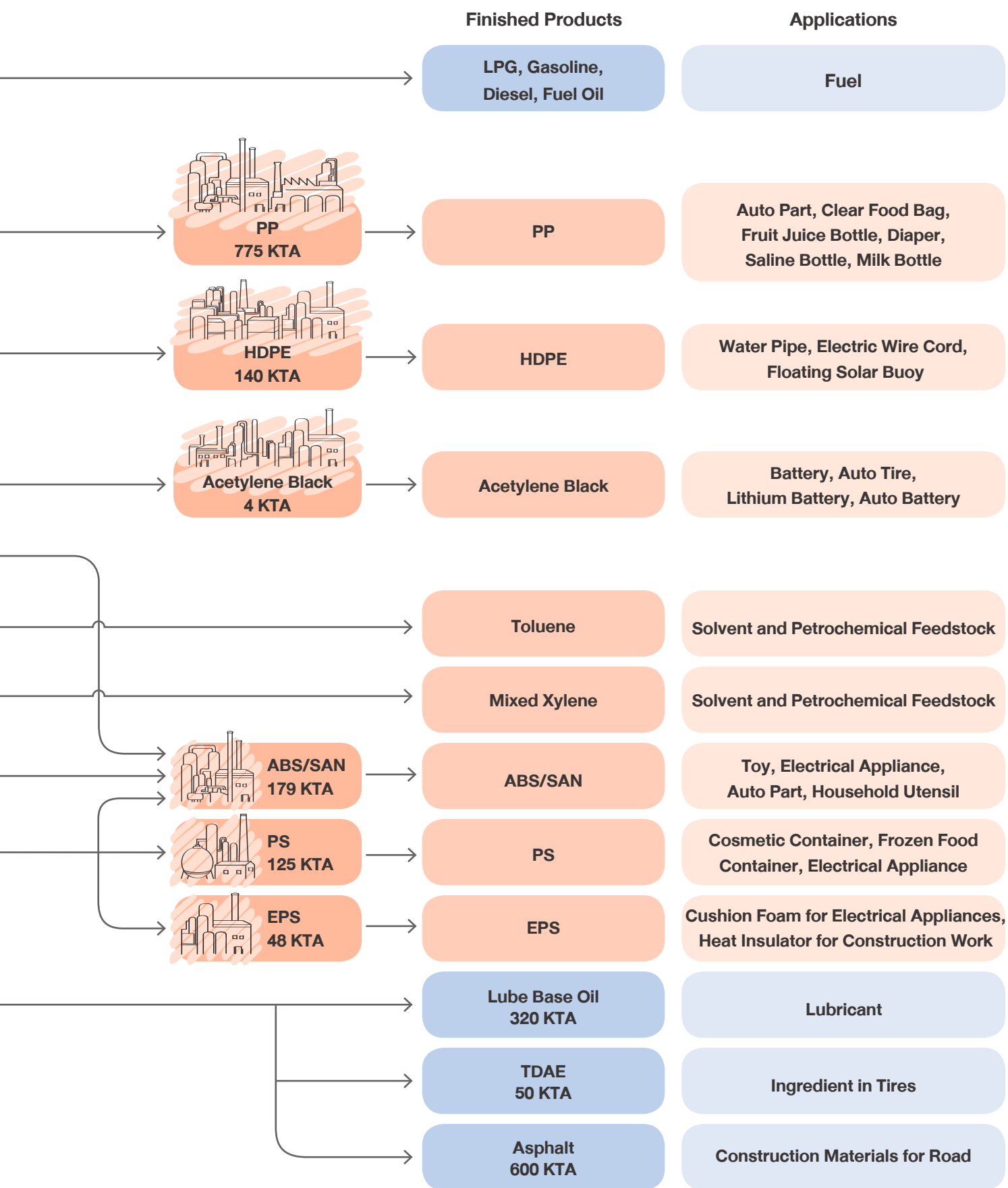
Asset Management

IRPC manages a total of 12,000 rai (approximately 4,743 acres) of land properties located in Rayong province and other provinces. Land management has been divided into 3 major groups:

- **Industrial zone project:** IRPC's industrial zone at Amphoe Mueang district in Rayong province with the aspiration to develop these lands into ecological projects for both industrialisation and other potential possibilities. The purpose is to aid the expansion of industrial sector and support Eastern Economics Corridor Development (EEC) which is one of the government's policies for investment promotion
- **Industrial estate project:** Rayong Industrial Estate (Baan Khai) at Baan Khai district in Rayong province
- **Potential land:** Large land plots with the potential for development in Jana district of Songkla province and other land plots in Rayong, Chiangmai and Lamphun provinces

Integrated Refinery and Petrochemical Complex Flow Chart





BUSINESS MODEL

INPUT

VALUE-CREATING PROCESS

Financial Capital



Operating Cost THB 264,637 Million
Equity THB 87,380 Million

Intellectual Capital



R&D Investment THB 454 Million
12 percent doctoral staff of
Total RD employees
5 patents per investment at THB 33 Million

Human Capital



Total Employee 5,466 persons
Employee training hours 48 hours
per person per year
Employee development expenses
THB 180 Million

Manufactured Capital



Property, Plant and Equipment
THB 127,737 Million
Spending on purchasing of products and
services from suppliers and contractors in
Rayong THB 2,568 Million

Social & Relationship Capital



Corporate Governance
Business Ethics
Relationship with stakeholders
Human Rights

Natural Capital



Crude Oil consumption
10 million Tons
Water consumption 37 million m³
Energy consumption 59 million GJ

Create Value with Corporate Strategy...

Power of **Growth**

Power of **Digital**

Power of **People**

Management Commitment

Supply Chain Management

- IRPC Supplier Code of Conduct
- IRPC Purchaser Code of Conduct
- IRPC Sustainable Procurement Management Manual

Tool: ISC 4.0 and PRO 4.0

Customer Relationship Management

- CRM Procedure Manual

Tool: B2B / Big Data Analytics / Market and Competitor Intelligence Dashboard / Control Tower: Logistics and Client Excellence

Operational Eco-Efficiency

- Operational Excellence
- E4E Project

Asset integrity and Occupational Health and Safety

- Process Safety Management

Climate Change

- Climate Strategy
- Water Management for sustainability

Tool: EKON\$ / idMS

Innovation, Product stewardship and Specialty Products

- Innovation Framework

Tool: EKON\$ / R&D Digital Dashboard

Community Well Being

- Community Development and Community Relation Manual

Human Right

- Human Right Policy

Become Leading Integrated Petrochemical Complex in Asia

Shareholder/Investor



Revenue THB 280,551 Million
EBITDA THB 18,344 Million
Operating profit (Loss) THB 10,197 Million
Payments to providers of capital THB 10,435 Million

Customer/Consumer



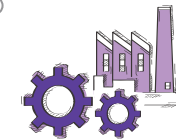
Petroleum & Petrochemical Product
12.5 Million Tons
Customer Satisfaction 89.1%

Employees



Organization Health Index 86%
Employee Engagement 83%
Employee wages and benefit THB 9,270 Million
Total Recordable Injury Rate 0.36 case per million hour worked

Supplier



100% of new suppliers were screened using environmental, human rights, and labor practices criteria.
Supplier Satisfaction 90.4%

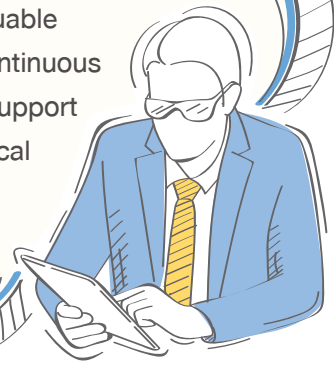
Community and Environment



Community Satisfaction 88.5%
THB 230 Million to support social enterprise
27,954 hours of volunteer employees
THB 194 Million to Environmental protection expenditures and investment
GHG Emission (Equity basis) 4.7 Million tCO₂e
55,598 tons of Total waste disposal

Sustainability at IRPC

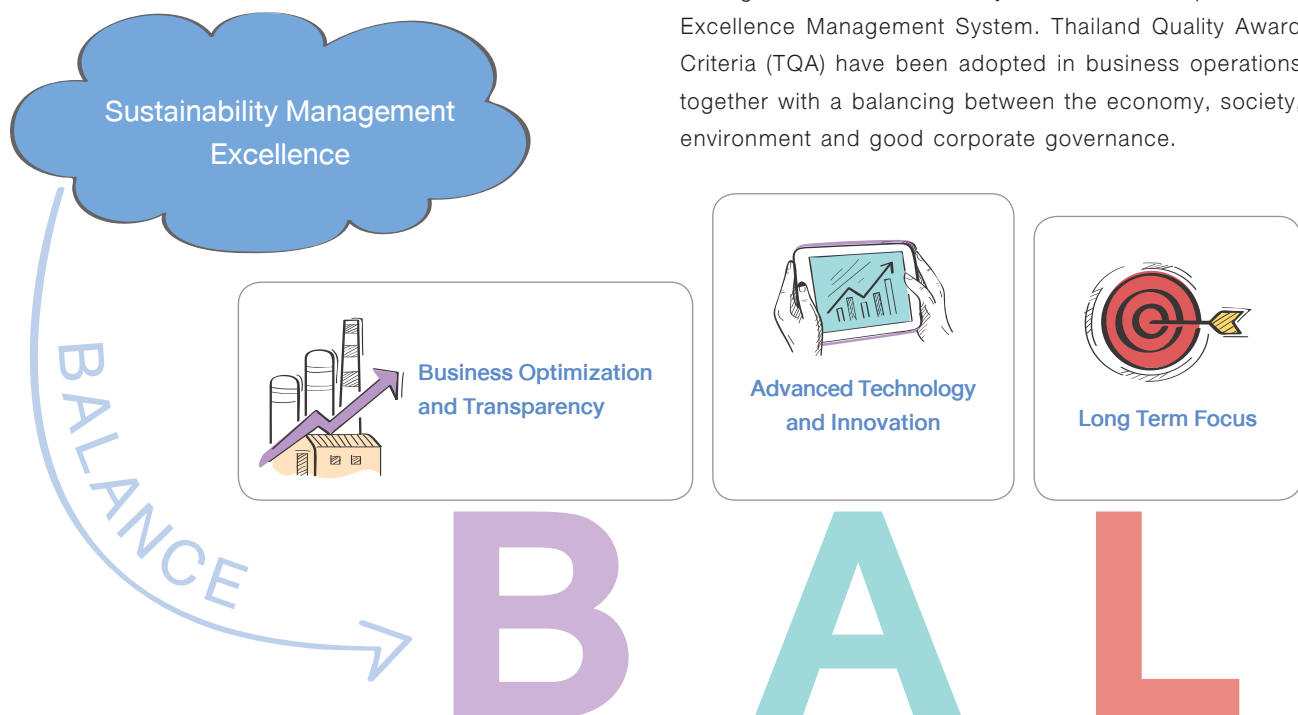
IRPC has always believed that the key for sustainable growth is to operate business efficiently and transparently. Foresight and commitment to success are driven by the excellent IRPC people who are competent and responsible, being an organization with caring and creating value for our valuable stakeholders, having an environmentally friendly operations and continuous improvement in technology and innovation. The aim of this is to support IRPC's vision of becoming the leading integrated petrochemical complex in Asia by 2020.



Management Approach

IRPC has established a committee which is considered to have the highest authority regarding the responsibility for sustainability as IRPC's president also took on the

responsibility as the committee's chairman. With regards to the policy announced in 2015 for sustainability management, IRPC has defined the strategic framework for Sustainability Management which is a key factor of the Operational Excellence Management System. Thailand Quality Award Criteria (TQA) have been adopted in business operations together with a balancing between the economy, society, environment and good corporate governance.





SD Academy

IRPC realized the important of driving sustainability from the foundation of the human resources strength, therefore, workshop training on sustainability has been conducted to provide knowledge to IRPC people in both management and operation level. The expectation of the workshop is to apply knowledge and understanding of sustainability in daily operation in order to achieve the excellent organization target including to measure the level of understanding on organization sustainability policy and raise the level of effective implementation.



**Accountable
People**



**Neighbor
Caring**



**Creating
Shared Value**



**Environmental
Friendly Operation**

ANCE

Performance

As a results of the determination and commitment to achieve the challenging targets as followed

MEMBER OF

**Dow Jones
Sustainability Indices**

In Collaboration with RobecoSAM



Being Industry Leader and ranked as a Gold Class member of the Dow Jones Sustainability Indices (DJSI) under the Emerging

Market category for Oil and Gas Refining and Marketing for the 5th consecutive year. In addition to being an Industry Mover which is given to the company with the highest score increase in the OGR industry, thus being confidence for domestic and international investors.



**To become
Eco Industrial Zone**

Being certified as Eco Industrial Zone (EIZ) Level 5 and obtained Eco Factory Certifications for 25 factories cumulatively.



Thailand Quality Class Award

Received 2018 Thai Quality Class (TQC) award.



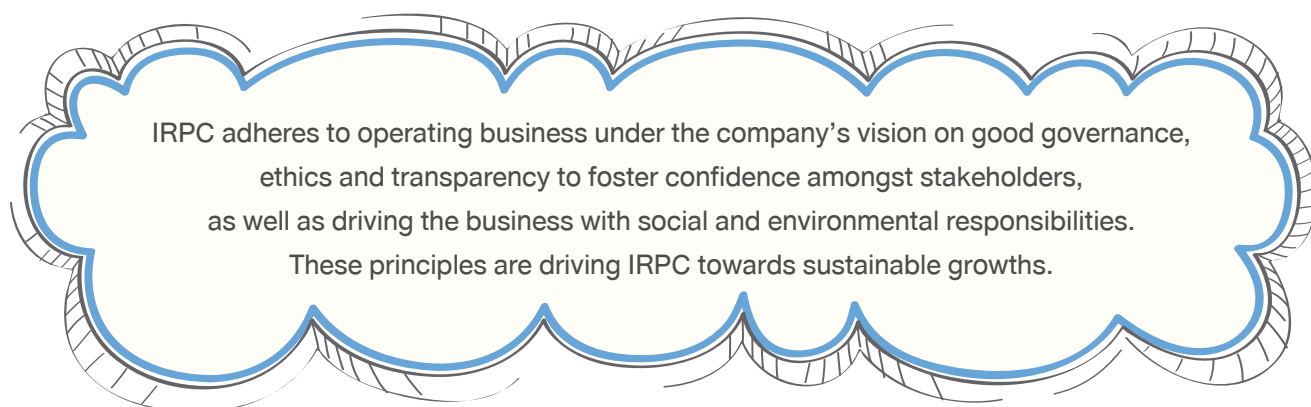
**Building Sustainability
Mindset amongst
IRPC employees**

78 score were given for sustainability participation in 2018. This included fostering knowledge and understanding about sustainability management for employees at all levels.



Obtaining 2018 Sustainability Report Award in "Excellent" from the Sustainability Report Award which is a collaborative project conducted with the CSR Club from Thai Listed Companies Associate of Securities and Exchange Commission in Thailand and Thaipat Institute.

Corporate Governance and Business Ethics



Good Governance

IRPC has determined good governance approach as corresponding to the United Nations Global Compact (UNGC), Guidelines of the Stock Exchange of Thailand and ASEAN Corporate Governance Scorecard. The company has adopted good corporate governance policy, published CG Handbook, and required members of the Board, Executives, and employees, as well as its subsidiaries to acknowledge and enforce the CG policy. IRPC focuses on cultivating awareness of strong business ethics and code of conduct on good governance, as well as Corporate Governance Code 2017 developed by the Stock Exchange of Thailand. More information can be found in IRPC 2018 Annual Report.

Management Structure

As of 2018, the Board of Directors consists of 14 members, with 7 members as independent member. IRPC recognizes the significance of structure and qualifications of members of the Board, for the benefit the organization and stakeholders. Therefore, the company appointed the Nomination and Remuneration Committee to recruit members of the Board of Directors based on their competency, knowledge and experiences in their respective professions, with consideration on qualification in accordance with the law and regulations set by the Securities and Exchange Commission of Thailand. IRPC also uses skill matrix system to consider the candidate, without discriminating against sex, age, races and religion. The compensations for the Directors are approved by shareholders, as incentives and to retain quality Directors in the organization.

Evaluation of the Board of Directors

The evaluation of the performance of the Board of Directors was conducted by the Board of Directors using cross evaluation method annually and by external auditors once in 3 years. The most recent evaluation was conducted in the beginning of 2019. In addition, IRPC also participated in the assessment of Corporate Governance Report (CGR) by Thai Institute of Directors (IOD) and The Stock Exchange of Thailand (SET). IRPC was evaluated as "Excellent" or 5 symbols for 10 consecutive years, putting IRPC in the Top Quartile of listed companies with free-float market capitalization higher than THB 10,000 Millions. The company also received the score of 100 from the evaluation by Thai Investors Association for IRPC's excellent Annual General Meeting of Shareholders where the company presents business performances annually. These achievements reflects IRPC's steady improvement in its corporate governance.

Results of Assessment by the Corporate Governance Report (CGR) (score)



IRPC's Board of Directors

Percentage of Independent Directors in the Board of Directors

50

Percentage of women Directors

7



The meeting attendance of the entire Board of Directors (percentage per year)

97



Energy (Oil and Gas Refining and Marketing)



7

The average Board tenure (year)

3



Experiences of the member of Board of Directors

Engineering



6

Business Management



13

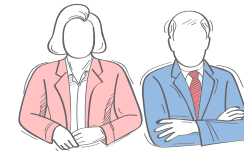
Corporate Governance



13

Average age of Directors (year)

58



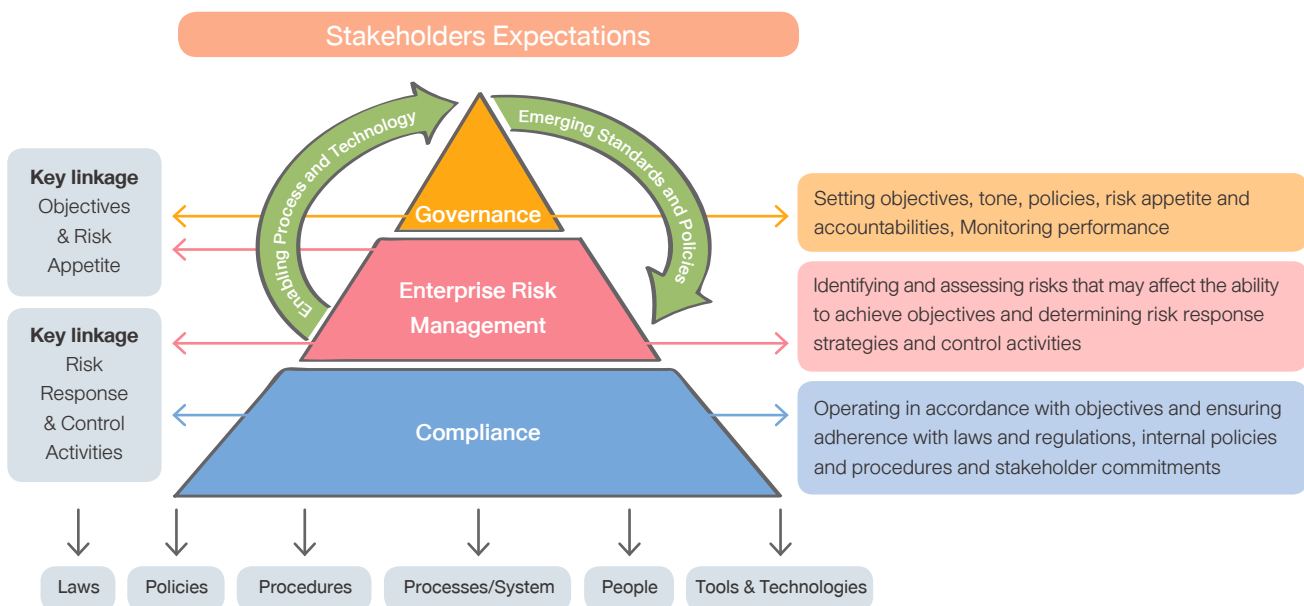
A Director must not hold position as director simultaneously at other 4 listed companies, and executive directors should not hold the same position in more than 2 other listed companies



Business Ethics

IRPC has adopted Corporate Governance Policy and the CG Handbook, in order to communicate CG guidelines to employees throughout the organization, and to enhance understanding and applications in their operations. In addition, in 2018, IRPC enforced GRC principles, which

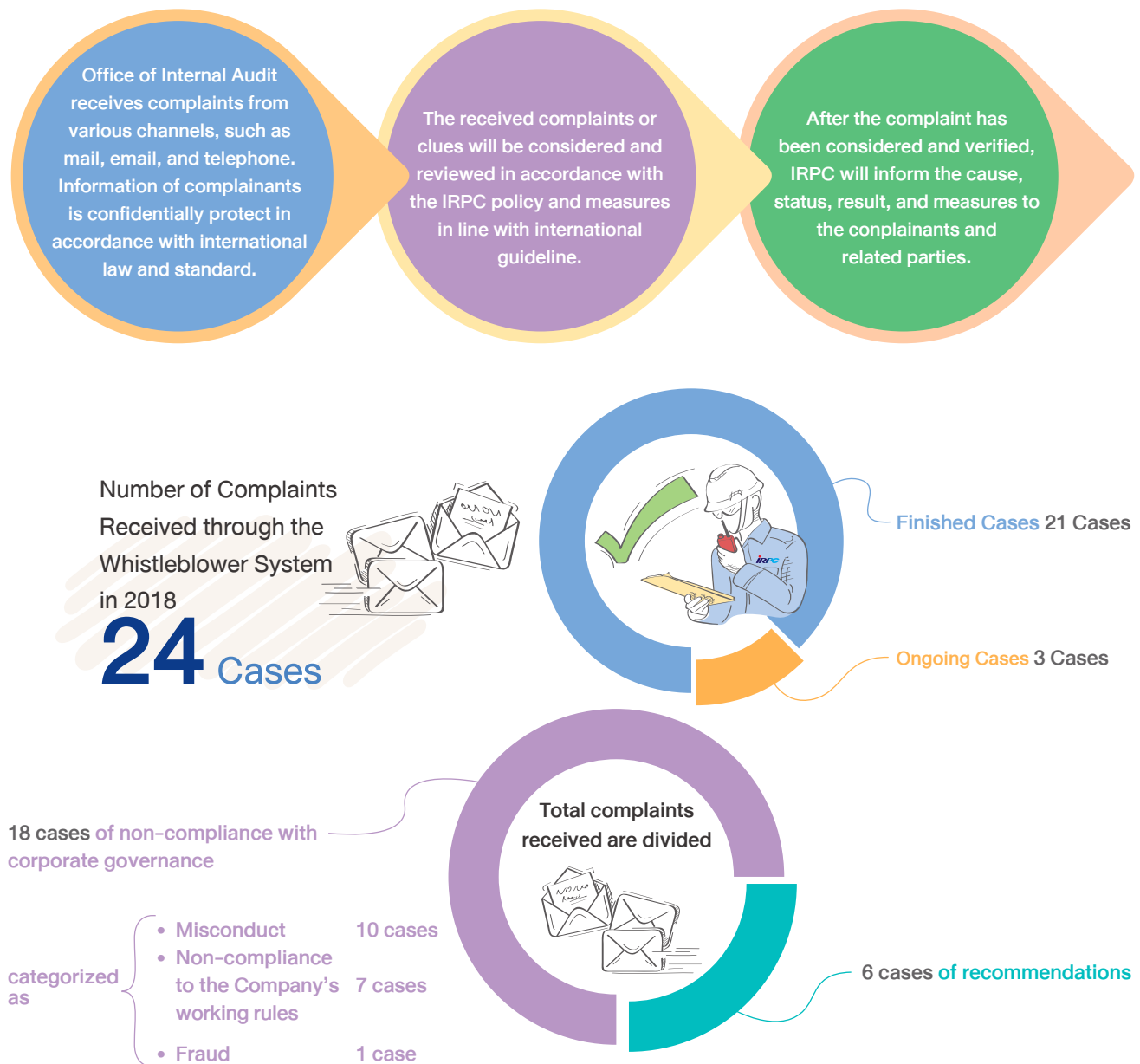
connects the principles of Corporate Governance, Risk Management, Internal Control and Corporate Compliance, to drive the company to become the organization with business ethics and integrity.



Complaints Management

IRPC has mechanisms dedicated to receive complaints and traces of incompliance with laws, regulations, good governance, corporate governance, and business ethics. The channels to receive complaints include mailing to Chairman of the Audit Committee, the President, or Internal Audit Department via email and PO Box 35. In 2018, IRPC

has updated the complaints management process to better clarity of responsible functions. The timeframe of case processing was also set, from the step of investigation, reporting to the Board Directors, Management Committee, and other departments, to the step of information recording to close the case.



As a consequence, disciplinary action was taken fairly and transparently against each violation case, however, there was no complaint found related to anti-corruption policy or fraudulent and no significant damage found. The cases were assigned to Internal Audit and relevant business units for verification and the reports were made to the Audit Committee and the Board as well as the related party in a sequence specified in Complaint Management Procedure.

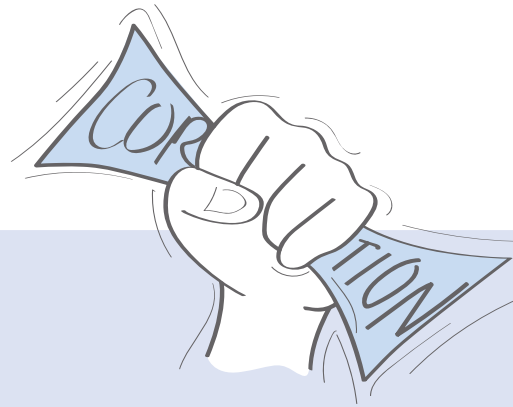
Enhance and Awareness Raising for the Good Corporate Governance

IRPC CG Day

The objective of IRPC CG Day 2018 is to share knowledge, foster understanding and raise awareness for good governance under the topic “Good Governance in the 4.0 era”. The event organized a discussion on “GRC for Operations in the 4.0 era”.

IRPC CG Roadshow 2018

Organized on 30 November 2018, following the concept of “Build power against corruption, Respect human rights, Focus on transparency, Towards the organization of sustainability”, the event is designed to foster knowledge and understanding of human rights and anti-corruption to the executives, employees, and business partners in order to promote ethics and transparency in the private sector. Honorably, the event was hosted by Dr. Serenont Suthi, the representative of Thailand in ASEAN, who led the discussions on “Human rights in the petrochemical industry”; and Mr. Kulvej Jenwattanawit, the director of the Thai Institute of Directors and Thailand’s Private Sector Collective Action against Corruption (CAC), who led the discussions on “Thai private sector role in anti-corruption”.



IRPC and PTT Group participated in “International Anti-Corruption Day (Thailand)”

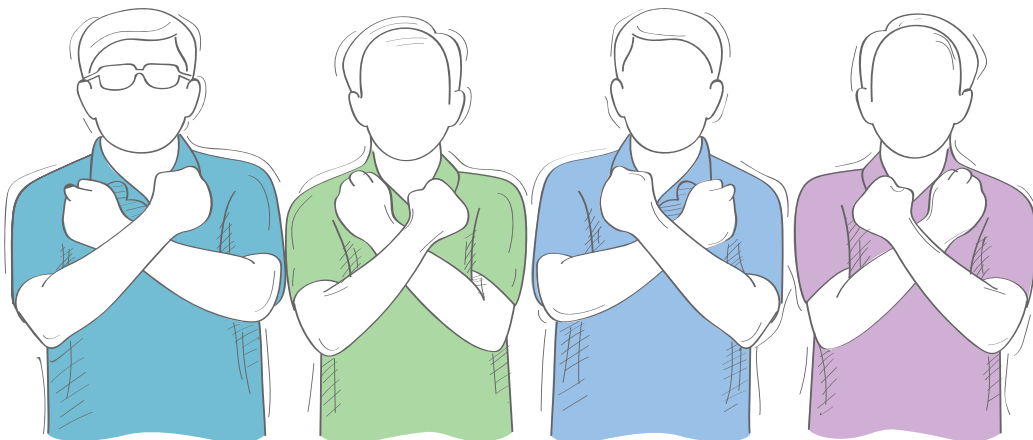
Organized by Office of the National Anti-Corruption Commission on the 7 December 2018 in the topic of “Zero Tolerance: Thais do not tolerate corruption”. The event was designed to portray the power for creating transparency, zero tolerance for corruption as well as to promote and support integrity in Thai society in order to build “Clean Thailand all unite against corruption”. This is to operate accordingly to the four pillars of UNGC (Labor, human rights, environment and anti-corruption) in which IRPC has joined since 2011.

E-Ethic

IRPC has published conflict of interest report in an online format (E-Ethics) in which all (100%) of executives and employees at all levels are required to reports on items that are suspected to be in conflict with the company's interest. In 2018, the company has announced “Measures to prevent conflicts of interest” to build understanding of the issue and encourage strict compliance.

GCNT

IRPC is among the 15 founding companies of the Global Compact Network Thailand (GCNT) registered on 27 December 2017 and officially launched on the 13 December 2018. The objective of the GCNT is to support and drive private sectors to conduct business according to the four pillars of United Nations Global Compact (UNGC - on Labor, human rights, environment and anti-corruption).



Performance



Employees acknowledged
of IRPC Code of Conduct
(Percentage)



100



100



100



100



Employees trained
on Business Ethics
(Percentage)



100



100



100



100



Business Units audited by
Internal Audit Department
(Units)



25



25



26



26



Business Units with
Corruption Prevention Plan
(Units with high risks of
corruptions)



6



6



6



6

Performance Indicators

2018
Performance

2018
Target

2019
Target

2020
Target



IRPC received ASEAN Corporate Governance Awards as a Thai listed company that ranked in TOP 50 ASEAN PLCs according to ASEAN CG Scorecard

IRPC is nominated for Integrity Award 2018 organized by the National Anti-Corruption Commission (NACC) to learn and implement NACC's good practice for organizational improvements as well as reinforcing confidence to stakeholders of IRPC's capability in terms of transparency and its' Anti-Corruption guideline.

Risk and Crisis Management

IRPC puts a strong focus on risk and crisis management with the aim to control economic, social, and environmental risks within IRPC's risk appetite, in order to reduce business impacts while navigating uncertainties. Systematic and effective risk and crisis management enables IRPC to identify and manage risks with optimal resources utilization, and to steadily achieve the business objectives. These achievements are the results of the strong risk culture in which IRPC has long fostered throughout the organization.

Management Approach

IRPC adopted Risk Management Policy and Enterprise Risk Management Manual to set directions on risk management and communicate with employees for effective implementation of the policy throughout the business operations. IRPC's risk management framework is in line with Enterprise Risk Management System and Business Continuity Management System which complies with IRPC's Operational Excellence Management System framework (OEMS), as well as ISO 31000:2009 and ISO 22301:2012.

IRPC's risk governance structure consists of Risk Management Committee (RMC), Risk Management Steering committee (RMSC), Risk Management Division, and Audit Committee. First, the RMC is appointed by the Board of Directors, with the mandate to formulate policies and recommendations on risk management in areas related to business operations to promote efficiency and appropriateness of IRPC's risk management. Second, the RMSC, chaired by the CEO, is in charge of overseeing the risk management in line with the Company's policy. Third, Risk Management Division is responsible for analyzing, monitoring and reporting internal risk management performances. Fourth, Audit Committee is responsible for reviewing the effectiveness of risk management based on the risk management report and the reports prepared by internal audit department and the financial auditors.

The mentioned risk management system is a critical and integral part of the whole mechanism to create trusts and confidence among internal and external stakeholders, including investors, regulators and public sectors. All

identified risks, if recognized as significant, will be mitigated and closely monitored to ensure effective risk controls.

In addition, IRPC ensures that all employees are provided with mechanisms to voice their concerns and report various potential risks, through channels e.g. monthly Risk Management Division meetings where all potential risks are discussed, and during campaigns such as Zero Accident to promote operational safety. Moreover, the public can also voice risk concerns and communicate with IRPC via PO Box 35 for corruption related issues or through IRPC's Communication Division for other issues in concern.

For more information on IRPC's risk management, please visit <http://www.irpc.co.th/th/sustainable.php>

Related Digital Technology



iERM

iERM is a risk management application for executives. The application was designed as a real time dashboard displaying risk statuses which provides real time risk surveillances and risk management monitoring for executives. All users can get access to updated information on risk factors which are usually updated during the quarterly meetings. iERM is currently on test-run and will be fully deployed by mid 2019.

Performance

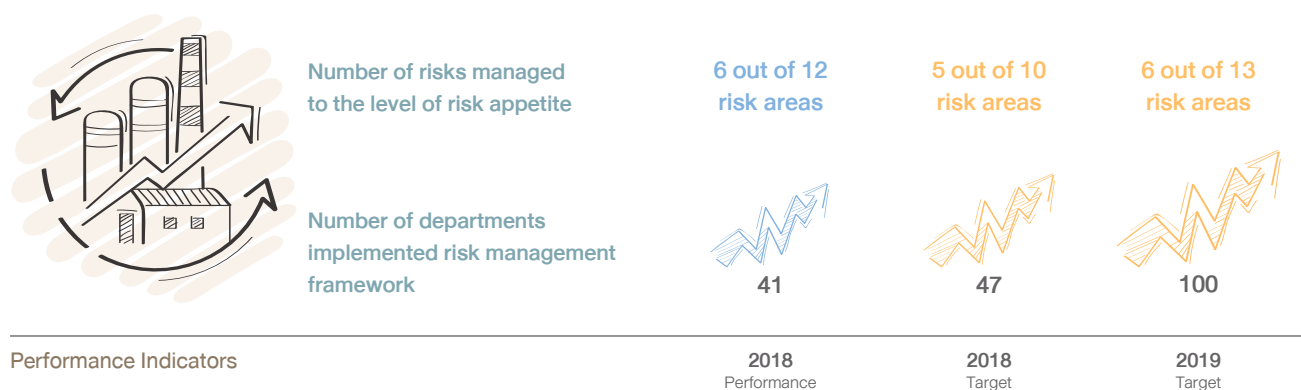
IRPC adopted the Risk Management Plan which is consistently implemented in line with the company's Strategic Plan. The plan takes into consideration IRPC's short term and long term risks and business opportunities, including Price Volatility Risk, Operational Risk, Capital Projects Risk, Organizational Capability Risk, Policy and Regulatory Risk, and IT Security & Crime Risk. The Risk Management Plan in detail is reported in IRPC 2018 Annual Report.

IRPC defines the number of corporate risks successfully managed to the level of risk appetite as one of Key Performance Indicators (KPI) of Corporate Planning Department and Risk Management Division. To manage risks within the risk appetite framework, IRPC monitors and

http://www.irpc.co.th/th/pdf/Annual_Report_2018_th.pdf
page.182-186

validates risk management plan with related parties on a quarterly basis. Tools and processes are also brought in to enhance effectiveness of risk management, while Key Risk Indicators were set to notify and monitor opportunities of risk incidents. In 2018, both units have effectively achieved their annual targets.

Besides, to ensure the implementations of risk management framework throughout the organization, IRPC also sets the number of departments implemented risk management as another key indicator of the Risk Management Division. To assist implementation of the framework, IRPC communicates and requests supports from executives at various meetings, to provide incentives for the implementation and set common target among departments.



Remark : (*) Compare with every functions in IRPC



Initiatives

Crisis Management

IRPC places great emphasis on business continuity management and trust building among the company's stakeholders. Therefore, IRPC exercises business continuity drill annually, and in 2018, the drill scenario was fire incident at the Data Center Building in Rayong Province, which is the center of IRPC's computer network system. This drill was designed to address business continuity risks stemmed from growing reliance on digital systems, which is in line with the GDP strategy. It was also aimed to raise awareness and improve preparedness of all relevant units to ensure that business operations will return to normalcy and maintain its continuity in unexpected emergencies.

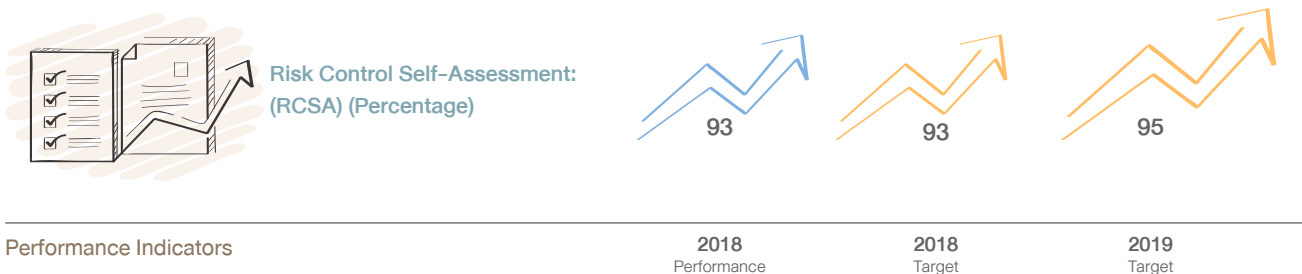
Risk Culture

IRPC promotes risk culture through a variety of activities targeting employees at all levels, from the Board of Directors,

executives and employees, in order to ensure that risk awareness and risk management are parts of everyone's work practices. The culture will enable the organization to grow and move forward sustainably and steadily.

IRPC organized series of risk culture promotion activities throughout 2018, e.g. compulsory risk trainings for risk managers in all departments, integration of risk criteria in the annual employee performance evaluation, integration of risk management performance indicators as a monetary incentive of executives. IRPC also appointed ERM Ambassador and ERM Auditor to assist in monitoring of risk management practices and promote good practices among employees. In addition, IRPC plans to organize formal trainings to raise awareness of risk management for 95% of all employees by the year 2020.

To evaluate the success of the risk culture, IRPC carries out a Risk Control Self-Assessment for executives every 2 years in order to assess the risk awareness and application of risk management framework within the organization. IRPC sets the target of risk control self-assessment at 95 percent in 2020.



Corruption Risks

IRPC has been accredited as a member of Private Sector Collective Action Coalition Against Corruption, by the Thai Institute of Directors. Members of the Coalition must adopt the 10th principle of United Nations Global Compact (UNGC) on anti-corruption, and adhere to the Business Principles for Countering Bribery developed by Transparency International.

In 2018, IRPC conducted corruption risk assessments in high-risk departments and operating processes, such as procurement, receiving and payment process, project management, permit application process with the government etc. The corruption risk assessment is conducted annually in all relevant responsible units throughout the company. In 2018, it was found that all units with high corruption risks have comprehensively improved their risk management in line with the risk management plan and there was no identified significant risk.

Cybersecurity Risks

The growth of digital technology deployed to enhance business operations today has heightened the significance of cybersecurity. In response, IRPC focuses on prevention of cybersecurity risks through implementing the cybersecurity management system in compliance with ISO/IEC 27001: 2013 Infrastructure (Data Center, Core Network and Virtualization System) and establishing Security Operation Center (SOC) in 2017.

IRPC tests the cybersecurity system on a monthly basis, and runs a major test annually. In addition, the company promotes cybersecurity risk culture among employees through trainings and e-learning, which are tailored for different departments and employees' working levels.

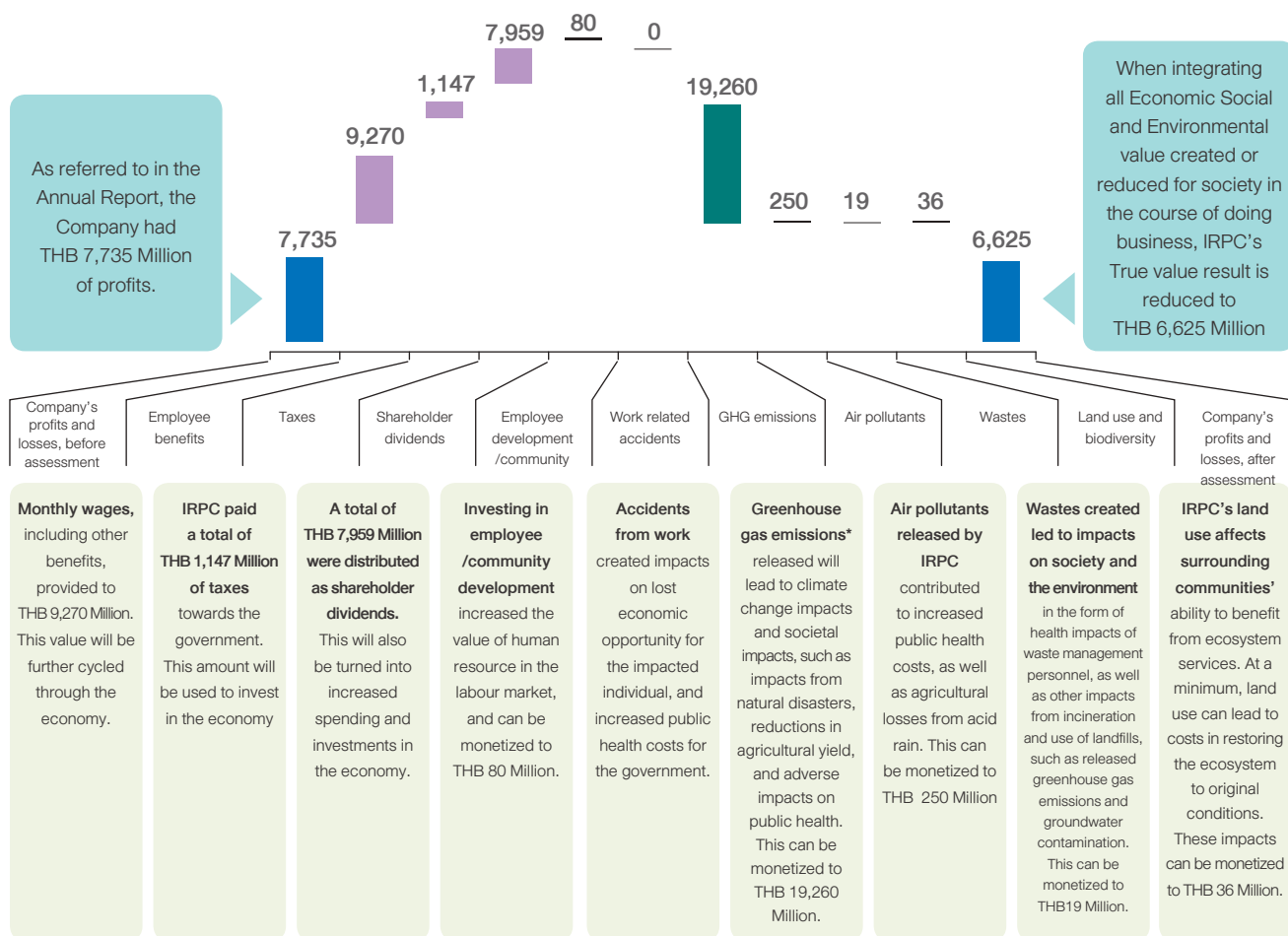
Business Value Creation Assessment

IRPC is focused on creating social shared value together with economic value through sustainable development

In 2018, IRPC has studied to assess its indirect impact of the business operations to the society using KPMG's True Value Methodology, which is the method that illustrates both increased and decreased value to the society along with financial performance of the company by translating positive and negative externalities to economic, social, and environment into monetary values that the society has to gain or lose

As a result of the studies, IRPC is allowed to capture the opportunity for improvement to increase efficiency and reduce impacts from its operations and made aware of any potential future risks. This will also be used for planning to create shared value in the future as well as to reassure stakeholders of IRPC's social and environmental responsibility.

IRPC's True Value Assessment



Remark: The boundary of the studies only covered IRPC's 2018 business operations (exclude suppliers and business partners)

GHG Emission impact refers to US EPA 2018 Social Cost (116 USD/tCO2e)

https://www.epa.gov/sites/production/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf

Stakeholder Engagement

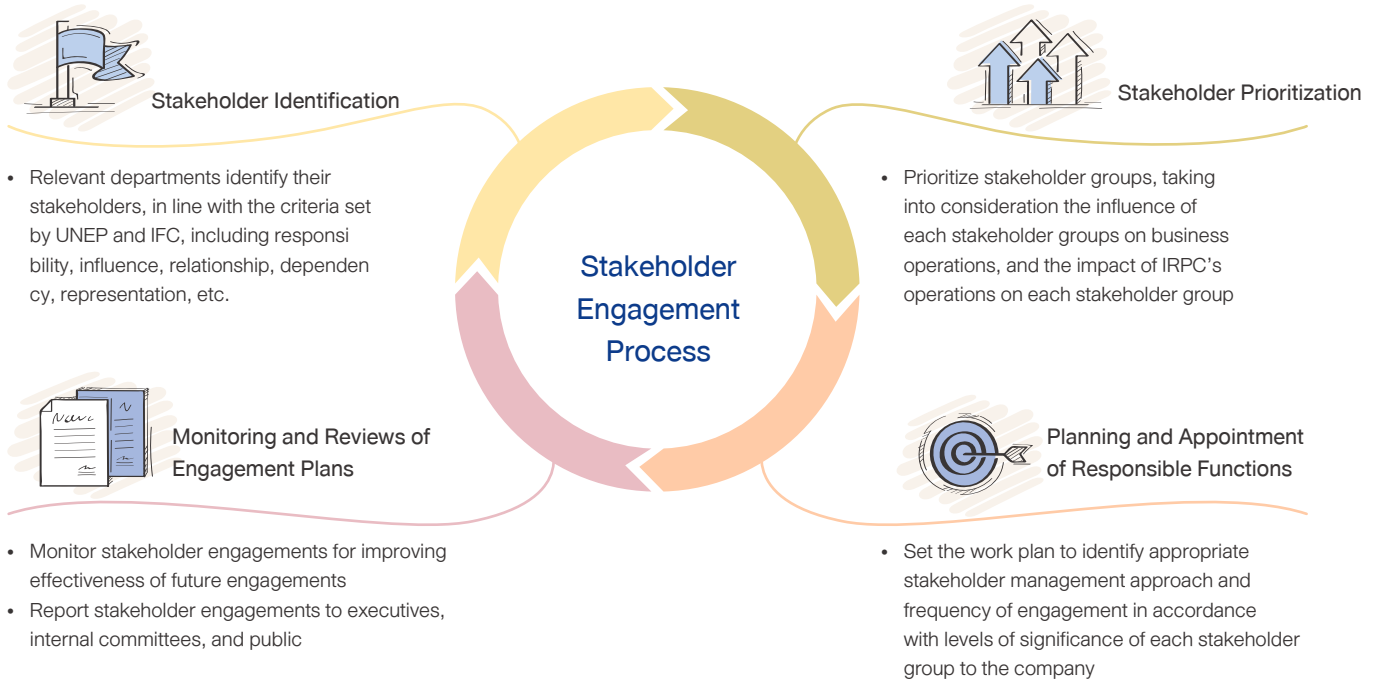
IRPC recognizes the significant roles of stakeholders, as well as the impacts and influences they have, both directly and indirectly, on the business operations. Therefore, IRPC is committed to operate its business adhering to the principle of trust and confidence building among stakeholders, through two-way communications and regular surveys of stakeholders' attitude towards the organization. The company then incorporates the feedbacks and recommendations to formulating strategies that respond best to expectations of all stakeholders, in the most sustainable manner.



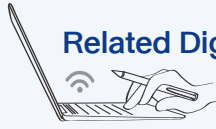
Management of Stakeholder Engagements

At IRPC, stakeholder engagement procedure encompasses the determination of role, duty, responsibility, procedure, key indicators, and performance reporting to corporate governance committee, as well as the process to communicate with IRPC's stakeholders through various communication channels. IRPC follows the "BALANCE Stakeholder Expectations" strategy which aims to balance

business operations and stakeholder's expectation, as well as strengthening corporate governance policy. The strategy prioritizes business operations that create highest and fair benefits to all stakeholders; the principle that IRPC adheres to as the company's code of conduct on responsibilities towards stakeholders.



United Nations Environment Programme (UNEP), The Stakeholder Engagement Manual, Volume 2: The Practitioner's Handbook on Stakeholder Engagement
International Finance Corporation (IFC), Stakeholder Engagement: good practice handbook for companies doing business in emerging markets



Related Digital Technology

IRPC recognizes the significance of maintaining institutional knowledge on stakeholder engagement, and adheres to the Continuous Performance Improvement (CPI) principle. As a result, IRPC brought in the digital system, KM Treasury, to assist in storing stakeholder engagement records and disseminate relevant feedbacks towards its business operations, such as challenges, recommendations for improvement, and best practices. IRPC expects for the system to foster consistent learnings and exchanges of experiences within the organization, while relevant departments can study from the lesson

learnt to further improve their stakeholder engagement performances in the future. The system gathers and monitors performances through management information system, using the software that enable timely access to information such as SAP and Performance Management System (PMS). Today, IRPC executives can monitor real time performance updates via smartphones through MIS 365 system, which track records of performances against the organization's indicators.

Further information on stakeholder engagement management can be found at www.irpc.co.th/th/cg_stakeholders.php.

IRPC's Stakeholders

Deriving from stakeholder identification process, IRPC's stakeholders can be divided into 5 major groups: 1) shareholders/investors, 2) employees, 3) customers/consumers, 4) suppliers and, 5) community, society and environment. IRPC has established effective stakeholder engagement approaches which have been specified for each stakeholder group. The company also sets indicators to track performances of stakeholder engagement, which will be assessed through annual satisfaction surveys.

IRPC's Stakeholder Groups

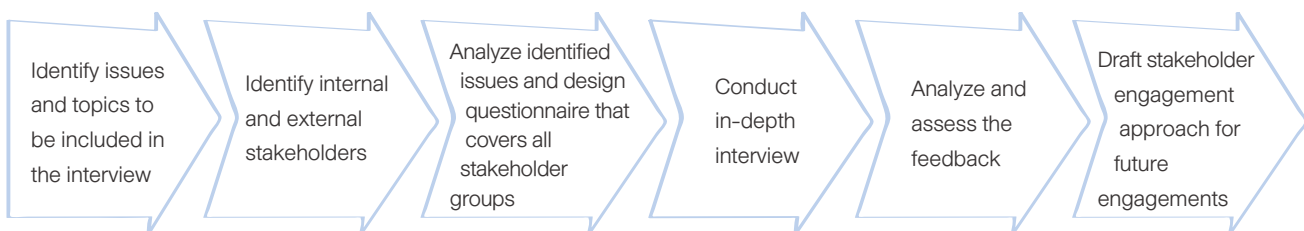
| Stakeholder Groups | Shareholders/ Investors | Employees | Customers/ Consumers | Suppliers | Community, Society and Environment |
|-----------------------------------|---|--|--|---|--|
| Stakeholder Engagement Indicators | Survey of Shareholder satisfaction towards annual general meeting | Employee engagement survey | Customer satisfaction survey | Supplier satisfaction survey | Community satisfaction survey |
| Engagement Channels | Direct engagement at the annual general meeting, analyst meetings, roadshow events, open house events, quarterly newsletter, public media and website, etc. | Organize regular meetings and consultations to collect feedbacks, President meets employees events, "Ai Oon" bulletins, communications via e-mail and intranet, etc. | Annual customer survey, customer relations activities, seminars and roadshows, social media, website, etc. | Newsletters to suppliers, annual supplier meeting, meeting with creditors and central organization, website, etc. | Community relations activities, open house event (at least once per year), public and local media, Multilateral meetings as required by EIA and Emergency Control Center (ECC), etc. |



Stakeholder Feedback



One of IRPC's main approach to collect feedbacks from stakeholders is in-depth interview. The process allows IRPC to acquire opinions on various aspects, as well as building accurate understandings of stakeholder's views towards IRPC from the perspective of each stakeholder group. Accordingly, the gathered information and expectations have been analyzed and used for strategic planning and framework of stakeholder engagements.




IRPC's Stakeholder Feedback Procedure

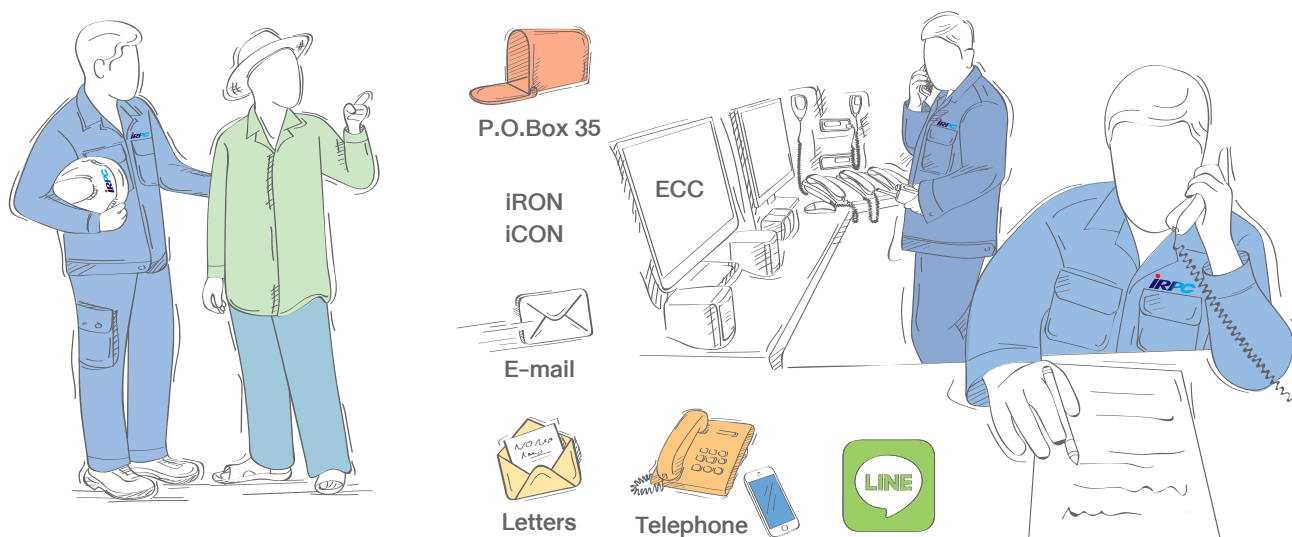


Results of Stakeholders Feedback

All groups of stakeholders agreed that growing influence of digital technologies may affect IRPC's business operations and commitment level or satisfaction of stakeholder towards IRPC. They were of the views that involvements of digital technologies may improve IRPC's operational performances, profitability, environmental impacts management, communications with stakeholders, and efficiency in supply chain management.

| | Identified Issues | Management Approach |
|---|---|---|
|  <p>Shareholders/ Investors</p> | <p>Transparency in corporate governance; innovations for business growth; climate change adaptation to address the intensified direct and indirect impacts in the future</p> | <ul style="list-style-type: none"> • Operate in accordance with GRC principle, and disclose corporate governance information for transparency • Promote product research and development and applications of digital technologies • Climate strategy adaptation |
|  <p>Employees</p> | <p>Increase communications on strategy and IRPC's direction towards sustainability development; Recognize the importance of human capital development and human resource management which are in line with modern working practices</p> | <ul style="list-style-type: none"> • Communicate strategy and sustainability development direction through Sustainability Academy training and plan to enhance communication via intranet in 2019 • Allow better access to resources for knowledge and talent development as well as promote gradual application of Agile Way of Working. |

| | Identified Issues | Management Approach |
|---|---|--|
|  Customers/Consumers | <p>In addition to technical support, IRPC should also consistently present the trends of utilizing new materials, as well as cooperation for research and product development.</p> | <ul style="list-style-type: none"> • Organize Roadshows to present world market trends and material technologies by knowledgeable speakers • Develop products that meet the needs of the customers whenever possible |
|  Suppliers | <p>Request for trainings on the new digital technologies that IRPC will deploy in its operations, as well as the criteria of supplier sustainability assessments.</p> | <ul style="list-style-type: none"> • Organize workshops to increase knowledge of the new technology and appoint a team to respond to queries on the new digital applications. • Organize regular trainings for suppliers on criteria of sustainability assessments |
|  Environment and Society | <p>There is an appeal for IRPC to manage environmental impacts of the construction of the new plant, as well as management approach to minimize pollution in the event of production emergencies.</p> | <ul style="list-style-type: none"> • Control the production process to minimize environmental impacts while strictly comply to EIA regulations • Consistently develop and maintain the stability of production systems as well as to investigate causes of emergencies to identify preventive measures and mitigate risk of production emergencies that may cause environmental • Communicate and create understanding Guidelines for reducing environmental impact to related parties. |

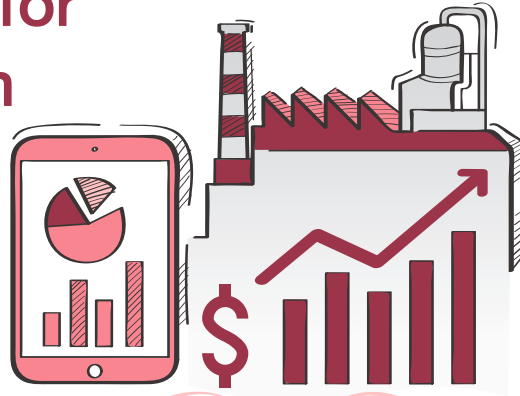


Complaints Management

IRPC has a systematic and standardized complaint management procedures. The responsible departments will gather information, analyze the causes of the complaints, respond to stakeholder's complaints and surrounding circumstance, and report to executives in accordance with the company's procedures. Please find further information on complaint management approaches for each stakeholder group in the following chapters: Corporate Governance and Business Ethics Supply Chain Management, Customer Relationship Management, Human Capital Development, Human Rights, and Community Well-Being.

FINANCIAL CAPITAL

Business strategy for sustainable growth

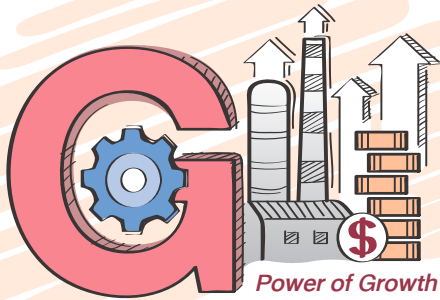


IRPC executes GDP Strategy to achieving the goal of becoming leading integrated petrochemical complex in Asia by 2020, through the expansion of investments, application of digital and modern technologies, and human capital development. To generate business profits and achieve challenging business goals, IRPC drives its business on the strong foundations of good governance. IRPC also drive its successes in line with the company's intention to optimize social and environmental performances and being responsive to the expectations of stakeholders.

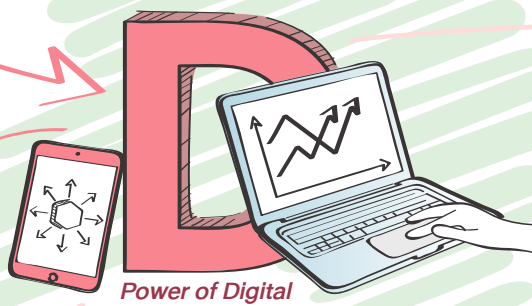


Business Strategy

From EVEREST to GDP



- MARS (Maximum Aromatics Project)
- GALAXY
- E4E
- R&D Excellence



- IRPC 4.0
- OPS 4.0
- ISC 4.0
- CCM 4.0
- PRO 4.0
- ERP 4.0

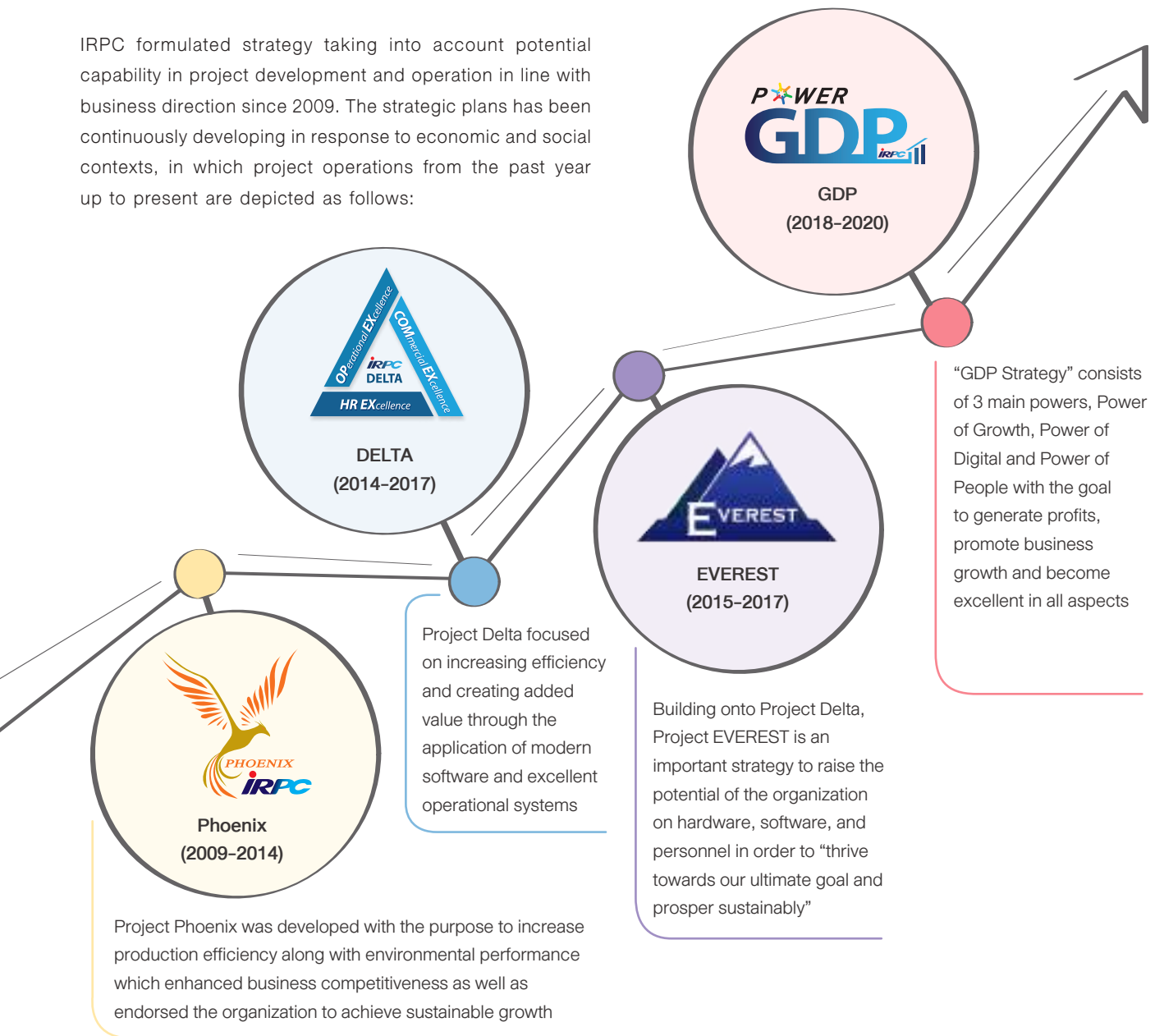


- IRPC DNA
- Top 30 leaders
- Lean and Fit-for-Purpose Organization

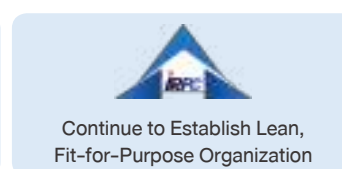
Business Strategy

IRPC emphasize to be the leading integrated petrochemical complex in Asia by 2020 while balancing the impact on economy, society and environment and adhering to good corporate governance. To achieve this goal, IRPC has implemented the strategic projects that consist of 7 objectives including; Strengthening Financial Performance, Managing Future Portfolio Against Global Forces, Strengthening Operational Performance, Strengthening Marketing Sale Excellence, Strengthening People Excellence, Creating Value for Stakeholders and Sustainability.

IRPC formulated strategy taking into account potential capability in project development and operation in line with business direction since 2009. The strategic plans has been continuously developing in response to economic and social contexts, in which project operations from the past year up to present are depicted as follows:



Important Elements of GDP 2018-2020



From EVEREST to GDP

Excellent business operation and the competency of employees who worked industriously throughout the organization have led IRPC to accomplish every Project Everest target in 2017. In order to maintain these competitiveness, various expertise has been instilled among our people and continuously developed as part of Project EVEREST FOREVER (E4E). For the past year performance, IRPC achieved the challenging target on revenue by adhering these good practices. For E4E Project, IRPC aims to reach the additional EBIT of USD 100 million per year by 2020, the current EBIT is USD 300 million per year. As IRPC emphasizes to complete this challenging target, IRPC demonstrates that IRPC is capable to build and maintain its capability to continuously and sustainably run business beyond excellence in long run.

GDP

Building on the success of Project EVEREST in 2017, IRPC continues our commitment to becoming the Top Quartile of Petrochemical Business Group through the GDP strategy. Since 2018, IRPC has been putting emphasis on the Power of Growth, the Power of Digital and the Power of People while maintaining balance on the environment, society and good governance in order to fuel the pursuit of becoming "The leading integrated petrochemical company in Asia by 2020."

Power of Growth

IRPC aims to expand the scope of investment for continuous business growth by focusing on increasing production capacity in the petrochemical business, increasing competency and efficiency of the production, building partnership and expanding business to reinforce growth, and developing high value products through innovation excellence.

Power of Digital

Digitization and modern technologies are applied into our business to enhance operational efficiency and transform corporate-wide customer service system to digitization under IRPC 4.0 program

Power of People

IRPC strives to improve human resource management system and reshape organizational structure to suit new way of working. With corporate values as a foundation, IRPC aims to raise the potential human resource through leadership development programs, talent attraction and retention and incentive programs. In doing so, it helps create good corporate culture and gets human resources ready for the growth of the company.

P Power of Growth

Continuous growth to achieve the target of return on investment capital (ROIC) over 14% at the level of "Top Quartile" through 4 main supporting projects

MARS (Maximum Aromatics Project)

Maximum Aromatics Project (MARS) is Paraxylene and Benzene production project with a capacity of 1.3 million tons per year and 500,000 tons of per year, order respectively. This project will add value to the raw materials used in production line by applying the finest technology to enhance business competitiveness. Upon completion, the plant will be able to increase the proportion of IRPC's petrochemical products from 18 percent to 27 percent. The project is currently under design process and Return on Investment (ROI) evaluation. It is expected to operate commercially by 2023.

GALAXY

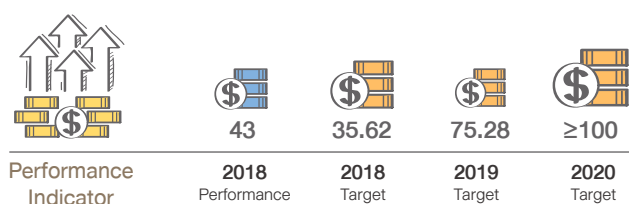
Project Galaxy builds upon a partnership model with an aim to expand business and increase EBIT. IRPC seeks to capture growth opportunities in the future via business synergy through investments, joint ventures, mergers and acquisition.



Everest Forever (E4E)

Moving forward with the excellence of EVEREST projects which has been incubated for over 3 years in terms of improving efficiency in production, marketing and sales, procurement and organization management. In which, there is a target to achieve for the additional profits (EBIT) of USD 100 millions per year by 2020 in order to attain a position as the Top Quartile in the Global Petrochemical Industry

Accumulate EBIT for E4E (USD millions per year)



R&D Excellence

Project R&D Excellence seeks to develop high value added products. With our innovation excellence, IRPC focuses on products in key business areas such as PP and ABS as well as new business opportunities (The New S-Curve) such as Li-S, Transparent Conductive Film and OLED.

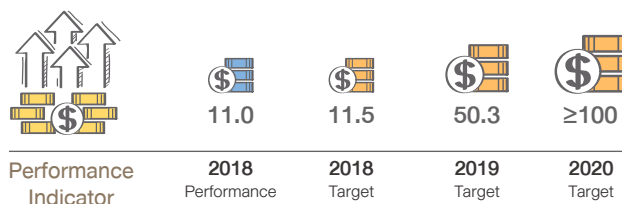
D Power of Digital

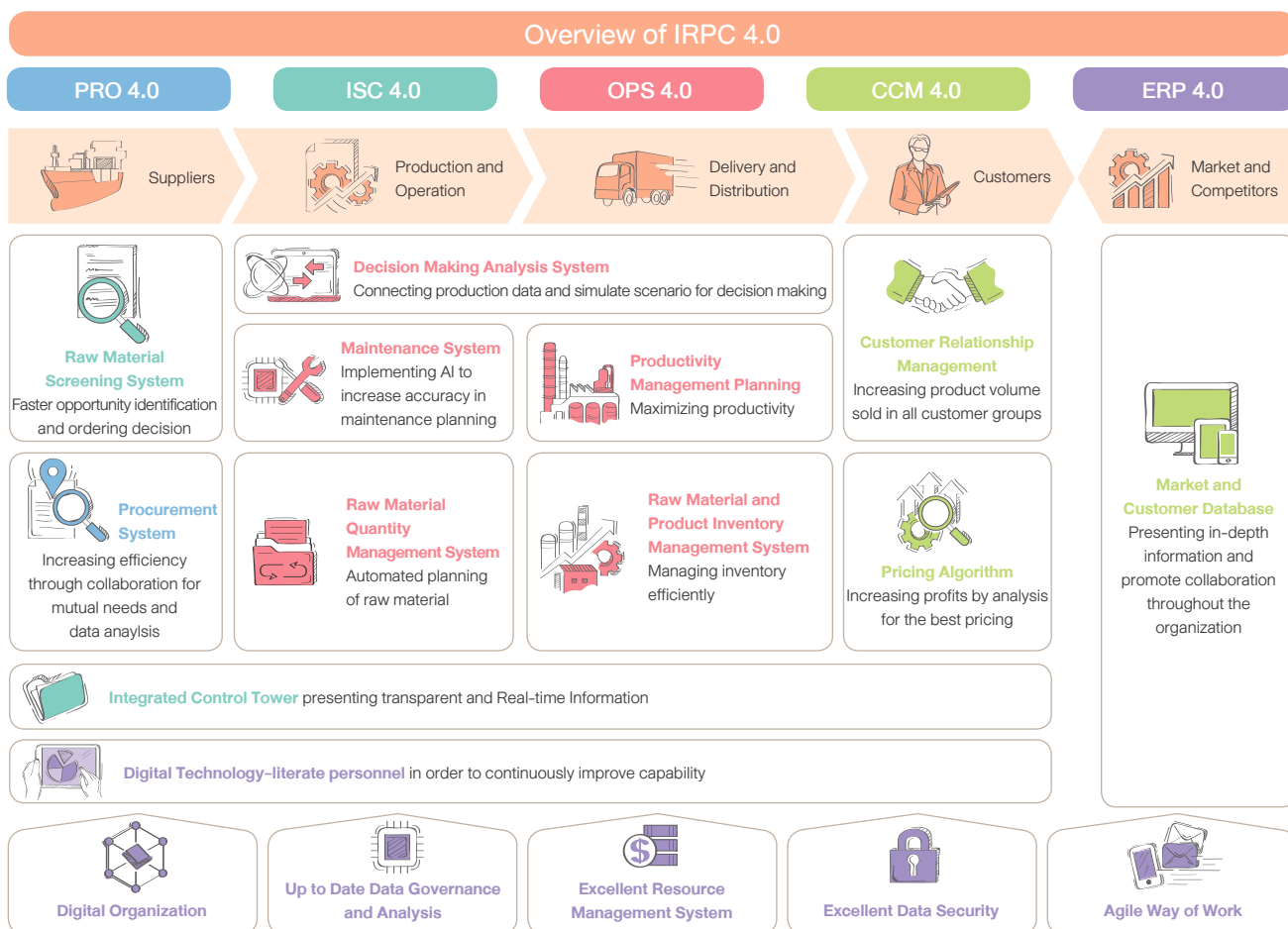
Synergize digital power to unlock operational efficiency to another level through 5 key projects

- 1) PRO 4.0 Improving procurement system towards "Lean Procurement" to eliminate operational redundancies and increase competitive advantage.
- 2) ISC 4.0 Implementing up-to-date tools to optimize purchasing decisions of crude oil, raw materials and production plan based on customer behavior and availability of raw materials in the value chain
- 3) OPS 4.0 Enhancing operational efficiency of IRPC plants through Smart Operation (AI) that assists in production planning.
- 4) CCM 4.0 Improving sales and marketing with Customer Centric Digital System to achieve customer's expectations in timely manner.
- 5) ERP 4.0 Establishing organization's IT structure to support corporate-wide digitization with a focus on data management and IT infrastructure

IRPC 4.0 targets to have the additional profits (EBIT) of USD 100 millions per year by 2020 and aims to reach 81% of Digital Acceleration Index (DAI) by 2020, from 24% baseline in 2018.

Accumulate EBIT for IRPC 4.0 (USD millions per year)





P Power of People

IRPC places importance on human capital by focusing on talent attraction and employee development as well as fostering on organization culture. In which, IRPC has launched 3 major programs as follows:

IRPC DNA

For employees of all levels to “Truly Embed and Live The IRPC DNA”, in 2018, IRPC has proceeded with awareness promotion campaigns and continuously evaluated behavioral shift towards IRPC DNA.

Employee engagement (%)



83

80

Organization Health Index (OHI) (%)



86

>74

Performance Indicator

2018 Performance

2019 Target

Remarks Organization Health Index: OHI is a comprehensive indicator that reflects managerial performance of a company on non-financial areas. Designed as a survey, individuals in management level and above give response on topics, such as accountability, motivation and leadership, which help to fully illustrate the performance of a company.

Top 30 Leaders

The Next Generation of Top 30 Leaders Program is developed base on an analysis of company's needs. This information then incorporates into human capital management and development plan that serves to manage future changes within the organization.

Lean and Fit-for-Purpose Organization

Lean and Fit-for-Purpose Organization Program is developed design and determine a proper organizational structure as well as embedding digital system into employee's way of working especially in terms of knowledge transfer that will contribute to company's success in the future.

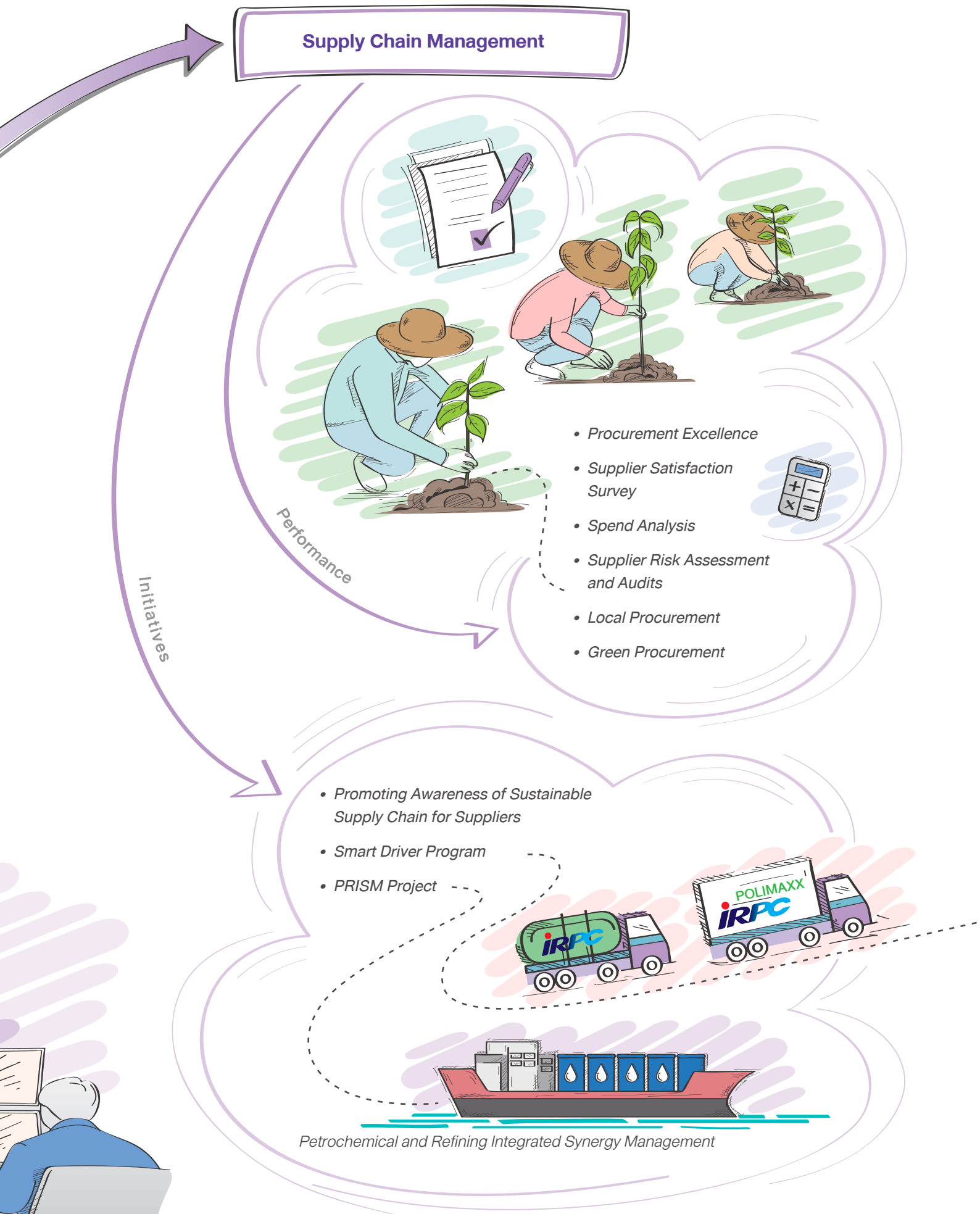
MANUFACTURED CAPITAL

Supply Chain Management for Sustainability



IRPC strives for Procurement Excellent towards consideration of Supplier Risks Assessment covering economic, environment, reputation, and safety, as well as, promoting local procurement and digital technology application for the sustainable growth.





Supply Chain Management

The understanding of material issues in Supply chain is vital to IRPC's business both in short-term and long-term. It is also an opportunity for IRPC to drive value creation for stakeholders on sustainability aspects such as human rights protection, occupational safety promotion, environment and safety of the community protection. Recognizing these important drivers, IRPC applies digital technology to identify market trends and manage demand in advance. This allows IRPC to create economic advantages and maintain competitiveness while exercising proactive policy to create shared value with stakeholders in the supply chain. This also helps reduce business continuity risk and promote supplier capability in order to ensure sustainable operations.



Management Approach

IRPC upholds its Sustainable Procurement Excellence, IRPC Supplier Code of Conduct and IRPC Purchaser Code of Conduct covering various sustainability topics such as ethical business operations, human rights, environment, occupational health and safety, conflicts of interest and confidentiality of information. Moreover, following IRPC Sustainable Procurement Management Manual, IRPC conducts supplier risk assessment consisting of 4 processes; 1) Expenditure, 2) Supplier Sustainability

ESG Risk Assessment, 3) Supplier Critical Analysis and 4) Implementation of Mitigation Measures whereby the results of these processes are analyzed and translated into actions to reduce procurement risks.

For more information on supply chain management, please visit <http://www.irpc.co.th/th/sustainable.php>



Related Digital Technology

ISC 4.0

1. Control Tower Decision-Making

Control Tower Decision-Making brings End-to-End Visibility into supply chain management, from the purchase of crude oil, production plan, refinery and production, until the delivery of products to the hands of the customers.

2. Crude Selection Model & Approach

A digital tool that assists in the selection of crude oil that exists in various qualities in the market. The tool not only provides higher accuracy and time saving but also improves the efficiency in collaboration between IRPC and PTT Trading, thus, increasing the bargaining power and reducing logistic cost.

PRO 4.0

1. Spend Cube Analytics

A digital tool that enhances the efficiency of procurement and lowers the cost of products and services. It is used to process orders in the past by collecting, screening, categorizing and analyzing spending data from related suppliers, hence, allowing decision making to be more promptly and accurately.

2. Demand Planning Platform

A system to collect demands for products from all departments with better accuracy, speed and sufficiently detailed for procurement planning, IRPC can reduce costs and increase the bargaining power with partners.

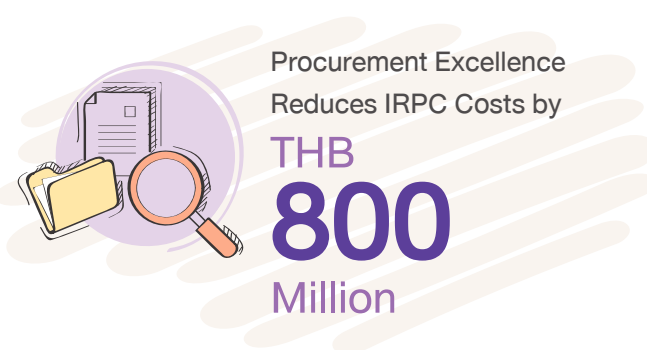
3. Process Workflow Re-design

Improve the purchasing process to be more efficient and faster, yet still maintain the same level of data security. For example, creating a standard contract form which can save time and minimize errors, implementing digital approval to reduce steps and time. These improvement will allow the procurement committee to be involved only in crucial steps.

Performance

Procurement Excellence

In 2018, IRPC continued to strive for procurement excellence. A variety of initiatives have been implemented such as, Digital Procurement and Demand Management. These initiatives serve to document the demands and allow departments to participate in procurement planning thus, reducing the order frequency and the amount of products and services used. Furthermore, the specification of various products have been optimized to most suit the usage while maintaining the efficiency. As a results of these initiatives, IRPC has managed to reduce costs by THB 800 Millions.



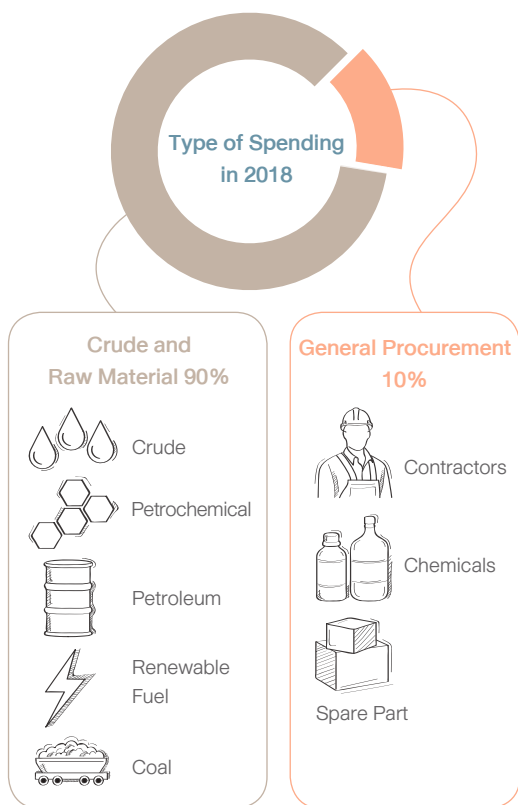
Supplier Satisfaction Survey

In 2018, IRPC attain a Supplier satisfaction survey score of 90.40%, well above the target of 90.00%. The topic that has improved the most is the personnel which involves coordination with suppliers and reputation such as transparency, etc. IRPC plans to improve the score of the Supplier satisfaction survey through digitization in order to aid the efficiency improvement of both parties.



Spend Analysis

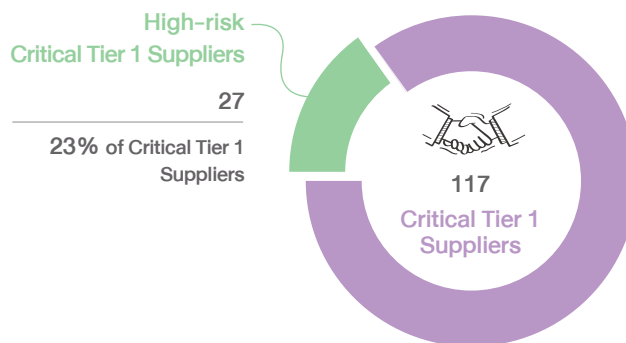
IRPC's procurement can be classified into 2 main types; Feed procurement i.e. crude oil, petroleum, petrochemical, etc.; and General procurement such as chemicals, machineries and parts, contractors, etc., with a proportion in 2018 of 90 and 10 percent respectively.



Furthermore, every new and existing suppliers registered with IRPC are subject to Supplier ESG Risk Assessment using IRPC's ESG criteria 1 which covers economic, environment, reputation and safety aspect. In 2018, IRPC has conducted Supplier ESG Risk Assessment as follows

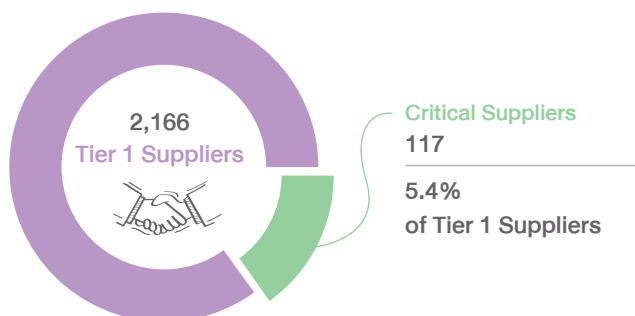
To learn more on IRPC's ESG criteria, please visit <http://www.irpc.co.th/th/sustainable.php>

Suppliers Undergone Supplier ESG Risk Assessment (Percentage)



Supplier Risk Assessment and Audits

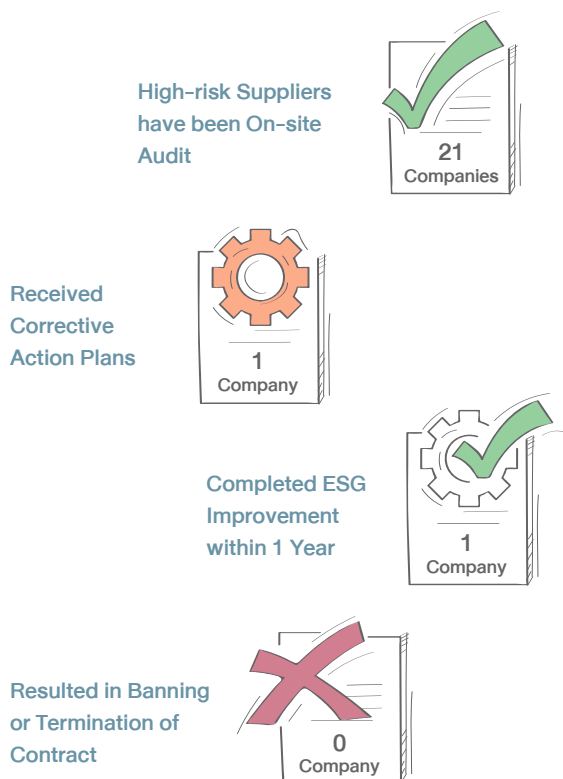
To assess the overall risk of all suppliers, IRPC conducts Criticality Analysis in which a critical supplier is defined by those possessing least one of these elements; accounted for a high volume of purchasing, delivering important or irreplaceable products or services, and/or having a strategic business relationship. The assessment results in 2018 is as follows



For critical and high-risk suppliers, IRPC has carried out on-site audit against ESG criteria and co-developed corrective action plans in order to mitigate risks to be in line with our standard. The risk topic identified in the past year is presented as follows.

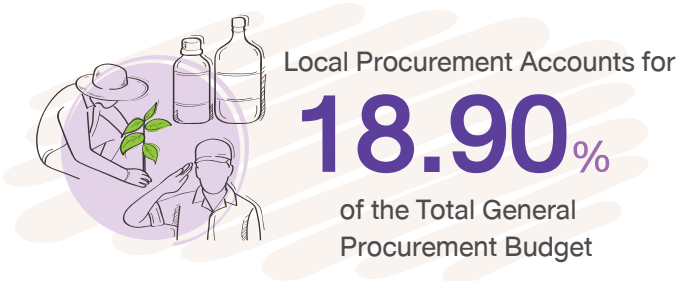
Number of High-risk Suppliers have been On-Site Audited





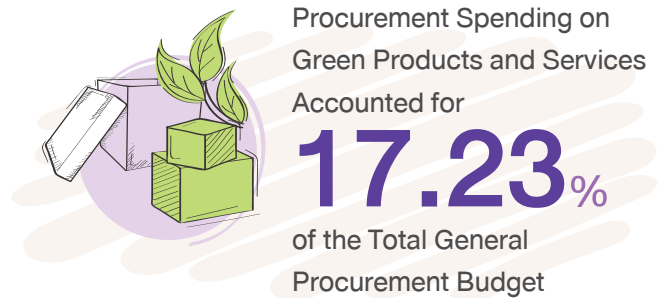
Local Procurement

IRPC recognizes that the procurement of local goods and services is a way to boost local economic development and promote employment of the local community. In 2018, IRPC procured goods and services from manufacturers and service providers in Rayong, the province of our major operations, up to THB 2,568 Millions or 18.90% of the total general procurement budget. This proportion is growing every year. The local products and services procured include chemicals for production process, logistics, hiring local contractors to establish fire barriers by tree plantation and security services, etc.



Green Procurement

IRPC encourages Green Procurement and promotes for the procurement of goods and services which are environmentally friendly. Green products and services procured by IRPC include verified REACH & RoHS products and green label products. IRPC's spending on green products and services is THB 2,239 Millions or 17.23 % of the total general procurement budget in 2018.



Initiatives

Promoting Awareness of Sustainable Supply Chain Management for Suppliers

IRPC promotes sustainable business operations in the supply chain through the official communication of IRPC's Supplier Code of Conduct which covers a variety of topics such as legal compliance, business ethics, human rights, anti-corruption, safety and environment, etc. Suppliers are expected to acknowledge and adopt into their upstream business as well with a written acknowledgment. Furthermore, IRPC promotes the understanding of sustainability management among suppliers in which environmental, social and governance principle of the partners (ESG) is upheld through various activities.



IRPC CG Day 2018 and PTT Group CG Day 2018

IRPC invited 37 Tier 1 suppliers from Rayong and nearby areas to participate in IRPC CG Day 2018 with objectives to raise awareness on human rights issues in petrochemical industry and to understand the role of private sector against corruptions. Moreover, IRPC invited 16 Tier 1 suppliers across the country to join the PTT Group CG Day 2018 event, organized by PTT Group, in order to boost awareness and encourage suppliers to follow the guidelines of the Group regarding good corporate governance, code of conducts and anti-corruption policy.

Counseling Program to Join the Anti-Corruption Network

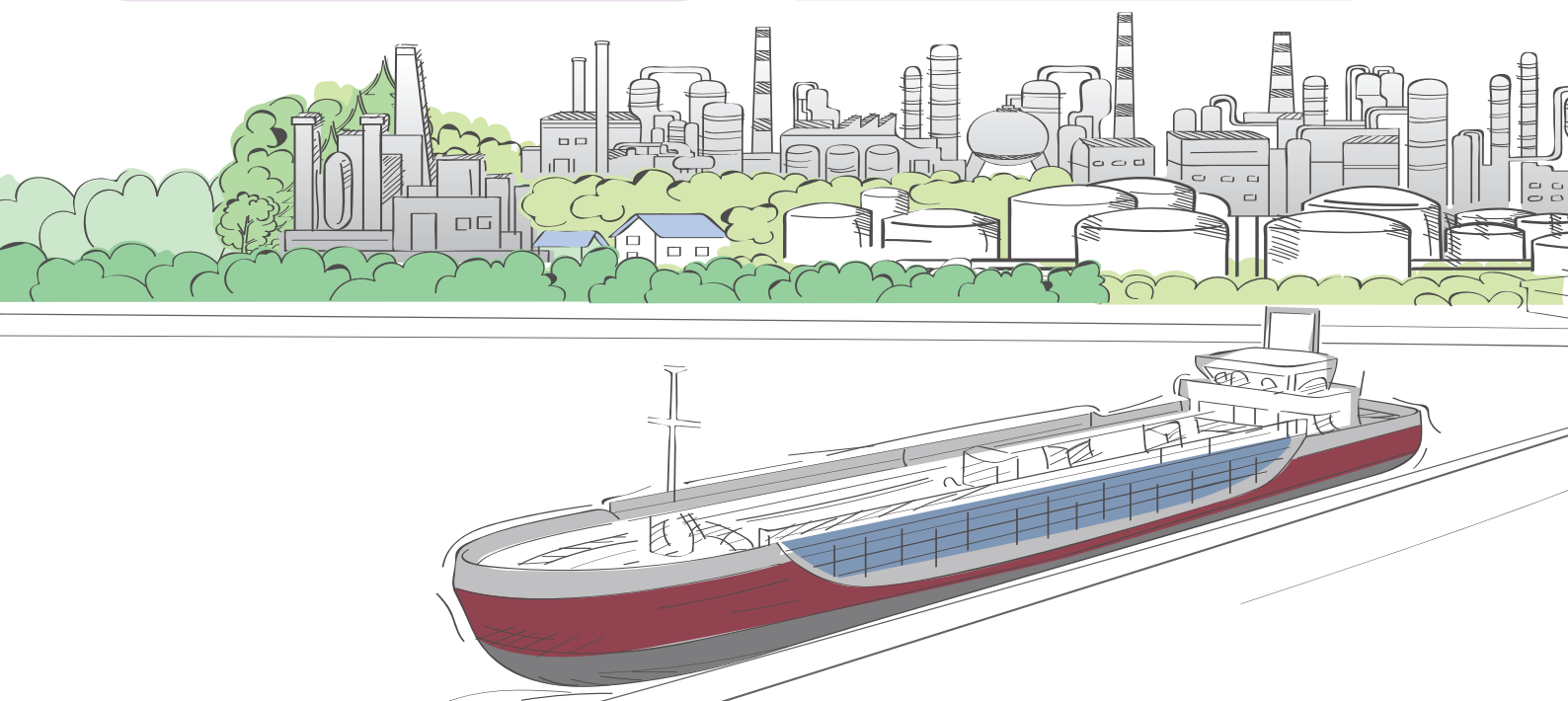
The Collective Action Coalition Against Corruption (CAC) is a project established by Thai government and the Anti-Corruption Organization of Thailand since 2010, with the concept to encourage all sectors to operate with transparency, avoid monopoly or bribery. IRPC has been a member of CAC since 2017 and in 2018, IRPC has communicated with suppliers at SME level to persuade them to join the coalition as IRPC has done so last year with Tier 1 suppliers.

Supplier ESG Training

IRPC carried a workshop on Supplier ESG Risk Assessment where the participating suppliers are screened for ESG self-assessment questionnaire completion. The outcome is expected to equip our suppliers with understanding before the on-site audit. This workshop are part of a collaborative project between the companies in PTT Group to facilitate information sharing among suppliers on environmental, social and good governance. The workshop does not only reduce operating cost of PTT Group but also creates good relationships with suppliers which lead to joint sustainable growth and development.

PRISM Project

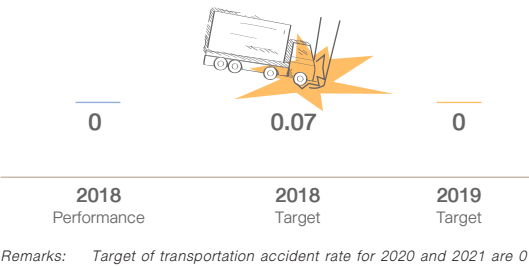
In 2018, IRPC cooperated with the PTT Group for the Petrochemical and Refining Integrated Synergy Management (PRISM) project, which coordinates with the refineries in PTT Group's supply chain by having meetings among companies in PTT Group to manage crude oil transportation so that trips have a full hull for the most efficient transportation of crude oil. As a result of this approach, IRPC is able to reduce the cost of transporting crude oil by approximately THB 47 Millions and reduce GHG emission more than 14,693 ton CO₂e.



Smart Driver Program

IRPC recognizes the importance to develop safe and high quality transportation. In doing so, IRPC focuses on raising safe driving awareness among the contractors. In 2018, IRPC continued on the Smart Driver (Logistics) program to raise safety awareness of plastic transporter truck drivers by conducted safe driver training and drug monitoring for all parties concerned. As well as developed a criteria for Smart Driver qualifications. IRPC presented the Smart Driver Award of the year in 2018 to seven drivers who had safe driving behaviors and who received no customer complaints. With this commitment, the IRPC's accident rate from transportation in 2018 was 0 times per million kilometers, which meets the goal to not exceed the rate at 0.07 times per million kilometers.

Rate of Transportation Accident
(Time per 1 million kilometers)



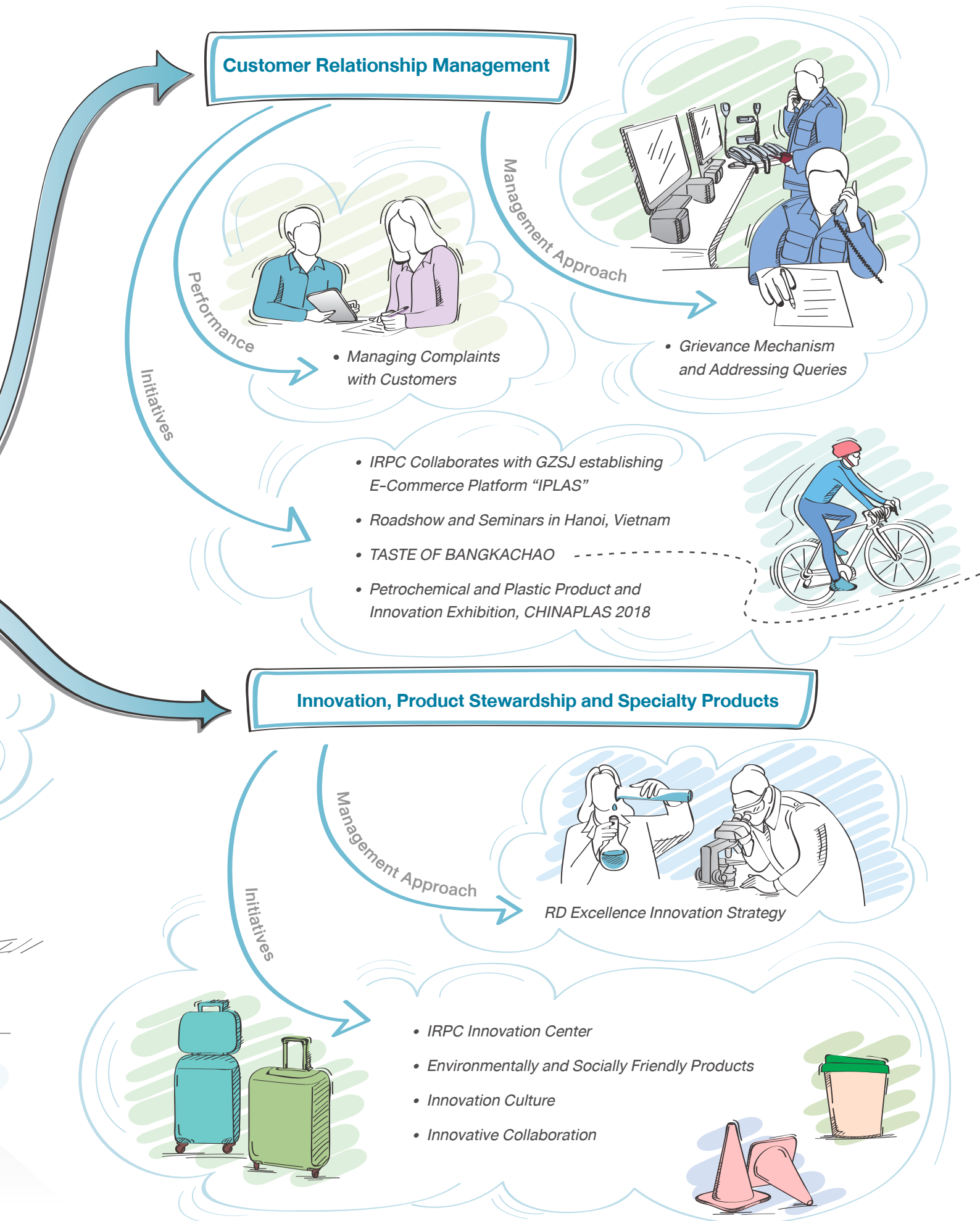
INTELLECTUAL CAPITAL

Customer Cares and Innovations for sustainability



IRPC elevates the capacity of product research, investments in human capital, and open innovation, in order to produce new innovative products. The company aims to respond effectively to the market needs, and maximize customer satisfaction. IRPC builds on strong understanding of various customer needs, which goes hand in hand with the development of environmentally friendly products, to improve quality of lives of customers and end users.





Customer Relationship Management

Due to the increase in business competition in addition to ever growing customer requirement presently, sincere customer relationship management is hence the most important factor to increase sales. Attracting new customers and maintaining current customers will result in a sustainable business growth. Additionally, obtaining information regarding purchasing behaviors as well as recommendations on products and services can help to identify opportunities for future business development. IRPC has adopted the benefits and strength of digital technology to proactively increase excellent experience for customers while also addressing needs directly and proactively.

Management Approach

IRPC has determined a management approach for customer relationship management which aligns with the Corporate Commercial and Marketing Roadmap 2016-2022. The management approach is also in accordance to the 3 operational guidelines, covering the customer relationship management as follows

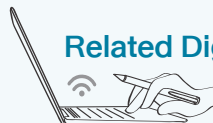
- Operational guidelines for managing a petroleum business;
- Operational guideline for petrochemical business; and
- Operational guideline for operating ports and property business.

Information that is included in the guidelines consist of systematic planning and analysis of the market, up until delivering products to customers and managing complaints to ensure highest satisfaction.

Grievance Mechanism and Addressing Queries

IRPC has a system implemented to receive complaints and address any queries which may arise. This is available by contacting the personnel directly or online. A team will be available to assist on questions or concerns raised regarding product sales, delivery, or any technical difficulties. Other than this, customer satisfaction survey is also conducted through in depth interviews and activities which are organized constantly. As a result, information collected is used to develop and improve products and service provided.

Related Digital Technology



IRPC developed a system in order to manage the database housing customer's information. Examples of this is the iCON Plus (IRPC Customer Oriented Network Plus) which is used for the Petrochemical Business, the iDEAL (IRPC Digital E-commerce Account & Logistic System), the iRON (IRPC Oil on Net) for the Petroleum Business, the iCROWN (IRPC Customer Relationship Oriented Wisdom Network) for Ports Business and iASSET for the Property Business.



Other Digital Projects which is currently being developed and will be fully ready for implementation in 2019.

B2B Portal

Central hub for the procurement system and storing customer satisfaction information. Customers are able to monitor ordering status real time. Presently, B2B Portal has been fully developed and will be announced for use in 2019.

Big Data Analytics

IRPC's system for storing and analyzing, consisting of in depth information regarding customer's behaviors and market needs including other external factors which relate with production and market

Market and Competitor Intelligence Dashboard

Increase accuracy for forecasting market needs, using information of product delivery readiness and competitor's pricing in order to be a competitive in the market.

Control Tower: Logistics and Client Excellence

System illustrating information from operating transparently throughout the production and distribution process. This helps manage the stock in the warehouse quickly and efficiently in addition to mitigating issues with product shortages.

Initiatives

IRPC Collaborates with GZSJ establishing E-Commerce Platform "IPLAS"

IRPC purchased 15% of Guangzhao Saiju Performance Polymer Ltd. (GZSJ), People's Republic of China, total shares which is a large E-commerce company in the plastic industry called "IPLAS". This is equivalent to an investment value of THB 650 Million, in addition to preparing a joint venture with a Thai company with a registered capital of THB 120 Million. This investment allows for services to be provided using the E-Commerce platform, and increase in IRPC's channels of sales for IRPC's product including service related to plastic and petrochemical products of other companies. From this investment, other than reducing capital cost for smaller service providers, up-scaling business is also easier in order to penetrate ASEAN's plastic and petrochemical market. By 2019, IPLAS will be implemented in Thailand.



Roadshow and Seminars in Hanoi, Vietnam

The petrochemical business group organized a Roadshow in Hanoi, Vietnam during September 2018 to expand petrochemical's customer base to neighboring south East Asian countries who have constant growth in the use of petrochemical products. During the event, roles of the new digital system is presented illustrating its capability to access petrochemical's customers and market, IRPC's direction for the petrochemical business and POLIMAXX's new products. The event was then closed with an informal experience sharing session by each business group's expert. Good feedback was reported by the attended customers.



This event informed clients about the direction, global changes in the petrochemical industry and exposure to IRPC's new product releases. At least 5 distributors or representatives and 100 potential customers joined this event. Hence, can be seen as opening new doors and opportunities to promote the use of product and develop products further in order to fully address the customer's need.



Petrochemical and Plastic Product and Innovation Exhibition, CHINAPLAS 2018

In collaboration with PTT Group, IRPC exhibited petrochemical and plastic products and innovation at the Product CHINAPLAS 2018 during 24-27 April 2018 held in Shanghai, People's Republic of China. The main objectives of this exhibition was to expand the customer base, encourage the export of polymer products, and promote the reputation for being the leader in the petrochemical industry for PTT Group. Additionally, this was an opportunity to meet customers who have constantly supported IRPC. CHINAPLAS is the largest exhibition in Asia featuring industrial plastic and rubber products which is held annually. There was a total of 2,600 exhibitors from 35 forefront countries across the world including Germany, France, Italy, Austria, Canada, Turkey, China, Japan, Taiwan and Thailand, and an average of more than 100,000 visitors per day.



TASTE OF BANGKACHAO

IRPC organized a cycling trip to promote Eco-tourism at Bangkachao also known as the Bangkok's Green Lungs, Phra Pradaeng District, Samutprakarn Province in June 2018. Activities in the event consisted of visiting an old temple in Bangkachao District, tie dying and having lunch together. This event hence was a good opportunity not only to exercise and promote tourism, but also build strong relationships between clients and IRPC by exchanging each other's experiences and expectations. Ultimately enhancing IRPC's access to customer's requirements.



Nonetheless, IRPC built a strong bond and increased its understanding regarding customer's needs and concerns through the different activities organized other formally and informally. Examples of activities include visiting domestic and international customers in order to captivate their issues and recommendations, organizing sporting events between IRPC and clients and gifting souvenirs during festive seasons.



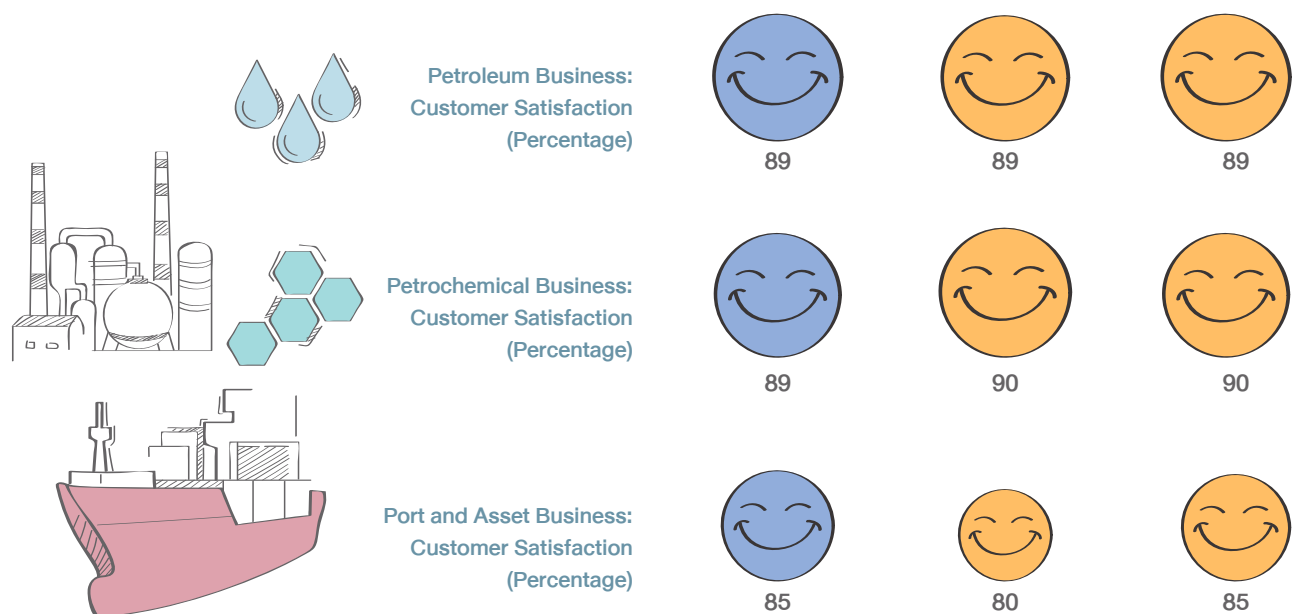
Performance

IRPC assessed the performance of customer relationship managing by using the scores from the customer satisfaction survey distributed through email. This is divided into 3 business units consisting of Petroleum, Petrochemical and Ports and Asset. In 2018, the results of customer satisfaction surveys are presented as follows.

Satisfaction of all customers in this year with a slightly lower score, As a result of quality and quantity adjustments which has changed the rules, conditions and the number of customers used in the satisfaction survey. Resulting in more comprehensive and detailed information that reflects the views, needs, attitudes and experiences of the customers. According to the Petrochemical business satisfaction survey, it was found the the Top Two Box customer satisfaction score increased from previous year 2017 to 18.7 percent.

Furthermore, IRPC conducted in depth interviews with over 100 customers to fully understand the customer's needs and concerns. Considering to the satisfaction survey performance, it was observed that there was a total of 40 complaints made, majority of these complaints were related to the quality of products, service and distribution system. IRPC thus prioritize addressing the mentioned issues by improving the production process, inspection the equipment integrity, ensuring detailed quality checks of product prior to distributing to customers, improving the condition of vehicles used for transporting goods according to the standards and engaging with customers to address issues together.

Nevertheless, IRPC did not identify any incidents which breached regulations relating to health and safety products and services, regulations concerning product labelling, market communications, customer privacy or losses of customer data.

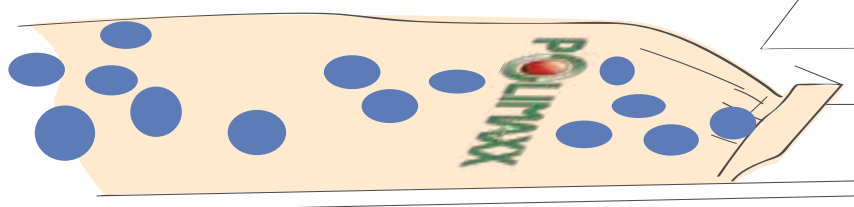


Performance Indicators

2018
Performance

2018
Target

2019
Target



Case Study: Managing Complaints with Customers

Mysterious Water in Plastic Pellets Container

In September 2018, IRPC was notified by a customer whom IRPC has excellent relationship with, stating that a large volume of water has been found in the sack containing plastic pellets which was tightly sealed. Thus, IRPC immediately conducted an investigation to identify the cause. The process included, investigating the production line in Rayong Province and monitoring of process for transporting that particular stock. It was found that the warehouse storing the client's troubled plastic bead container was a newly built warehouse with no signs of leakages in the roof. When investigated further, it was pointed out that during the period of product transporting, heavy rain was present. While moving the goods prior to being stored in the main warehouse, the container sack was placed in the temporary storage building for 1-2 days which showed signs of leakages on the building pillars. On top of this, seeping of water was identified on the sack seals.

Hence, IRPC notified the client in addition to testing seepage through the sack seals in the case of being caught by the rain. The customer was highly satisfied with IRPC's investigation which took 1 day to complete, mitigating any unplanned losses. As a result, IRPC's satisfaction rate for solving problems was ranked "Excellent" by this customer.

Due to this situation, IRPC is now aware that IRPC's sacks are water resistant excluding the seal area. Therefore, IRPC has developed a method in reduce leakages, in order to mitigate any losses which may occur from storing the product. This directly increases customer's confidence and ensures that products are of good quality. With this, lessons learnt from the situation has been shared among employees through the Knowledge Management (KM) system.



Innovation and Product Development



Product innovation development is an important element that allowed IRPC to create more added value to the products with lower costs and to successfully fulfil the demands of the market. In addition, the attention to product's sustainability that new generation of consumers are giving to their everyday products have also drove IRPC to unceasingly create environmentally friendly products. The company have also used domestically harvested resources which helps foster national economy and sustainable growth of the country as a whole.

Management Approach

IRPC carried out innovation and product development under R&D Excellence strategy with the intent to better the capability for research development and to create innovations that are compatible with the standards of World-class Fast Follower. Under this approach, IRPC's innovation center focuses on product research and development to enhance core business' competitive capacity, to maintain and expand market shares, to support product's research and development of adjacent business, increase value of special products and to seek for new long-term business opportunities (New S-Curve).

Product research and development process began with the gathering of research and development concepts and the selection of innovation for development. The criteria included value increment and resource investment reduction. Additionally, innovation center also worked closely with customer relations to receive recommendations from customers for further product development that truly reflected the needs of the customers.

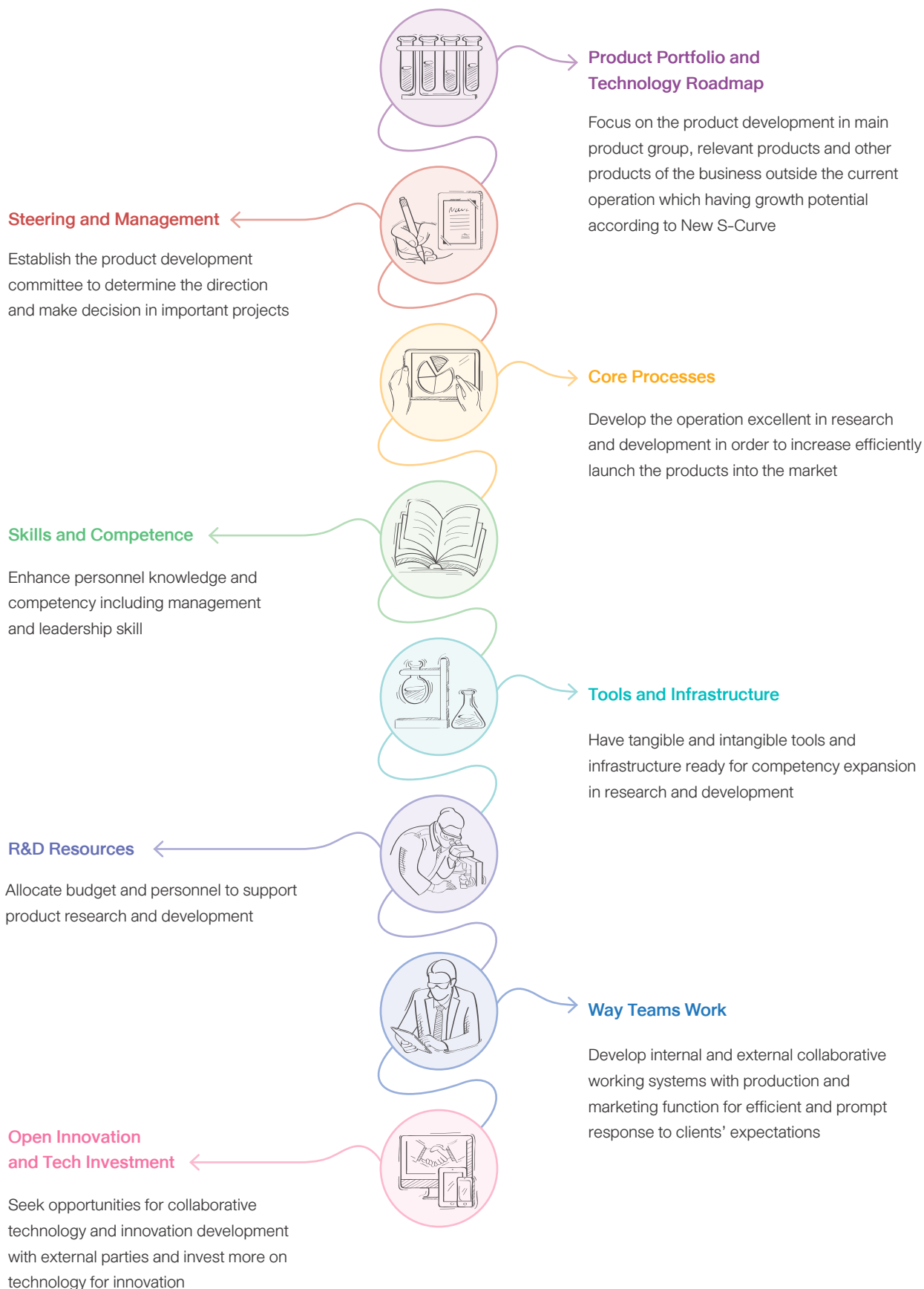
Related Digital Technology



R&D Digital Dashboard

Research and development team is planning to implement R&D Digital Dashboard in 2019 to help with progress tracking process of research projects, budgeting, serving as a knowledge and skills database for employees and a collection of research information. This project also helps promote information transparency management as well as to help make strategic planning of research development a more convenient and faster process. It also allows for an easy access to research information that were not available in the past as there was a lack of centralized system to share this information. This project is part of the "Core Processes" under R&D Excellence strategy that aim to aid higher performance in research and development department and to reduce the duration of product development before the product launch.

R&D Excellence



Initiatives

IRPC Innovation Center

In 2018, Board of Director approved the budget to improve the Research and Development Building and Application Laboratory Building and expand to be a IRPC Innovation Center. The budget of THB 732 Million was also approved for New IRPC Innovation Center construction which aim to complete the construction within 2019. This is according to the target of R&D excellence and support the additional personnel and equipment in the future.

Product Innovation

UHMWPE for Li-Ion Battery Separator

IRPC developed Ultra-high Molecular Weight Polyethylene (UHMWPE) to have suitable properties for forming a film of thickness less than 30 micrometers. The product also has microporous membrane, which can be found in lithium ion battery for phones and laptops energy storage unit of electric cars, as a lithium ion battery separator per United States Advanced Battery Consortium (USABC) standards. This microporous membrane separated between positive and negative charges of electrode and only allowed lithium ion to flow through. In addition, the membrane also acted as the protector from burning and explosion such that when the temperature exceeded the limit the membrane will automatically shut down. This product creates additional revenue at THB 22 Million.

High Speed PP Yarn

This product was developed for high-speed yarn production which is more popular in the market nowadays due to decreasing of user' cost and production time. This product is also strong and flexible and can be used in various product type. This product creates additional revenue at THB 18 Million.

High-performance expanded polystyrene products with fire resistance per the standards of DIN 4102, Level B2.

Expanded Polystyrene (EPS) has great insulation properties and a long life resulted in its popularity as insulators in construction work which helped with saving energy and global warming issues. However, such an EPS product also should have fire resistance properties, and create less soot when burning. Most importantly, the chemical used in production should be extremely safe which is the reason that IRPC used environmentally friendly flame retardant with fire resistance properties as according to flame retardant standards of polymer foam level B2, DIN 4102. This product creates additional revenue at THB 12 Million.

Environmentally and Socially Friendly Products

POLIMAXX

Under the brand "POLIMAXX", the innovation center developed products that use natural resources such as rubber, lumber, and natural coloring as part of plastic beads production, thus creating friendly products for the consumers and the environment. Moreover, such production also supported local rubber planters and the rubber industry in Thailand during the crisis of rubber prices. Some of the said POLIMAXX products included POLIMAXX GREEN ABS, POLIMAXX GREEN PS and POLIMAXX WOOD PLASTIC COMPOSITE.

Bio-Maxx is a cement-like bioplastic that can be molded with general plastic injection process. It was produced by the synthesis of natural rubber and is designed to replace other types of bioplastics such as PLA, PBS, and PHA. Bio-Maxx L-Cement is the product that is compatible with various fillers and can also be combine with cement powder. The highlight of Bio-Maxx L-Cement is its reduced weight, strength and improved efficiency and time of production when compared to the conventional cement. In addition, it can also be molded into complex shapes and is recyclable.

Innovation Culture

Lesson-learnt and Innovation KM Session

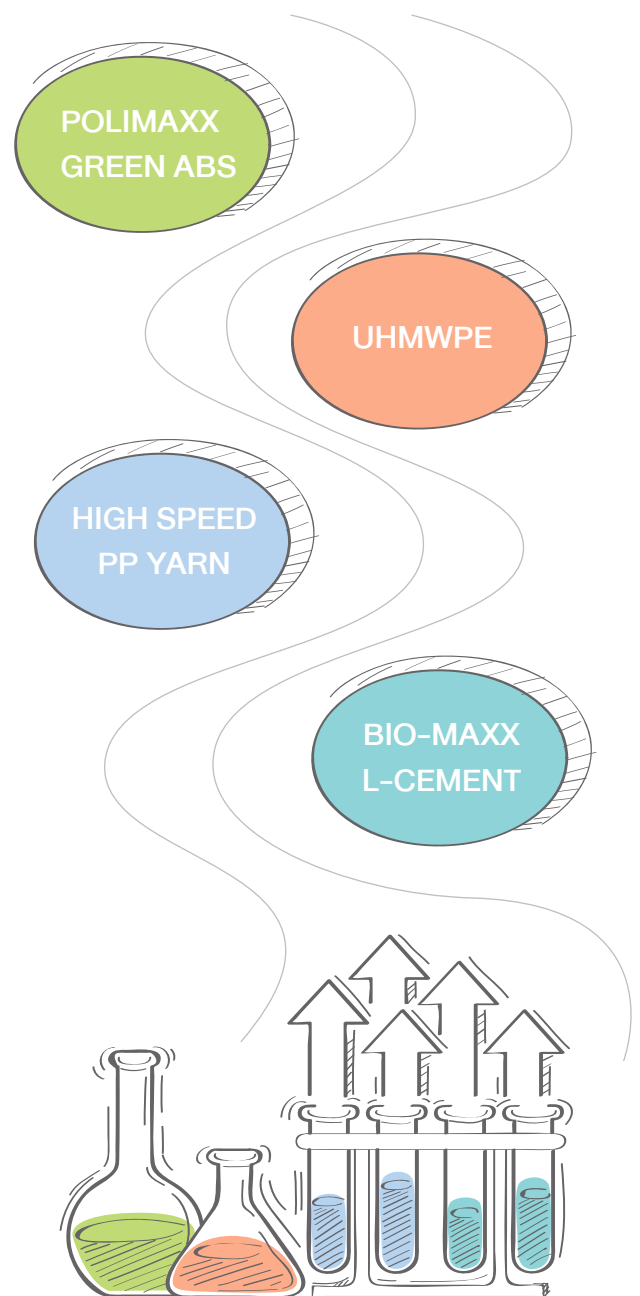
IRPC developed innovation management system by creating PEAK program to monitor the progress of EVEREST project performance including Stage Gate process, effectively. Top management can consider to stop any process with potential does not achieve the target or complete within the defined timeline in order to allocate resources into other more important projects.

In addition to follow-up the results of research and development, IRPC Innovation Center also set up the seminar within the function for continuous knowledge sharing. This is aim to transfer knowledge and increase personnel competency.

Innovative Collaboration

IRPC has created a collaborative network for research and development with educational institution and leading domestic and international companies such as Vidyasirimedhi Institute of Science and Technology (VISTEC), National Science and Technology Development Agency, Japan Advanced Institute of Science and Technology (JAIST) and Houston Technology Center. Under Open Innovation methodology, IRPC is able to learn of various approaches and access a wealth and diversity of updated knowledge and human resources while fostering healthy relationship with external organizations. In addition to reducing research and development investment risks, open innovation also supports agility of various innovation development and even drive new innovation to launch into the market faster. In the past year, IRPC has collaborated with the international leading research institutes to study the material efficiency which is developed for electronic devices and energy storage. Forming as this Phototype, IRPC has plan to invest in new business having model technology such as nano-carbon materials, etc. This is in the stage of new business feasibility.

Furthermore, to seek for new business opportunities and build New S-curve that would create significance and sustainability towards the organization, IRPC has implemented a research and development program 'De novo Research' that focused on intriguing technology in 3 platforms. They are electronic materials, energy storage and nano-materials. In 2018, innovation center has planned for research and business for all the 3 platforms as well as to simultaneously study for the market and the technology. The project is expected to commence accordingly in 2019.



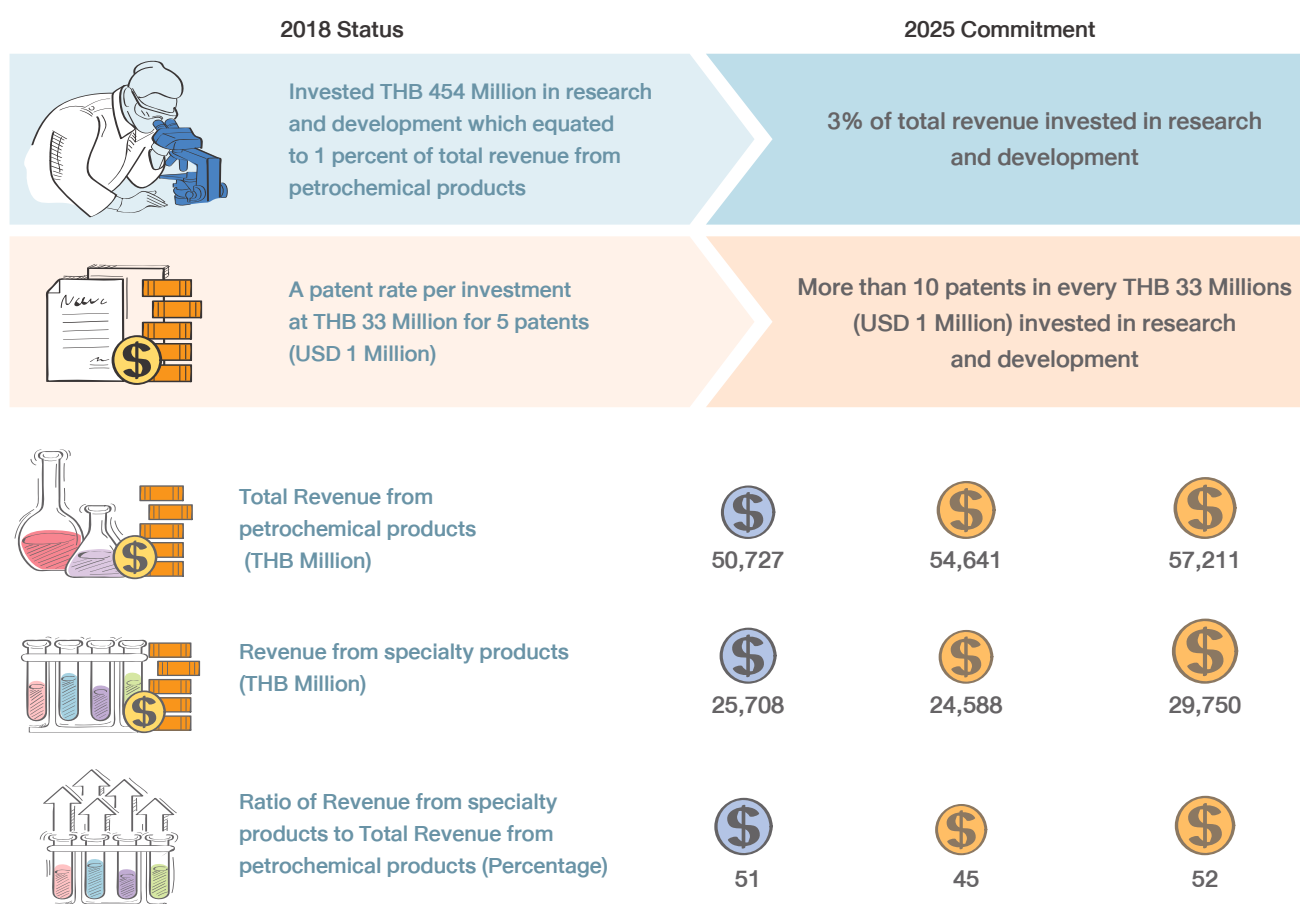
Performance

Striving towards R&D Excellence, IRPC proceeds forward on talent attraction as well as research and development budget allocation. A long-term target on research and development was also set until 2025.

In 2018, IRPC invested in research and development totaling THB 454 Millions or 1% of petrochemical sale revenue. While projects currently under the development are valued at THB 940 Million, 15 products research projects were successfully launched into the market last year resulted in THB 223 Million of revenue. A patent rate of 5 patents per THB 33 Millions R&D investment was achieved. In terms

of human resources, 12% of personnel in IRPC's research and development function are PhD graduates.

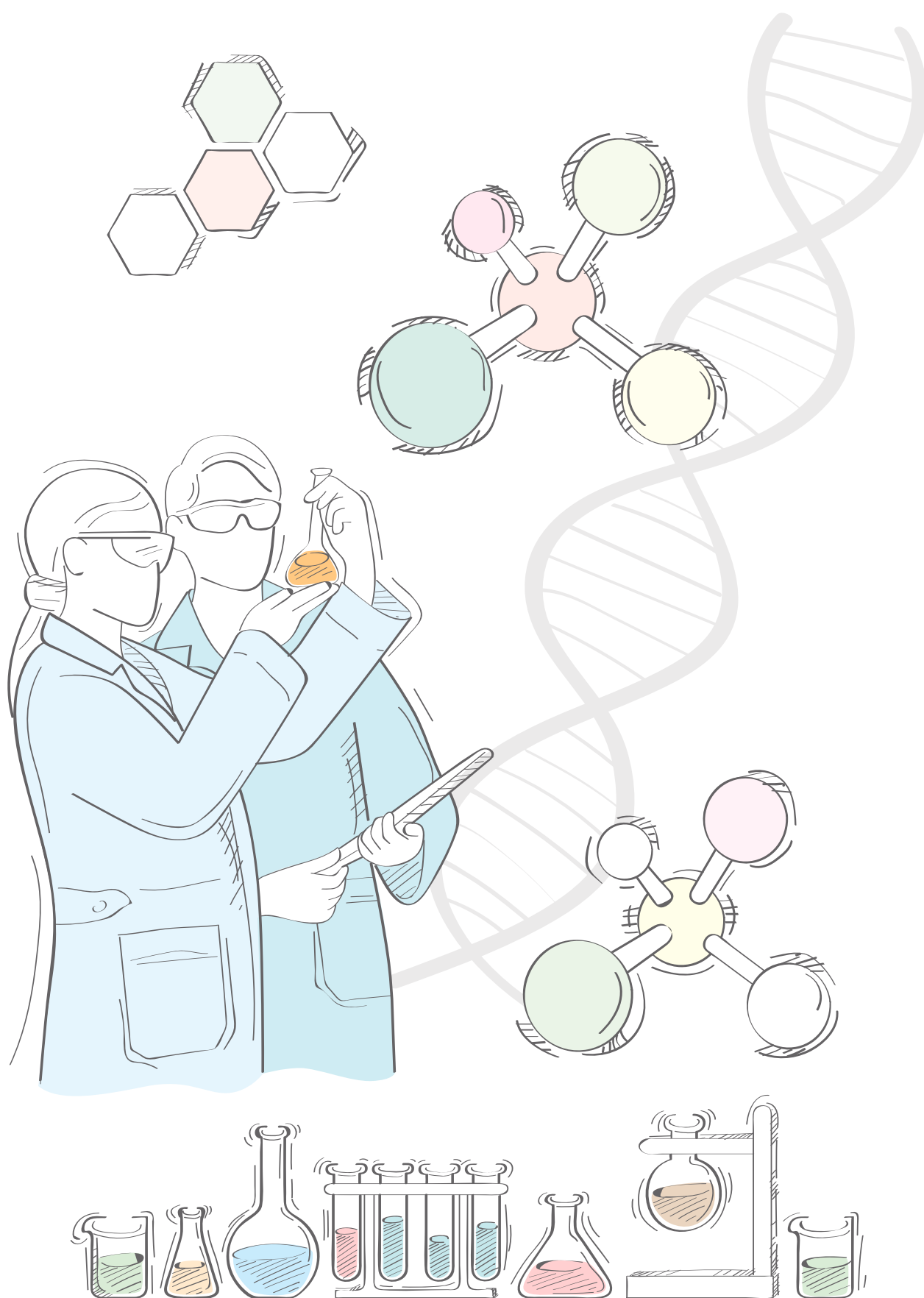
According to 10 Year Roadmap, IRPC plans to invest up to 3% of petrochemical sale revenue in research and development in order to generate sales of specialty products or new products as high as 25% of petrochemical sale revenue. IRPC also aims to achieve a patent rate of more than 10 patents per THB 33 Millions R&D investment and attain 30% of personnel with PhD qualification in research and development function.



Performance Indicators

Best Innovative Company Awards from SET Award 2018 was received for Convert HDPE plant to Specialty pipe grade. The project was the design of molecular structure of polymers and the upgrade of plastic beads production to allow for this specific design to be produced. The project was certified by international leading standards which resulted

in products that corresponded to the needs of domestic and international consumers as well as a great revenue for the company.



HUMAN CAPITAL

Human Resources Management for Sustainable Growth



IRPC aims to cultivate employees' attitude and behavior in line with the value of iSPIRIT, which is the key of IRPC's transformation to modern work environment. This transformation requires development of agile working environment and continued quality development.

These development requires strong human resource management in all dimensions, including promoting incentives and motivations, strengthening leadership, and promoting welfare, as well as occupational health and safety excellence.

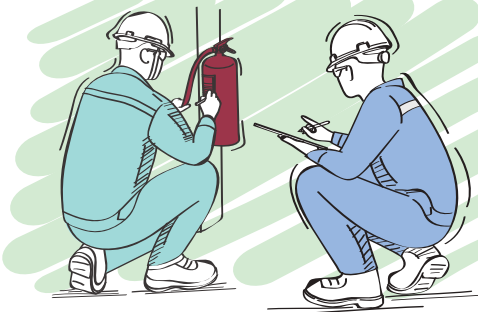


Human Resources Management



- Dimension 1 : Building an Effective and Agile Organization
- Dimension 2 : Inspirational Leadership Development
- Dimension 3 : Resources Management and Succession Planning
- Dimension 4 : Applying Digital Technologies in Human Resources Management

Asset Integrity and Occupational Health and Safety



Safety Excellence



Process Safety Management



Safety Cultures



Proactive Health Promotion

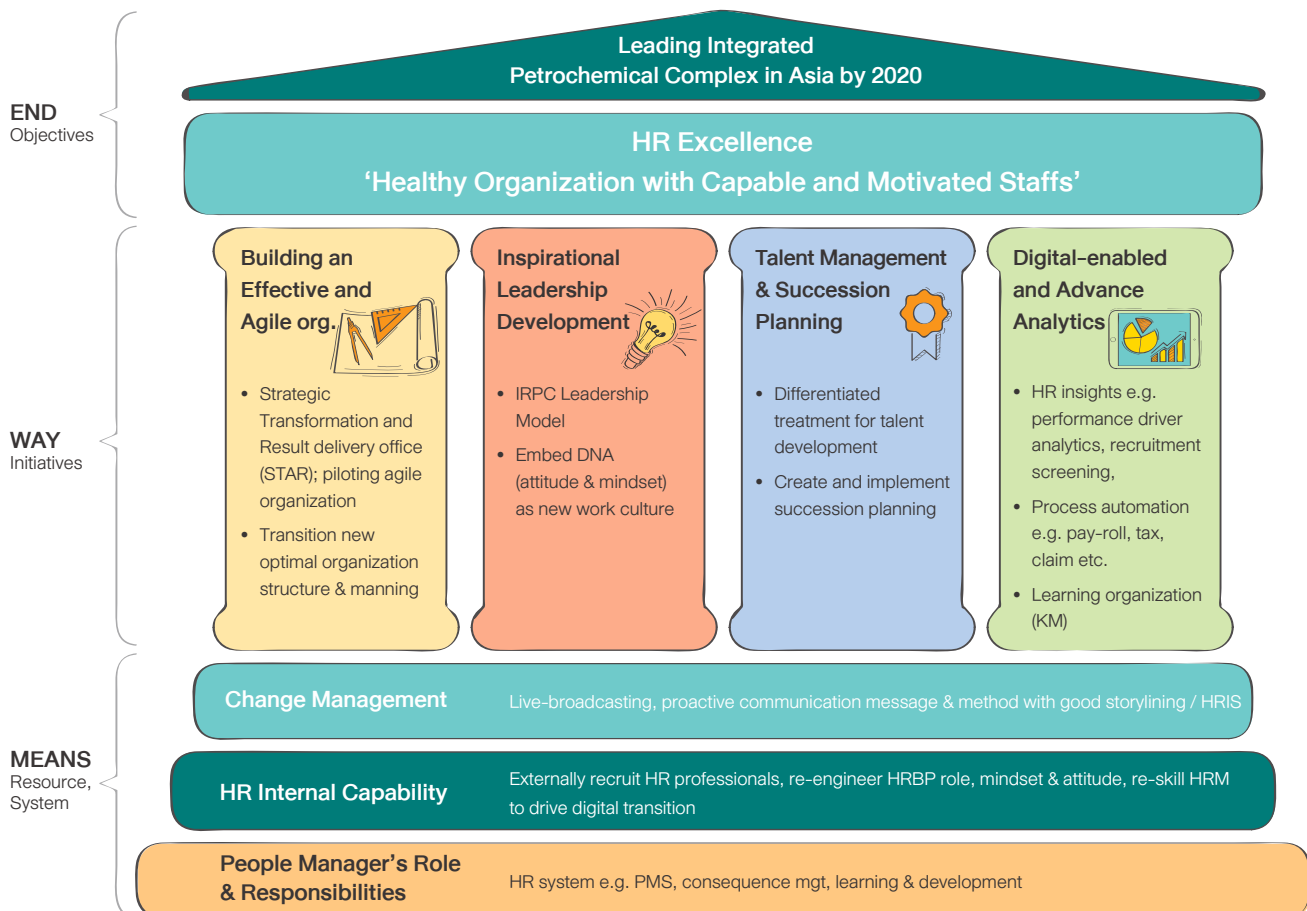
Human Resources Management

IRPC's valuable employees are the fundamentals to driving the organization towards a continuous success. IRPC therefore prioritizes effective recruiting of high potential candidates and retaining quality employees, as well as developing employees' knowledge and competencies to enhance their career development opportunities. In addition, IRPC continues to foster the core organizational value of iSPIRIT, through the promotion of IRPC DNA or the desirable behavior of IRPC's employees. IRPC aims to be recognized as an exemplary organization in human resource management where employees are highly engaged, and to become the employer of choice for potential recruits.

Management Approach

IRPC improves and promotes employees' competencies through the GDP strategy, under the 'Power of People'. In 2018, the company remains determined to become the Leading Integrated Petrochemical Complex in Asia by 2020, and to execute HR Excellence strategy with the aim to create

the organization of agile business operations, competent and highly motivated employees, and excellent work-life balance workplace. IRPC's human resource strategy consists of 4 dimensions as follows:



Dimension 1: Building an Effective and Agile Organization

IRPC strives to strengthen the organization's competency and agility, promote Agile Way of Working, and improve the capacity to promptly respond to stakeholders' needs.

In 2018, IRPC established the Strategic Transformation Unit to enhance agility and flexibility in business operations. To achieve agile way of working, IRPC has adopted the long term organizational restructuring plan which will transform IRPC to an effective and agile organization by 2026.

Dimension 2: Inspirational Leadership Development

IRPC drives employees' competency development, and behavioral changes in line with the desirable behaviors defined as IRPC DNA values. IRPC also strengthens leadership skill development to promote high performance employees as the Role Model who can inspire employees throughout the organization. To achieve this, IRPC uses Influencing Model concept, along with assessing various departments' performances to establish pilot unit to develop best practices in leadership and competency development for their employees. All these efforts will promote good practices for competency development and inspire employees, both at the individual and departmental levels.



IRPC DNA is the desirable behaviors that the organization expects all employees to adhere to, and develop as the organizational culture. The value of IRPC DNA is to foster employees at all levels to engage and adopt these behaviors into practice, and drives IRPC to sustainably achieving its targets.



Culture Transformation Project

Culture transformation Program aims to foster IRPC DNA role model among executives. In 2018, IRPC have appointed external trainers to provide a workshop for department managers and above in all functions. The workshop focused on exploring behaviours that resonate with IRPC DNA and how to scale them up to make a change in organization's performance. Inside out principles based on Otto Scharmer's U theory and Iceberg Theory was used to reshape their attitudes and lead to behavioral shift.

Dimension 3: Resource Management and Succession Planning

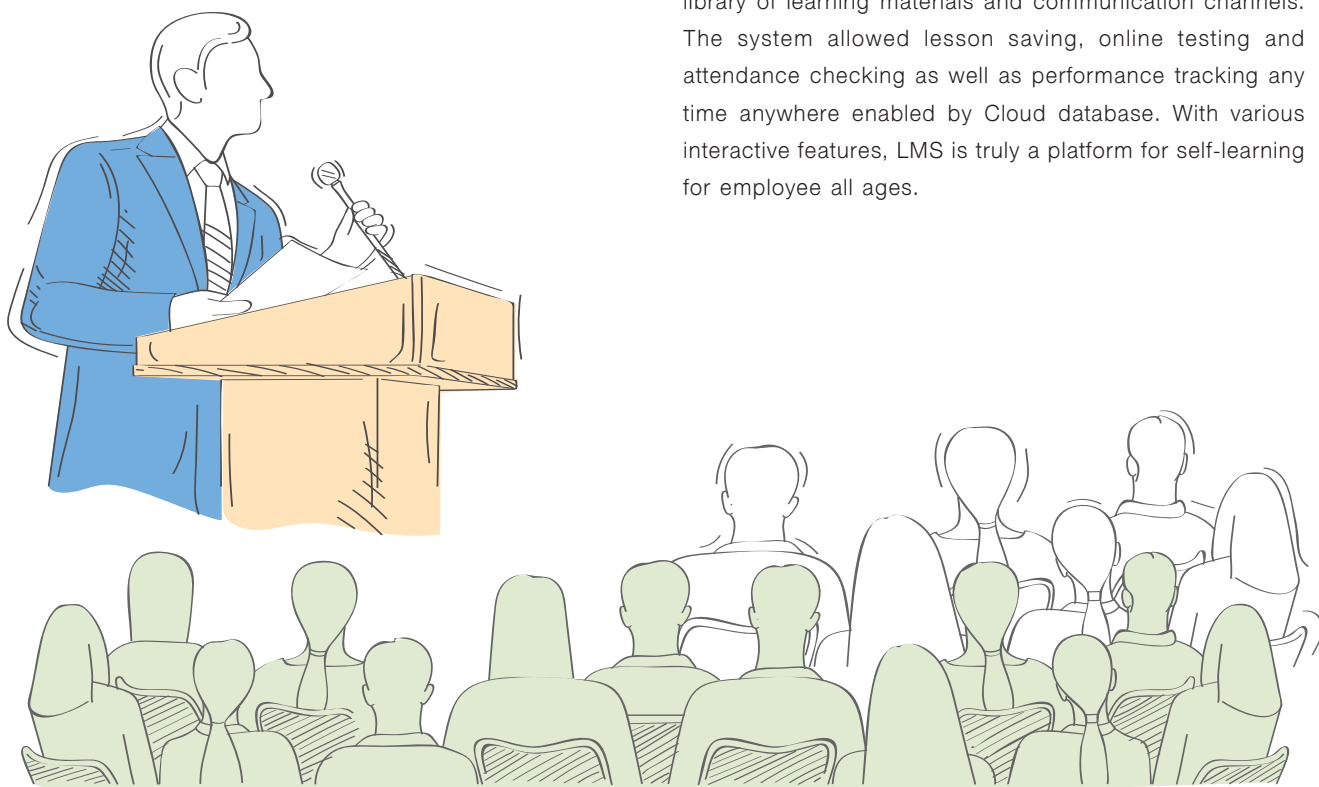
IRPC prioritises the development of knowledge, capability and competency of employees at all levels, in line with HR Excellence strategy, through Leadership Excellence Program and Learning Management System (LMS). Along with the competency development programs, IRPC also prioritises high quality employee retention through setting a clear career path in accordance under IRPC's Top 30 Leadership Project.

Current Estimated Potential: CEP

With human capital development as a priority, IRPC launched an employee potential estimation system called Current Estimated Potential (CEP) for supervisors to assess employee's growth potential and its alignment with human capital needs in the future. The outcome will serve in long term human resource planning and recruiting process which lead the achievement of company's objective. In 2018, 98% of employee have participated in this program.

Learning Management System (LMS)

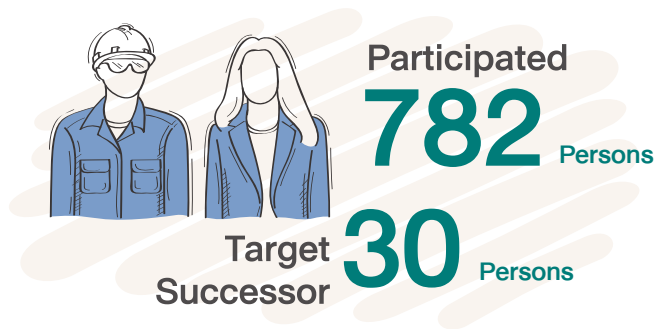
IRPC launched Learning Management System (LMS) in 2018, an education system designed to build skills and knowledge of personnel in 4 aspects; technical skills, leadership, organization knowledge and business; and efficiency improvement. Such system integrates Competency Assessment, IDP and Learning Management and presents as a bridge to Competency-based development. Learning components consist of Course Management, Content Management and Evaluation System, Course Tools and Data Management System. Instructors, learners and administrator are facilitated by various tools such as online classrooms, library of learning materials and communication channels. The system allowed lesson saving, online testing and attendance checking as well as performance tracking any time anywhere enabled by Cloud database. With various interactive features, LMS is truly a platform for self-learning for employee all ages.



Top 30 Leadership Project

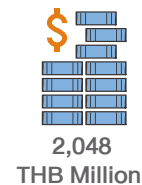
IRPC organised the Top 30 Leadership program to select and develop 30 employees with high leadership skills, who are qualified to become IRPC executives in the future. Many evaluation system are applied in selecting the candidates of this program such as Current Estimated Potential (CEP), Assessment of Leadership Potential (ALP) and 360 degree performance evaluation in which direct line managers, indirect managers, subordinates and colleagues are involved in the evaluation.

The selected employees are assigned to manage challenging projects or initiatives as a part of their performance assessments. The project is a part of IRPC's efforts to promote employee potentials and foster future organization leaders.



Return on employee development investment

Average Training Hours for each Employee (Hour/Person/Year)



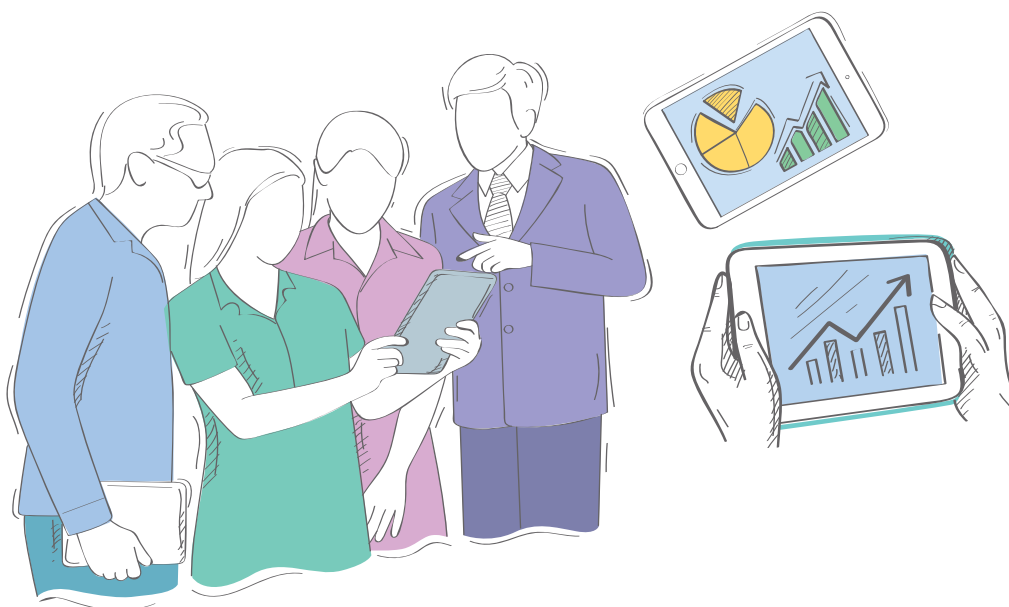
Performance Indicators

Dimension 4: Applying Digital Technologies in Human Resource Management

IRPC applies digital technologies to increase efficiency of Human Resource Management, in line with the GDP strategy's 'Power of Digital'. In 2018, IRPC developed a human resource information system on the intranet with a large database to streamline management of employees' information, centralise operating systems between departments and provide an individual communication channel for all. The system was also established as a new hub for trainings and communications that enhance employees' accessibility to information and resources, e.g. Internal Search Engine coupled with online authorization system accessible via smartphone and two-way communication channel via Line@ where employee can interactively ask questions. Additionally, all employee can access Learning

Management System (LMS) and participate in online courses through SkillLane application anytime anywhere.

With aforementioned human capital development and talent retention programs, IRPC in corporation with external survey company regularly conducted employee engagement survey and benchmarked its performance with peers in the oil and gas industry in Southeast Asia. Contributing factors of employee engagement were analysed and translated into engagement promotion initiatives. Likewise, turnover rate of the oil and gas industry in Thailand is also taken into account to realise excellent Human Resource Management, productive working environment, and attractive employee welfares and benefits at IRPC.



Employee Engagement Score (Percentage)



83

2018
Performance



80

2018
Target

Organization Health Index (Percentage)



86

2018
Performance



>74

2018
Target

Asset Integrity and Occupational Health and Safety

IRPC recognizes the risks and possible impacts of business operations on occupational health and safety of employees and contractors, as well as its asset integrity. As a result, IRPC continuously operates the business with the priority in managing safety and occupational health for all workers, and fostering safety culture throughout the organization. To achieve this, IRPC also improves stability and reliability of production equipment, in order to achieve excellent working conditions and zero work-related accident.



The Prime Minister's Industry Awards 2018 on Safety Management category for Condensate Residue Conversion Plant by Ministry of Industry

PTT Group SSHE Awards 2018 Tier 1 Zero Accident by PTT Group

ASEAN-OSHNET Awards on Best Practice category for Ayutthaya Depot

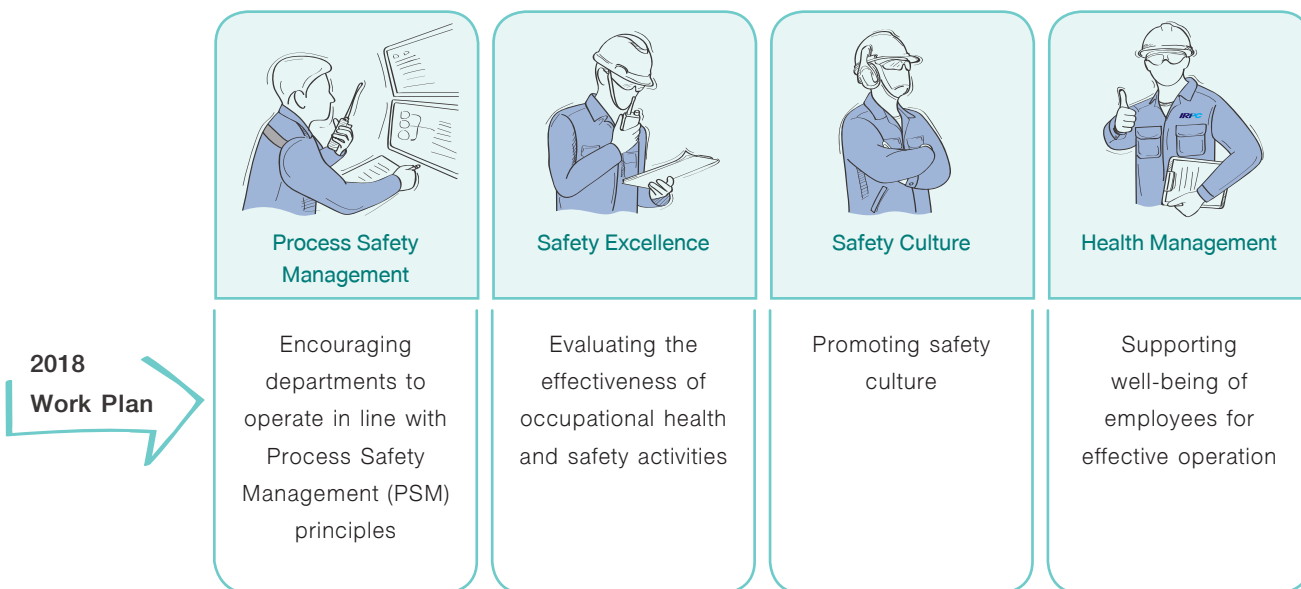
Management Approach

IRPC implements the company's occupational health and safety strategy to achieve the company's goal of becoming Leading Integrated Petrochemical Complex in Asia by 2020 with operational excellence, and zero accident. In doing so, IRPC focuses on managing and improving

process safety management, promoting safety excellence, fostering safety culture and strengthening health management to nurture better health and safety throughout the organization.



Progress on IRPC Occupational Health and Safety Strategy



Process Safety and Reliability Management

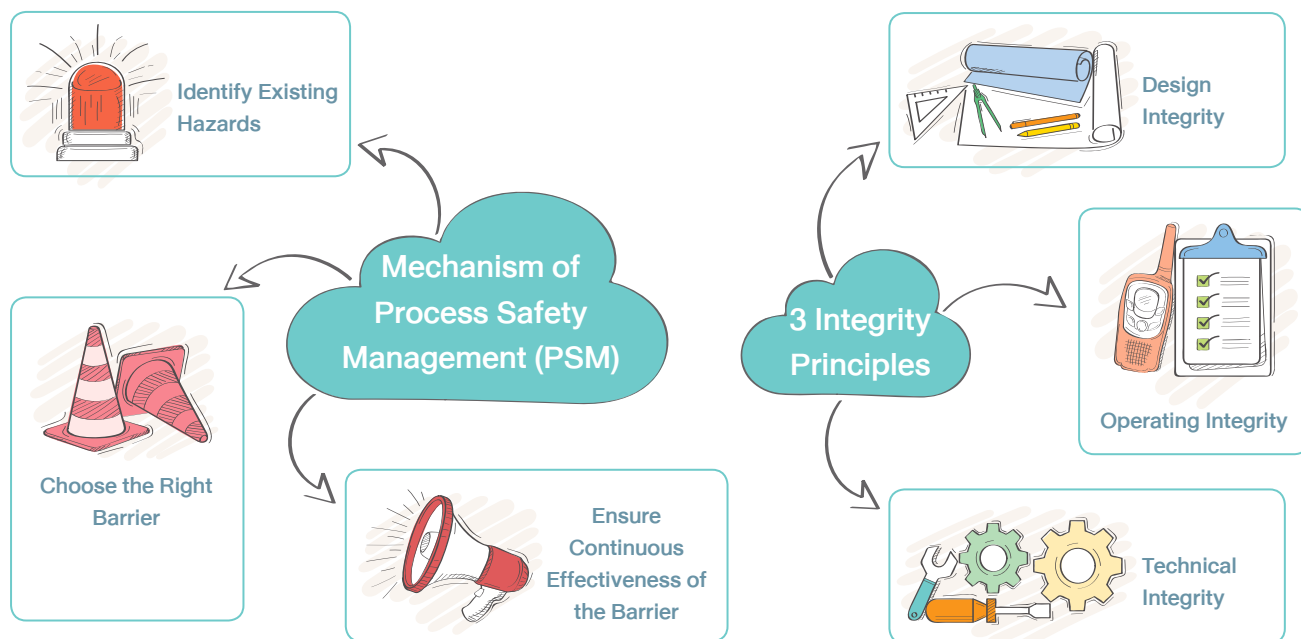
Safe and reliable production process will reduce accidents or unplanned shutdowns that affect business operations. Accordingly, IRPC controls and manages the operational processes through Process Safety Management (PSM) which applies management measures and engineering basics to improve and achieve highest level of process reliability, such as Risk Assessment, Risk Reduction Measure, Risk

Based Inspection, Risk Control Measure, Safety Critical Element Management, and Time Base Preventive Maintenance. These measures comply with Occupational Safety and Health Administration (OSHA) standard and Center for Chemical Process Safety (CCPS) standard, to reduce risks of accidents that may have severe impacts on workers and assets, as well as to maximize the efficiency of safety management throughout the production chain

Process Safety Management (PSM)

Process Safety Management (PSM) refers to a management process to lower the chance and reduce the losses from accidents related to production processes such as, chemicals spilled, fire, explosion, etc. It is based on 3 Integrity Principles; Design Integrity, Operating Integrity and

Technical Integrity. The PSM mechanism can be employed to identify risk factors or hazards that might exist throughout the operations leading to setting up of preventive barriers and mitigating barriers in order to avoid and control the impact caused by those factors.



Model Plant Project

In 2018, IRPC improves efficiency of PSM system through Model Plant Project which support better communication and understanding of safety management approach under the PSM among employees. The project raised awareness on safety related issues during the Morning Talk, including accident rates, work permits, management of change (MOC), safety equipment, and operating procedures. As a result, the Model Plant Project has been one of the main contributors to IRPC's zero Tier 1 Process Safety Events caused by spills in 2018.



Performance

The commitment to achieving safe and accident free workplace has driven IRPC to continuously improve its production safety and stability. Nevertheless, in 2018 there are two Tier 2 Process Safety Events, including 1) leakage of 35% hydrochloric acid from the storage tank in production Utilities and a case of fire in extruder gas outlet system

in ABS Pallet production process. In response to the events, IRPC has investigated using Process Safety Management and has implemented measures for all departments to assess risks of similar incidents in their production processes and to develop preventive measures.



Process Safety Events Tier 1 (Case)



0



0



0



0

Process Safety Events Tier 2 (Case)



2



0



0



0



Percentage of Plant Reliability (%)



99.9



99.4



99.5



99.6



Percentage of Operational Availability (%)



97.5



97.4



97.6



97.6



Unplanned Shut Down (Case per year)



11



9



7



5

Performance Indicators

2018
Performance

2018
Target

2019
Target

2020
Target



Safety Excellence

One of the factors to improve quality of life as envisioned in the Sustainable Development Goals (SDGs) is a safe working environment for all. Respectively, IRPC prioritizes promoting good working environment and constantly improves its health and safety performances with the aim to become Safety Excellence organization, in order to achieve its goal of zero accident (Goal-Zero) organization.

IRPC adopted the management approach of Operational Excellence Management System (OEMS) that ensures

excellences in all aspects of the operational management systems. As one of the elements of OEMS, IRPC prioritizes Safety, Security, Health and Environment (SSHE) and focuses on the development of excellent safety strategy that would guide operational practices for employees and contractors. With this awareness and commitment to adhere to health and safety standards, IRPC has consistently received ISO45001 (Occupational Health and Safety) certification which is a voluntary standard that covers all employees and contractors throughout the organization.

IRPC recognizes the importance of the occupational health and safety management in compliance with laws and regulations. IRPC has appointed the Safety Occupational Health Committee (SHE), which comprises of equal numbers of representatives from both employer and employee with a vocational safety officer as secretary. The committee is responsible for deliberating policy and safety management plan, taking part in assessing and identifying risk,

supporting safety promotional activities, as well as monitoring performance and presenting mitigation measures through monthly meeting. Other committees are also appointed, include, IRPC Management Safety & Occupational Health Committee (MANSAFCOM), Department Safety Committee (DEP. SC) in order to manage occupational health and safety issues as efficiently as possible

Performance

Safety Excellence Assessment

IRPC conducts Safety Excellence Assessment to review and improve the efficiency of operations in order to prevent and reduce practical risks, as well as to drive the organization's performance on safety and occupational health excellence. The assessment was designed by integrating various management systems, such as ISO45001, PSM and OEM, to

cover all elements of occupational health and safety, including safety and occupational health plans and its implementation, working environment management, emergency preparedness, and safety and incident trainings. The assessments are carried out by the internal auditors from Safety Management Department.

In 2018, a total of 67 departments have participated in Safety Excellence Assessment. The number revealed increasing trend as compared to 61 departments and 66 department participated in 2016 and 2017 respectively. Subsequently, the assessment also shown better trends of safety performances among IRPC's departments, as the number of departments in Platinum level has doubled from the previous year. Through this initiative, in order to inspire and sustain safety improvement, IRPC provides Presidential Award for departments rated Diamond level, and Operation Excellence Award for Platinum level departments

| Levels of Award | No of Dep. in Y2016 | No of Dep. in Y2017 | No of Dep. in Y2018 |
|--------------------------------------|---------------------|---------------------|---------------------|
| Diamond | 0 | 0 | 0 |
| Platinum | 11 | 15 | 28 |
| Gold | 26 | 26 | 24 |
| Silver | 8 | 5 | 1 |
| Bronze | 0 | 1 | 0 |
| Ineligible Due to Accidents Occurred | 16 | 19 | 14 |
| Total Participating Units | 61 | 66 | 67 |

Safety Culture

IRPC strives to strengthen Safety Culture Execution to prevent operational accidents by promoting better understanding and awareness of health and safety among employees and contractors, from the basic understanding to specialized health and safety awareness in specific types of work. IRPC cultivates the safety culture through seminars,

training and occasional campaigning, as well as managing safety behavior through Behavior Safety Management (BSM) system. The main objective of BSM system is to promote long-term desirable behaviors based on i-CAREs principle, which corresponds with Safety Excellence strategy. To assess the level of safety culture, IRPC also conducts performance surveys and safety culture assessments once every three years.

i-CAREs

is a promotional tool for safety culture in IRPC, under the slogan **“Take care for each other’s safety”**, with the following basic principles:



Walk & Talk

Walk & Talk is a site visit program by department level managers or higher, to communicate policies, regulations and to share safety and occupational health related updates to employees. The visit also serves as an opportunity for the managers to directly learn about the challenges at the operational level and employees' quality of life. It also allows the managers to follow up

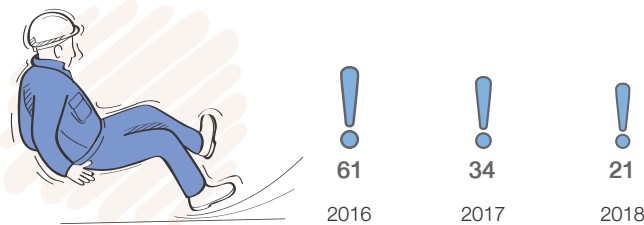
on progresses in improving various safety measures. In 2018, high level managers have frequently conducted site visits to exchange safety information with area managers and to learn about the risks and preventive measures as well as emergency preparedness for incidents in the operational areas and nearby areas.



Life Saving Rules

In order to reduce frequency of safety incident occurred during operations, IRPC improved working environment and adjusted behaviors of employees through dissemination of Saving Rules posters to remind workers of safety culture. The poster also shows details and proper steps to maintain safety and avoid repeated safety incidents in the future. This campaign has contributed to significantly reduced number of safety incidents in 2018.

Number of Accidents (Case)

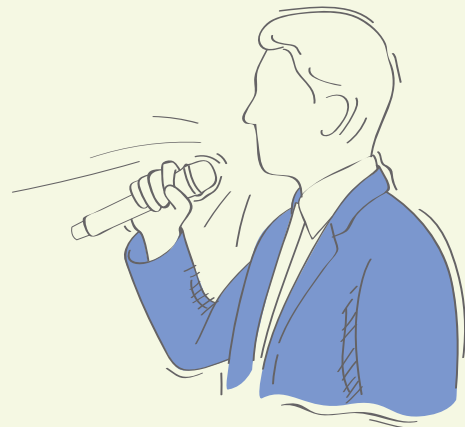


In regards to the safety of contractors, IRPC has implemented projects and improved various safety plans to support safer production processes. These efforts included safety activities such as Contractor Day or 99 Days Strong Contractor etc. IRPC has also promoted safety and occupational health

throughout its supply chain, through setting environmental, social and governance (ESG) risk assessment criteria that encompasses safety of operational processes and occupational health.

99-Day Strong Zero Accident

On 14 December 2018, Senior Executive Vice President, Executive Vice President of Safety, Occupational Health and Environment gave a speech at the opening of the 99-Day Strong Zero Accident and award the Strong Zero Accident flag to 14 accident-free functions with over a thousand participants at the ceremony. On this event, safe driving training was provided by external speakers from Toyota Vision Rayong for employees, contractors and students from IRPC Technological College.



Knowledge Sharing Seminar on “Accident-Free Transportation Strategy”

Knowledge Management (KM) Department together with Warehouse Management and Product Delivery Department organized knowledge sharing seminar on “Accident-Free Transportation Strategy” on 30 October 2018, for IRPC employees and contractors of petroleum and petrochemical transport companies. The event started off with welcome speech by Senior Executive Vice president of Petrochemical and Refining Business Group along with Mr. Surasak Charoensirichot, Rayong Governor, at IRPC Community Learning Center.

The activities focused on the exchanging experiences amongst transport companies, including issues on safety strategy and process improvement that prevented accidents in the past 3 years. The seminar was organized as a part of Goal-Zero target, in correspond with public and private agenda for zero accidents. The seminar was the first activity that IRPC shares its good safety practices to stakeholders and the public. The event also reflects IRPC’s commitment towards the community, society, and environment to fulfil the company’s vision as Leading Integrated Petrochemical Complex in Asia by 2020.



Moreover, IRPC also encourages employees and contractors to report safety risks and concerns via 24-hour internal safety complaint center or reporting via the safety committee meeting. The reporters who voiced their concerns on safety risks will also be protected of their rights. Furthermore, all employees and contractors are reserved the right to stop

work immediately if working conditions are unsafe (Stop Work Policy). Subsequently, IRPC investigates all accidents to identify the cause, develop solution or measures and monitor results, as well as to communicate the lesson learnt via Knowledge Management (KM) to proactive preventions in order to avoid reoccurrence of such incidents in the future.



Related Digital Technology

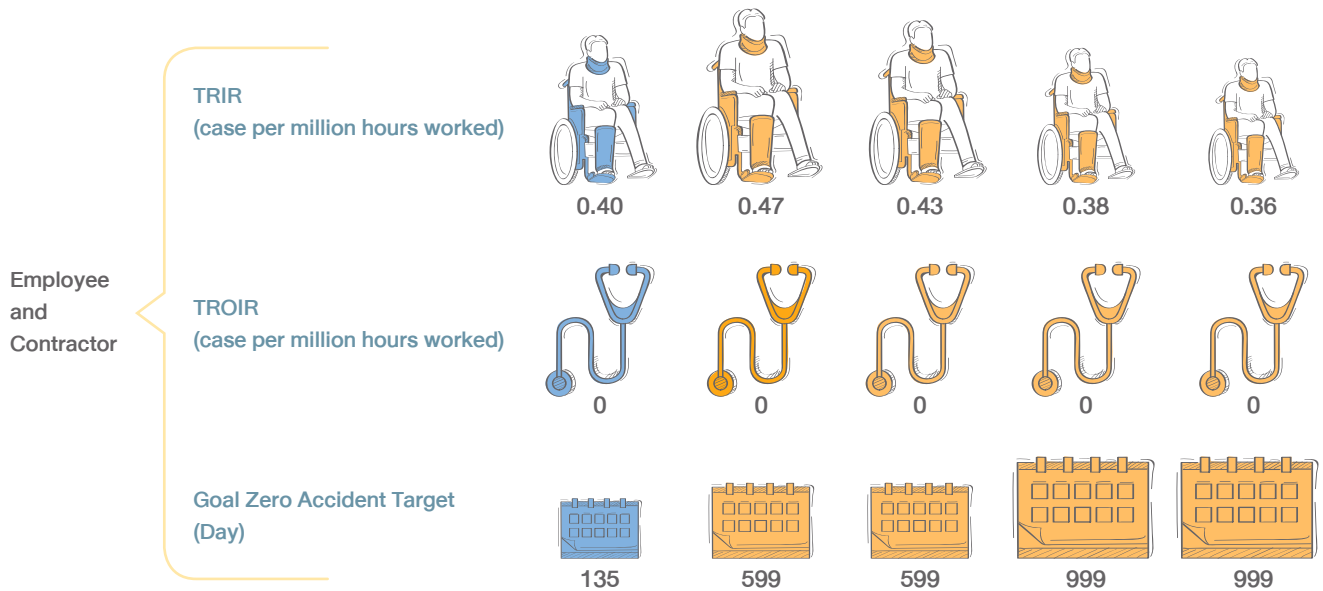
Behavior Safety Management (BSM) Software

In 2018, IRPC developed Behavior Safety Management (BSM) Software as an extension of the previous Behavior Based Safety (BBS) management system. The software allows users to note their observations of

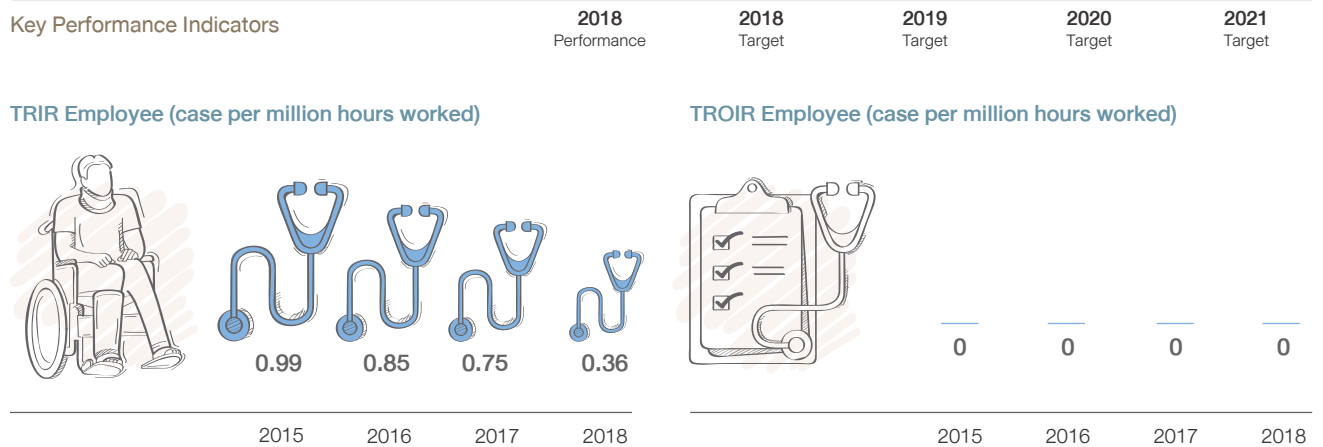
safety behaviors, follow up on the improvement, remind users of safety risks, and submit recommendation or praises to employees with good safety practices. The program is designed to foster long-term behavioral and attitude changes towards better safety practices.

In 2018, IRPC has implemented test-run of the software. The full version of the program is expected to be deployed in 2019.

Performance



Key Performance Indicators



Proactive Health Promotion

IRPC takes the matter of employees' health seriously. Accordingly, the company started the program "Good Health Starts Here" to promote healthy habits, e.g. promote the availability of healthy foods for employees, play promotional videos on healthy lifestyle on staff shuttle buses and in the cafeteria, promote healthy snacks in meetings, such as fruits and herbal juices etc. Furthermore, IRPC also organized "Good Health by walking, running, cycling IRPC 4Gs (Good Food, Good Health, Good Life Good Mood)" activity to promote physical exercises for relaxation and to raise awareness of health among employees. As a result of these efforts to cultivate healthy lifestyle and promote good working environment, the rate of work related injuries and illness have remained at zero for the past consecutive years.



SOCIAL & RELATIONSHIP CAPITAL

Create Value for Society to Live Together Sustainably



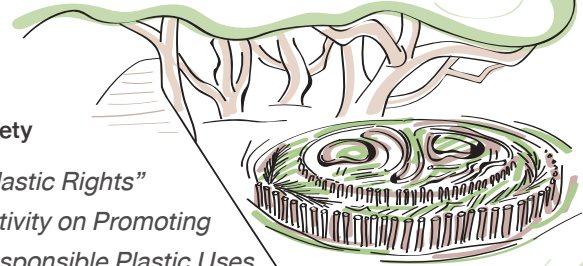
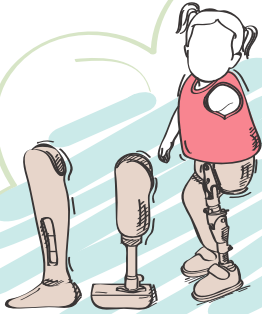
Good relationship with communities surrounding operations is a significant social capital that support smooth business operations. IRPC recognizes the importance of community relations and intend to co-create values with communities and societies on various fronts, including improving quality of life, supporting education, health promotion, and environmental conservation. In addition, IRPC continues to prioritize protection of human rights of all relevant individuals who take parts in our business operations.



Community Well-Being

Improving Quality of Life for Society

- From Bench to Community Project
- Lum Sai Yong Model Project
- “Plastic Rights” Activity on Promoting Responsible Plastic Uses



Community Well-being Improvement Development

- Community Health Promotional Funds
- Pun Nam Jai Clinic Project
- Mobile Community Health Checkup Unit Project
- Public Health Surveillance Project
- Community Enterprise Promotion Project

Respect for Human Rights

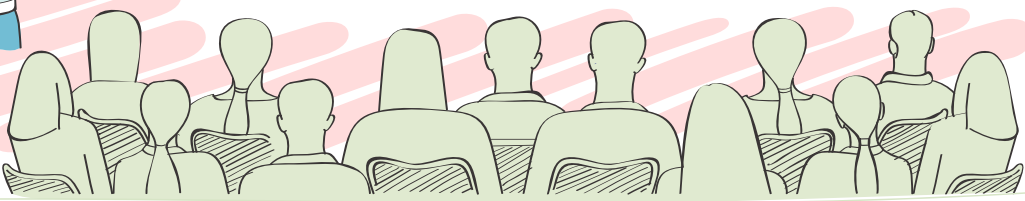
Initiatives

- Social Rights to Know on IRPC Expansion Project
- Awareness Raising on Supplier Rights



Human Rights Policy

- Policy Development in Both Thai and English
- Public Disclosure on IRPC Website
- Raise Awareness and Provide Human Rights Training for All Employees
- Evaluate Result of the Management Approach



Community Well-Being

IRPC conducts sustainable and responsible business for the society and communities surrounding the company's industrial areas through implementation of projects that focus on improving quality of life, education, health, and environmental conservation in order to achieve business growth along with community development, while creating shared value between IRPC and communities. These efforts also contribute to the achievement of Sustainable Development Goals (SDGs), secure the Social License to Operate, and build trusts of all stakeholder groups.

IRPC promotes community well-beings in line with the company's Community Development and Community Relation Manual (CDCR), which determines values benefitted from implementations of social projects through project value assessments, or the Portfolio of Social Initiatives (POSI). POSI also provides information for balanced implementation of social projects, through the consideration of Time of Impact and Proximity to Core Business. In addition, IRPC conducts Social Return on Investment (SROI) assessments to evaluate successes of social projects implementation.



Improving Quality of Life for Society

IRPC is committed to improving life quality for people in the society alongside realizing the importance of natural resources and environment conservation. In doing so, IRPC has implemented several projects including:

From Bench to Community Project

IRPC takes parts in improving quality of life promoting self-reliance for people with disabilities. The company have donated the average of 20 tons of PP plastic pallets (Polypropylene) annually to the Prosthetics Foundation of



H.R.H the Princess Mother to be used for prosthetic legs production. Since 2011, IRPC's plastic have contributed to the production of 21,579 prosthetics in Thailand. In addition, IRPC also donates plastic pallets to the Prosthetics manufacturing units of the Foundation for projects implemented in neighboring countries including Malaysia, Myanmar, Cambodia, and Indonesia.

Furthermore, in 2018 IRPC also donated a container truck to the Prosthetic Foundation. The truck has been used for transportation of tools and equipment in order to accommodate the Foundations' mobile units in remote areas.

Lum Sai Yong Model Project

The lack of water reserves in remote areas and absence of systematic water management are major causes of water scarcities, both for consumptions and agricultural uses in several communities. To address these challenges, since 2014 IRPC have collaborated with the Education and Public Welfare Foundation, to develop a water management system in Lam Sai Yong sub-district, Nang Rong district, Buriram province. The success of Lam Sai Yong Model has resulted in increase of water reserves for uses in tap water production in the village, household vegetable gardening, and for other consumption purposes. So far, the Lum Sai Yong Model Project has been replicated and implemented in various areas in Thailand.

In 2018, IRPC has expanded the project by dredging a 1,175 meter long water retention canal (or Kaem Ling canal) which covers the areas of Moo 8 Ban Non Ee Pang, Moo 10 Ban Phon Wua, Moo 1 Baan Phon Kha, and Moo 12 Baan Pone Sawang, Mueang District, Sisaket Province. The canal functions as a retention basin for natural floods and receives water from the

Huai Khan Reservoir. The canal can hold up to 58,700 cubic meters of water, providing water reserves for the communities and mitigate water shortages in the area. The communities also benefit from decreased spending on sourcing portable water and water for agricultural uses.

IRPC digs a 1-rai reservoir to collect and reserve flood waters and rainwater at the Natural Agriculture and Creative Center, Moo 8, Na Kham Sub-district, Mueang District, Uttaradit Province. The center serves as an organic agricultural learning center for farmers, youths, and the public. The reservoir provides water reserve of 9,600 cubic meters for agriculture in dry seasons. The water reserve can also support 10 households in surrounding communities, resulting in the benefits contributed to both the center and the community. In addition, in 2019 IRPC plans to expand implementation of the Lam Sai Yong Model with the aim to develop effective water management for agricultural purposes in other areas in Thailand, including Udon Thani and Ubon Ratchathani provinces.



“Plastic Rights” Activity on Promoting Responsible Plastic Uses

IRPC, in collaboration with Thammasat University and communities surrounding IRPC industrial areas in Rayong province, organized “Plastic Rights with Rayong River Conservation Boat” activity. The activity attracted participants from the government, private sector, academic group, the Rayong River and Mangrove Conservation Group, and community members. The activity aims to raise awareness of river trash problems, while promoting waste separation awareness for effective waste recycling and waste management.

IRPC also organized the “Plastic Rights Market 3R” activity to promote responsible uses of plastic through the slogan “Plastic is not a villain, love the earth with responsible use of plastic”. The activity provided demonstrations of creative uses of recycled plastics, and production of Eco bricks, which are compressed plastic bottles filled with non-decomposable wastes to alternative materials for construction and in furniture production, etc. The last activity was the Big Cleaning activity, which raised awareness on environmentally responsible approach in sorting of plastic wastes at the IRPC Community Learning Center in Rayong.

Community Well-being Improvement Development

IRPC recognizes the importance of promoting of livelihood and education in surrounding communities, through implementing several projects as follow:

Community Academic Scholarship Project

IRPC believes that education is the pathway to opportunities for the Thai youths. In 2018, IRPC has continued to sponsor a total of 305 Academic Scholarships, a total amount of 2,085,000 Baht, to students from communities surrounding IRPC Industrial zone IRPC awarded the scholarships to eligible students who have good behaviors and academic performances but are lack in financial supports. The scholarships cover students from elementary level, secondary level, as well as vocational and higher education, who are residents in Choeng Noen Subdistrict Municipality, Taphong Subdistrict, Ban Laeng Subdistrict, Natakwan Subdistrict and Rayong Municipality, in Mueang District, and Rayong Province. The community level committee in these areas selected and assessed actual needs of eligible students for the Scholarships.



Rayong's School for Elderly

IRPC promotes lifelong learnings through Rayong's School for Elderly project to improve life quality for elderly people. IRPC takes parts in curriculum designing and learning activities on topics significant to livelihood of the elderly, improve knowledge and life skills for their physical and mental resilience. Participants can apply the earned skills and knowledge to enhance their employability or build their own business, generating income for themselves and their families. The activities also contribute to boosting happiness among the participating elder people through their group engagements and participations at the school.

In 2018, the project provided a more variety of knowledge-building activities such as cooking, making keychains and herbal shampoos, coin-folding, and promoting self-care using Thai traditional medicines. Recreational activities were also provided, such as Bar Slope dancing, study trips on sufficiency economy at Songsalueng Natural Agricultural Center in Klaeng District, trips to temples, and site visits at IRPC's factories, etc. Currently, the total of 138 elderly persons are participating in the project.

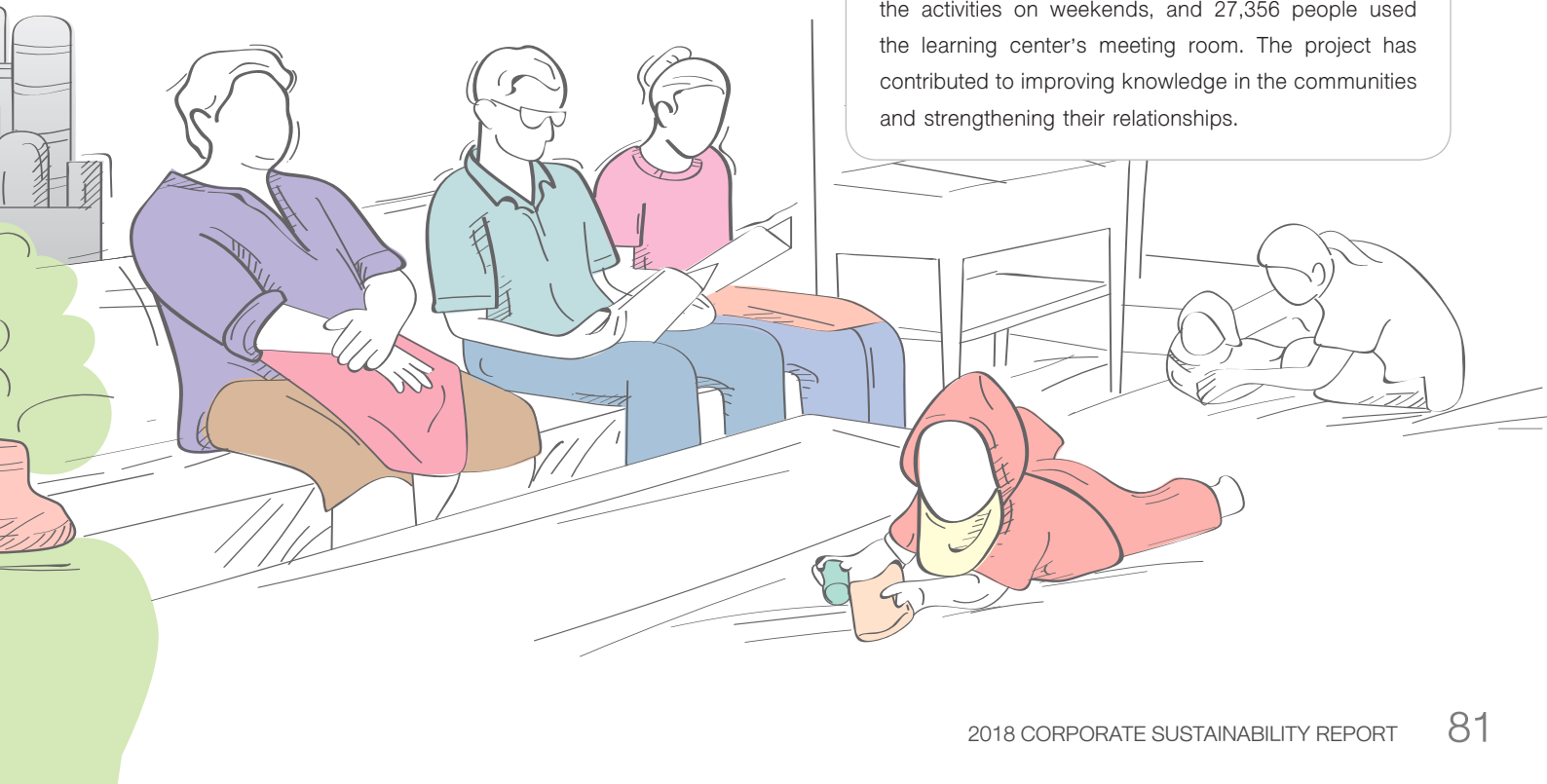
Community Health Promotional Funds

IRPC has set up Community Health Promotional Funds since 2016 to take care of health of the people in the community within 5 km radius. IRPC has contributed 6 Million Baht into the fund annually. Community is given an opportunity to manage the fund by themselves under supervision of public health specialists. The fund is beneficial to promotion, protection, and rehabilitation of communities' health

Moreover, In 2018, IRPC has supported a total of 41 projects, presented by the community, for example, medical equipment system development, Colorectal and rectal cancer screening program with Fit Test, Screening program for breast cancer, cervical cancer, obesity and stroke, and Outdoor fitness equipment for community, etc.

Community Learning Center

The Community Network Learning Center was established to promote learning and environmental development, skill training and local economy. It also serves as a meeting platform to strengthen intra-communal and inter-communal relationships, as well as relationships between community and IRPC. The learning center rotates activities to be organized monthly, including cooking and pastry trainings, Design Reuse Club (patching quilts), Yoga Club, Science Club, English Club, Jintana Math Club (for mental arithmetic), Watha Art Club (rhetoric club), Taekwondo Club, Dance Club, etc. In 2018, a total of 11,187 participants attended the activities on weekends, and 27,356 people used the learning center's meeting room. The project has contributed to improving knowledge in the communities and strengthening their relationships.



Pun Nam Jai Clinic Project

The Pun Nam Jai Clinic Project provides free general medical services for patients in the communities around IRPC Industrial zone since 2010. The clinic is located at the IRPC Community Learning Center, Rayong Province. In 2018, the Clinic provided services to a total of 4,746 patients from Choeng Noen Municipality and Rayong City Municipality. The Clinic also shares the patient's health examination records to Rayong Hospital to update the hospital's patient database for future medical uses.

The Pun Nam Jai Clinic Project
provided service

to **4,746** people

Mobile Community Health Checkup Unit Project

IRPC collaborates with the Queen Sirikit Naval Hospital in providing a mobile medical unit for free health checkups and general medical services for the surrounding communities. The services provided include tendon and bone diseases, respiratory tract diseases, digestive diseases, and dental checkup. In addition, IRPC expands the project to support 100-baht eyeglasses service. In 2018, a total of 2,049 people from Ban Laeng Sub-district, Taphong Sub-district, Na Khwan Sub-district, Choeng Noen Municipality, and Rayong City Municipality, benefited from the services. The results of health examination will also be used for planning of medical follow-ups in the next year, including the follow-ups for those who need specialized medical cares.



Public Health Surveillance Project

IRPC launched community database system (GIS system) in areas surrounding IRPC Industrial zone to predict movements and dispersions of air pollutions using mathematical models. In addition, IRPC has collected data from 900 random samples over the course of 3 years from 2015 to 2017, to analyze and prepare monitoring and prevention plan for mitigation of future health consequences among 10,398 households and 38,256 people in the surrounding communities.

Community Enterprise Promotion Project

Since 2017, IRPC has supported occupational groups in the communities surrounding IRPC's industrial zone through capacity building activities on product processing, packaging, product standardization, as well as seeking markets for local products. The project also provides study visits such as study trips to agricultural tourism sites, following the King's science, organic Thai vegetable plots at Tung Yan En Sub-district, Khao Chamao District; OTOP villages Nawatwithi, Kao Noi Sub-district, Khao Chamao District, and the Self-sufficient Economy Learning Center 1 rai 1 person at Ban Sam Yak Ton Thai, Huai Tub Mon Sub-district, Khao Chamao District. In 2018, 75 participants attended the field study trips. The project has also contributed in development of 5 self-sufficiency business groups, generating incomes of 325,390 Baht to each group. Moreover, IRPC continues the policy on local procurement, with the total of THB 447 Million spent on goods and services locally procured in 2018.

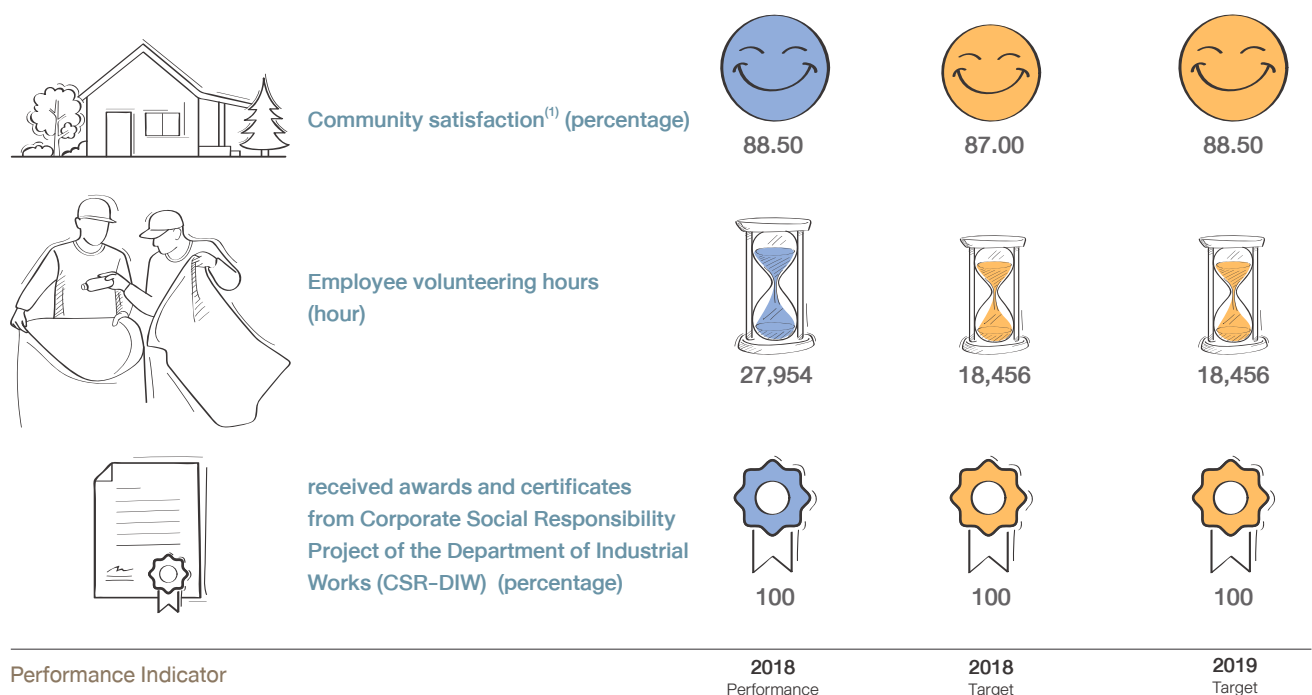


Social Impact on Communities

IRPC organized the process to listen to stakeholders' opinions, which is a part of the Environmental Impact Assessment Process (EIA) for the Maximum Aromatics Project (MARS). Through the organization of public forum to receive feedbacks and concerns, as well as communicate and clarify detail of the project, IRPC collected all recommendations for the formation of measures on prevention and minimizing environmental impacts. IRPC also aims to integrate all the feedback for effective monitoring measures to track environmental impacts of the project. All these efforts are to ensure stakeholders' confidence in IRPC's safety, health and environmental management, and its monitoring system throughout the implementation of the project. Moreover in 2018, IRPC has also increased communication channels with communities through the LINE application, in respond to business digitization, under IRPC's GDP strategy. This channel has enhanced IRPC's capacity to disseminate timely information to stakeholders and communities.

Moreover, IRPC has conducted Social Return on Investment (SROI) assessments to evaluate the "Outcomes" and "Values" of the Lam Sai Yong Project implemented in Sisaket Province, and other social projects. The results of the assessments are to be used for future planning of strategy formations, as well as social project implementations in the future. The result of SROI assessment shows that per 1 Baht IRPC have invested has generated social returns at the value of 2.19 Baht.

As a result of all abovementioned projects, IRPC achieved the target of community satisfaction score and received awards and certificates from Corporate Social Responsibility Project of the Department of Industrial Works (CSR-DIW) for 10 consecutive years.



(1) satisfaction of target communities 2020 and 2021 is greater than or equal to 89% and greater than or equal to 90%, respectively

Complaint Management

IRPC established a systematic and standardized 24-hour complaint receiving process. The system administrator will forward complaints to responsible departments for investigations and reporting to the management committee, IRPC will contact complainants to update on identified causes, status of the case, and corrective measures.

Furthermore, IRPC communicates with stakeholders through public relations, consultations and seminars, and onsite visits, to clarify and build understanding of its operations and project implementations in 2018. As a result of this effort, the number of complaints received from the community have decreased compared to 2017. IRPC also utilize information and recommendations from the received complaints as a frame for evaluation of future improvements in its business operations and complaint management.



Performance

470 Households have benefitted from the expansion of the Lam Sai Yong Model

Donated plastic pallets from 2011–2018 to produce the total of **21,579** Prosthetics.

41 Projects in areas surrounding IRPC Industrial zone were approved by the Community Health Promotion Fund

138 Elderly persons benefitted from the Rayong School for the Elderly

4,746 Patients have received medical services from the Pun Nam Jai Clinic

2,049 People received medical checks and treatments from the mobile medical units

Donation of products and services
THB 840,000

305 Academic scholarships granted, in a total of **THB 2,085,000**

38,543 People participated in the Community Learning Center

Community Relations department operational cost
THB 43 Million

75 Entrepreneurs participated in the Community Enterprise Project

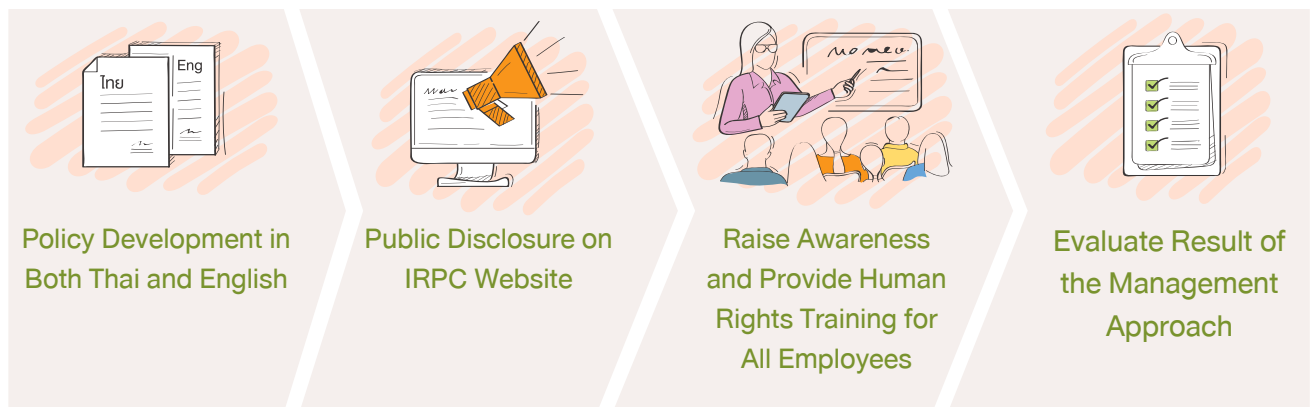
Respect for Human Rights

IRPC respects human rights of all stakeholders throughout the value chain, which covers all main business activities of the organization.

Accordingly, IRPC determines to consistently operate the business with adherence to human rights principles to foster healthy and fair relationships with all stakeholders. In doing so, IRPC strictly operates in compliance with laws and regulations, while taking responsibility to consistently operate its business in accordance with the United Nations Universal Declaration of Human Rights (UDHR), International Labor Organization (ILO) conventions, and UN Guiding Principles on Business and Human Rights, in order to prevent and avert risks and impacts of human rights violations among employees, suppliers, business partners, customers as well as community and environment.

Management Approach

IRPC's human rights management approach consists of:



Human Rights Policy

IRPC has endorsed and promulgated the group's policy on human rights in 2017. The policy covers labor rights, women's rights, children's rights and human dignity, and encompasses freedom and equality of individuals who are entitled for protections under domestic and international laws,

with the aim to avert human rights violation and administer human rights performances throughout IRPC's supply chain.

For more information on Human Rights, please visit <http://www.irpc.co.th/th/sustainable.php>

Initiatives

Community Rights to access information and participate in the new Project

IRPC is aware of the importance of respecting human rights of all stakeholder throughout the value chain as well as the new investment projects. In 2018, IRPC is currently developing Paraxylene Project. Therefore, IRPC has carried out public participation process for the concerned stakeholders that may be impacted by the project through community consultation to gather opinions and concerns regarding the construction and operation, as well as conducting focus group meetings and questionnaire surveys. In addition, IRPC also provides advance information related to the project via various channels to ensure that the community is able to access the information in the most detailed and transparent manner, and also able to show concerns related community rights. IRPC gathered and used these information to assess the impact and set up the mitigation measures in environmental impact assessment (EIA) report. As a result, there was about 1,740 people participated and IRPC was able to gather such concerns regarding to the environmental and health impact during

the construction and operation phases. These concerns will be used to conduct appropriate mitigation measures and monitoring program and later present to the community.

Culture Creation : Human rights awareness for suppliers

In 2018, IRPC organized activities to promote human rights awareness for suppliers in order to expand the network of fair operations and respect to human rights through CG Roadshow (Details of the event can be found in AR 2018)

Moreover, IRPC has enforced Supplier Code of Conduct to cover supplier of supplier (Tier 2 supplier) to comply with IRPC's Code of Conduct. For example, respect to human rights, labor rights, and occupational health and safety. IRPC has already begun to communicate with Tier 2 suppliers includes contractors working on any construction projects within the IRPC industrial zone, etc.



Performance

IRPC conducted human rights risks assessments in accordance with the Human Rights Risks and Impact Assessment Methodology adopted in 2017. The Methodology was reviewed and improved from the 2017 version to correspond to the PTT Group's Human Rights Management System and international standards. IRPC implemented the process to assess human rights risks throughout the value chain including IRPC and its affiliate, controllable and non-controllable joint ventures, and critical Tier 1 suppliers.

In 2018, the company also extended the human rights risk assessments to cover 5 depots: Chumphon Oil Depot, Ayutthaya Oil Depot, Phra Pradaeng Oil Depot, Rayong Oil Depot and Maeklong Oil Depot, achieving the target set in 2017 to extend the assessments to all depots.

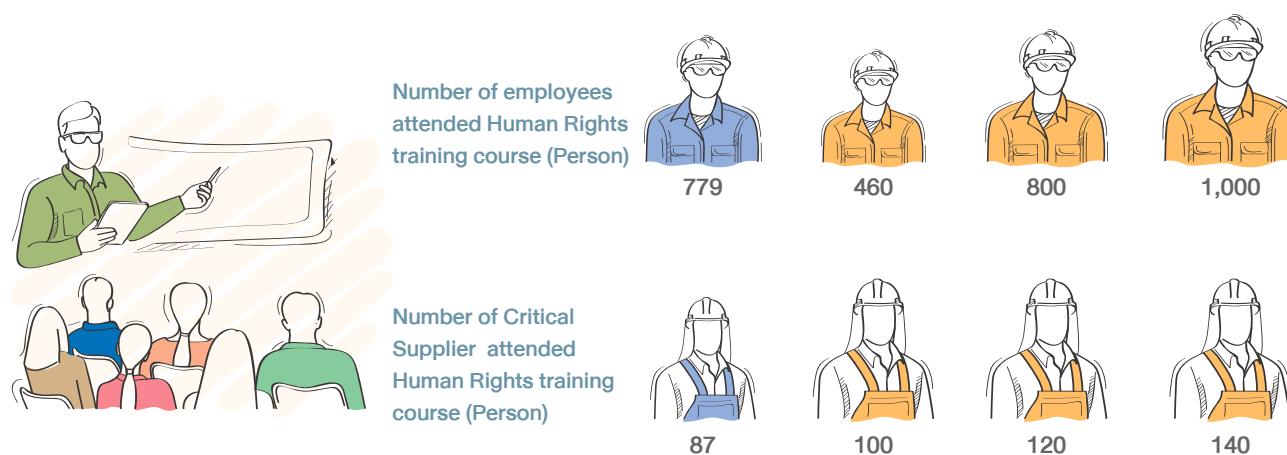
The assessment results indicated that there is no significant risk on human rights issue. The identified relevant risks include health and safety of community or workers, and security management. To address these issues, IRPC has developed guidelines to mitigate and control risks, e.g. Quality, Safety, Occupational Health and Environment policy.

IRPC also conducted human rights trainings for employees, contractors and other stakeholders to strengthen understandings of IRPC's human rights policy and guidelines, as well as to cultivate awareness on human rights issues and impacts, with the aim to encourage employees to cooperatively prevent human rights violations throughout IRPC's operations.

Human Rights Impact Assessment Coverage (Percentage)



Remark: *Cover IRPC and its affiliate, joint ventures where IRPC has and has no management control, and critical Tier 1 Supplier



Performance Indicators



NATURAL CAPITAL

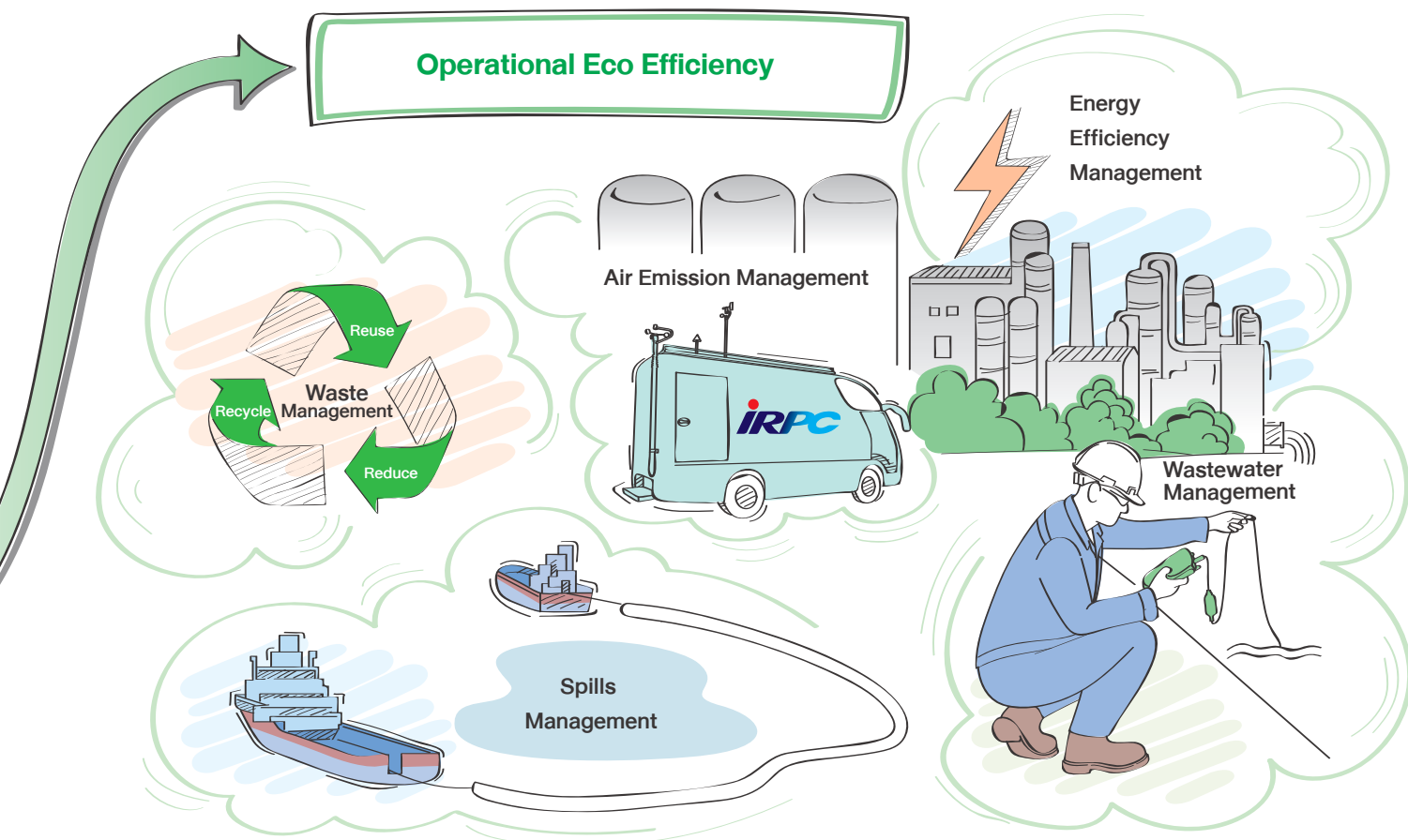
Caring for the environment
for sustainability



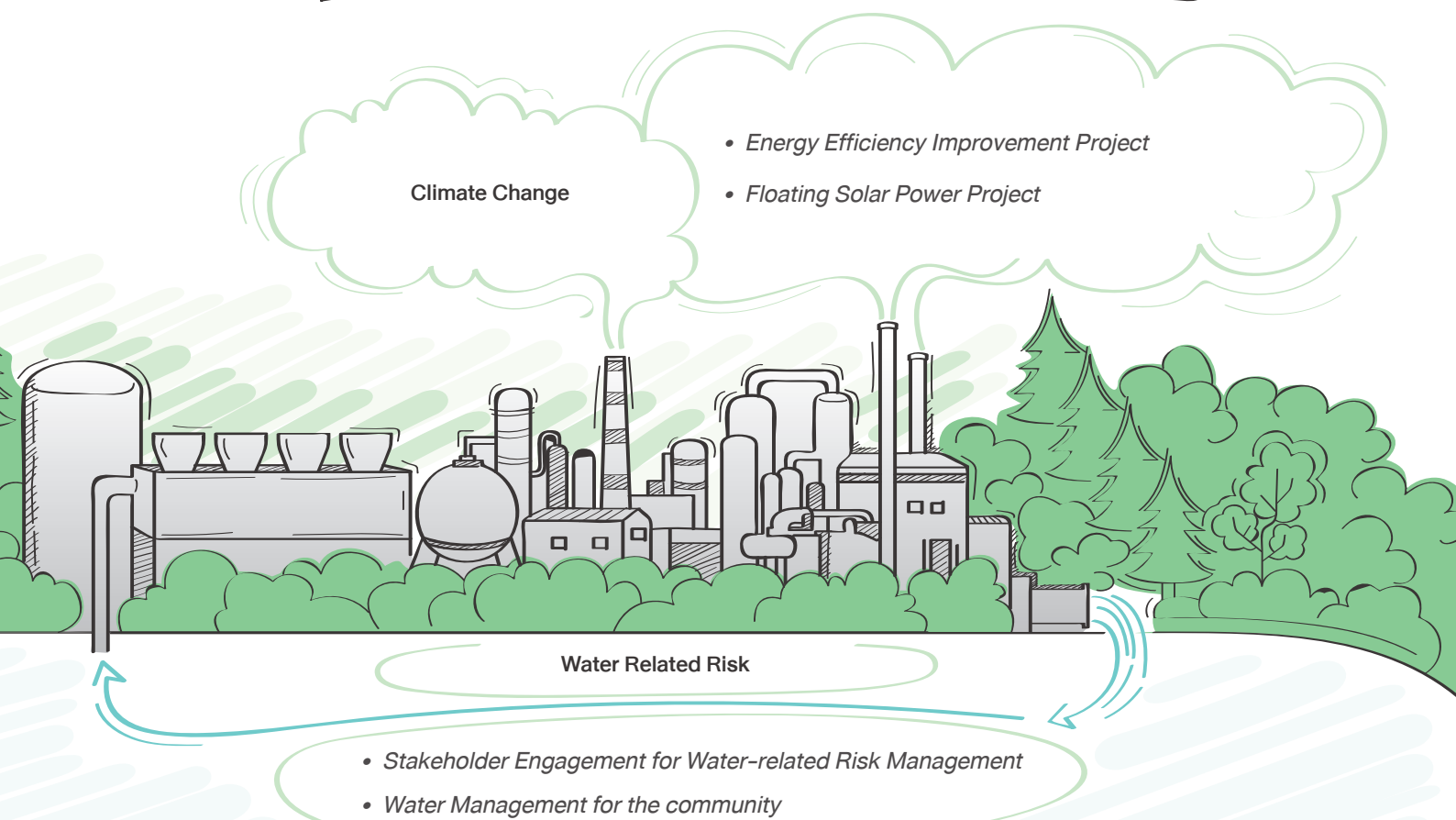
IRPC is committed to minimizing environmental impact by investing on process improvements and integrate management in terms of air, water, waste, energy, efficient use of resources, and especially on issue that has an impact of a global scale, GHG emission and climate change adaptation. Therefore, IRPC is putting in its best effort to maintain the inhabitable for the next generation people



Operational Eco Efficiency



Climate Change and Water Management



Operational Eco-Efficiency

To address the global issues of climate change and natural resource scarcity, IRPC is committed to operate the business that recognizes the significance of resource optimization and the company's responsibility towards environmental management throughout its supply chain. With this in mind, IRPC continues to improve its production processes to increase operational eco-efficiency and implement various environmental projects and initiatives to reduce air emissions, strengthen waste management, and prevent chemical or oil spills, in order to maintain a balanced ecology and drive IRPC's stable and sustainable business growths.

Management Approach

IRPC is committed to operating business with eco-efficiency with corporate environmental responsibilities as one of main priorities. IRPC thus operates the business strictly in compliance with law and legislations, the company's regulations and other related environmental standards. Additionally, IRPC's production processes are under the Quality, Security, Safety, Health, Environment and Energy Management (QSSHE) Policy and IRPC's Operational Excellent Strategy. The Strategy is an integrated management frameworks that covers air, water, waste, energy and resource efficiency management, and bringing in various standards including Environmental Management System (ISO14001), Energy Management System (ISO50001) and other best practices. The integrated environmental management approach is expected to drive IRPC to achieve the targeted environmental performances, minimize impacts from operations, and lead IRPC to sustainable environmental management, while satisfying stakeholder's expectations.

Likewise, IRPC continuously supports improvements of eco-efficiency management. In 2018, IRPC allocated a budget of THB 194 Millions to various environmental projects on air emissions reduction, waste management, waste water management, and energy conservation etc., in order to maintain biodiversity and balanced ecosystem, and to promote a low-carbon society.

Environmental Capital Investment



Investment (2018)

THB Million

Pollution prevention
and reduction system



120

Monitoring of
environmental impacts



17

Environmental Impact
Assessment



7

Environmental
Management System



6

Efficiency improvement
for energy reduction



44

Total

194

As a result of consistent focus on environmental and energy management in business operations, IRPC received various awards, include Thailand Quality Award from the Ministry of Energy, Prime Minister's Industry Awards from the Ministry of Industry. Additionally, IRPC's 24 plants were awarded the Green Industry 4 (GI4) by the Department of Industrial Works, while 25 plants were awarded the Eco Factory Award by the Ministry of Industry. IRPC industrial complex was also awarded the Eco-Industrial Zone 5 (EIZ 5) by the Ministry of Industry. These achievements reflect IRPC's commitment to operational excellence and quality management while maintaining environmental balances for sustainable growth.



Related Digital Technology

IRPC has implemented digital technology in line with the organization's GDP Strategy, under the Power of Digital, to improve effectiveness in environmental stewardship in 4.0 era. In 2018, IRPC deployed the program €KON\$ (EKONS) to assist in decision making process. The program shows real-time calculation of financial outcomes influenced by various factors in production processes, and analyzes the data to identify production approach that would optimize the resources used in the process.



Initiatives

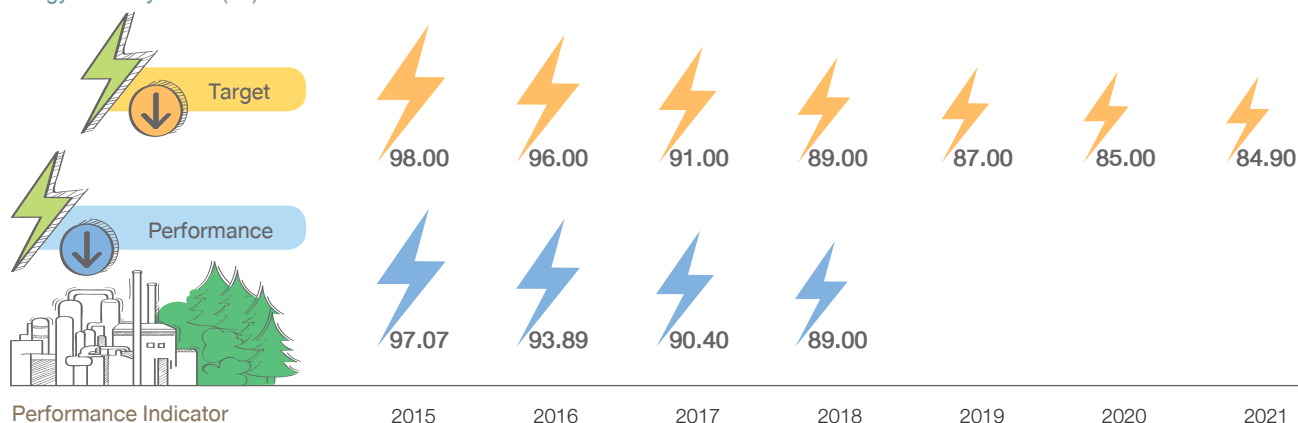
Energy Efficiency

IRPC recognizes the significance of responsible energy management. In 2018, IRPC's energy consumption decreased as a result of the Everest Forever (E4E) project. As a result, IRPC reduced energy used in 2018 by 604,997 Gigajoules, which resulted in reduction of energy expenditure by THB 155 Millions. Furthermore, IRPC has adopted a 5-year strategy for long-term reduction of energy consumption

and increasing energy efficiency in production processes. The strategy aims to implement projects such as increasing uses of catalysts in catalyst cooler equipment and diverting surplus heats to produce steams and electricity. The project is expected to be deployed in 2019.

IRPC established the process to consistently review and monitor energy consumption reduction, through setting a long-term target and Energy Intensity Index (EII). In 2018, IRPC's Energy Intensity Index was 89%, which achieved the target set for the year.

Energy Intensity Index (EII)





Air Emissions Management

IRPC has steadily improved its business in parallel with controlling and reducing air pollutant emissions from its operations. Not only does IRPC operate with full compliance with laws and regulations, the company also takes strong efforts in preventing any impacts on surrounding communities and societies. IRPC continues to invest in initiatives to reduce and prevent emissions of air pollutants, from the source of emission through utilizing cleaner fuels in production. As a result, sulfur oxides and nitrogen oxides (SOx and NOx) emitted from plants' vents are lower than environmental standards, and the emission intensities per unit of production also reduced by 35% and 8 % respectively compared to 2016 (excluding period of major maintenances). IRPC also installed Electrostatic Precipitator (EP), the equipment that reduces the emission of pollutants, which resulted in constantly low level of Total Suspended Particles (TSP) emitted from the plants' air emission. A Regenerative Thermal Oxidizer (RTO) has also been installed to reduce odor from production

processes. IRPC invests in these equipments from the construction phase and during expansion of its production plants, to ensure effective management of air emissions and to ease surrounding communities' concerns. Moreover, in 2018 as a part of the Odor Treatment Project, IRPC installed covers on central wastewater pond, which resulted in a reduction of 50% in complaints regarding odor compared to 2017. Additionally, IRPC optimize the use of excess gases, which would otherwise be flared, to be used as alternative energy in refinery and the lube base oil production plant. As a result, methane was reduced by 8% compared to 2016 and hydrocarbon emissions reduced by 18% compared to 2017.

Besides all these efforts, IRPC has set a long-term development plan to reduce volatile organic compounds (VOCs) emissions through installation of a dome roof and replacing roof seals by high-quality materials in 18 raw materials and products storage tanks. The project was initiated in 2018 and is expected to be completed in 2027.

VOC Intensity
(ton per thousand tons of production)



Waste Management

IRPC values the importance of optimizing finite resources to maximize their benefits, while minimizing the volume of waste generated from the production process, in accordance with IRPC's QSSHE Policy and Operational Excellence Management System (OEMS). IRPC adopted the 4Rs concept - Recovery, Reduce, Reuse and Recycle - and implemented the Green Turnaround Project during the annual maintenance cycle. In addition, IRPC also integrated

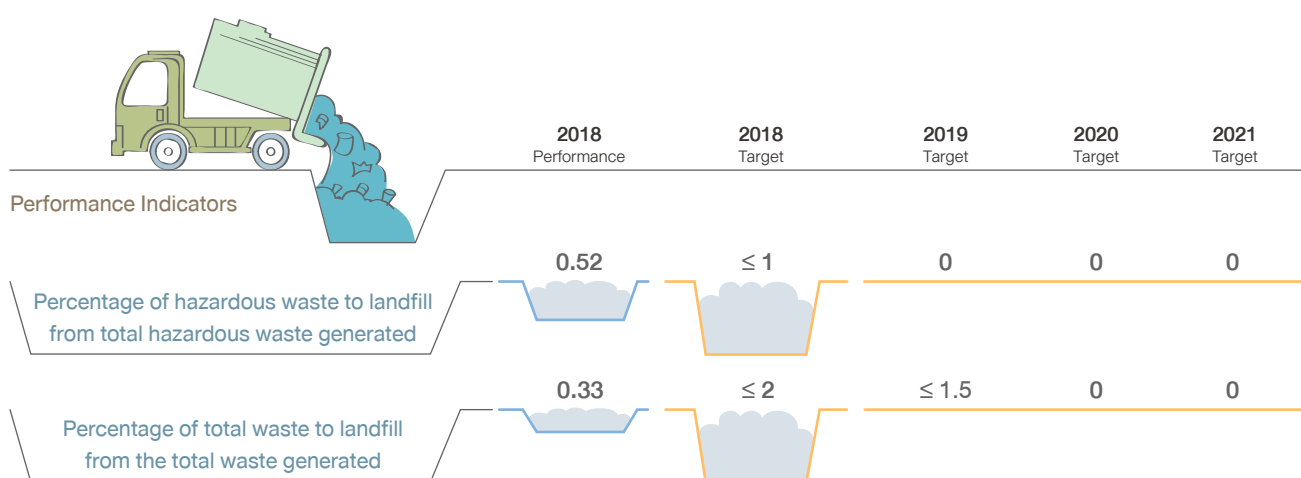
PTT Group's Zero Hazardous Waste to Landfill by 2020 policy, to plan comprehensive waste management which will be specified in waste management contract signed with external service providers. In 2018, these proactive measures and policies resulted in reduction of waste to landfills to 0.33% of total waste generated and reduction of hazardous waste to landfills to 0.52% of total hazardous waste generated, which achieved target set at equal or less than 1%

Waste Reduction Project

UHV plant adopted the principles of 4Rs and Green Turnaround to control the volume of waste generated during the annual maintenance in 2018. It emphasizes resource efficiency and reduction of waste generated by the maintenance related activities. From the beginning of equipment maintenance and repair process, contractors were required to separate waste, and all industrial wastes to be sent for disposal by

service providers certified with Department of Industrial Works. Moreover, the wastes transportation was closely monitored to ensure zero impacts on the environment and surrounding communities. In addition to hazardous waste management, during maintenance, IRPC encouraged to reduce and reuse wastes and scrap for waste reduction. i.e. thermal insulation.

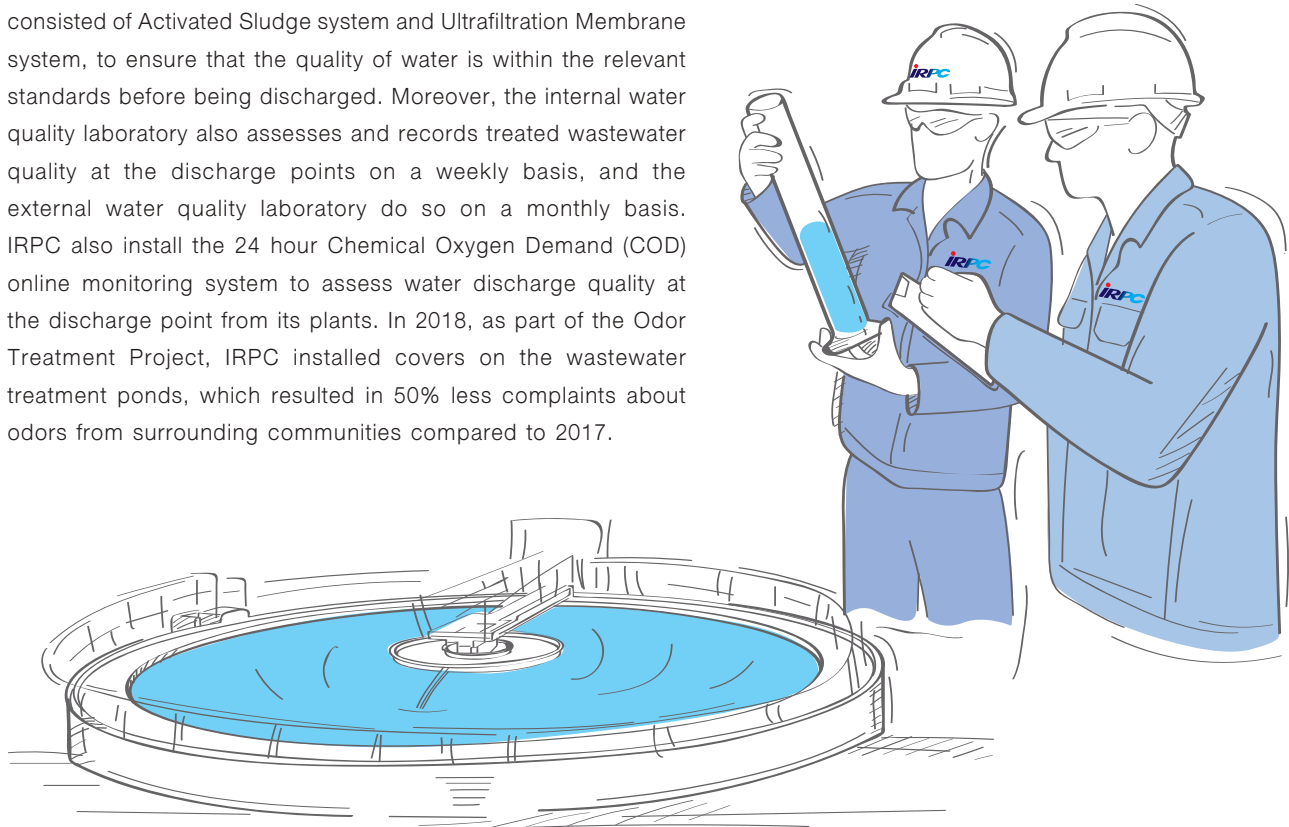
Performance



Remark: Percentage of landfill compared to landfill target of PTT Group

Wastewater Management

IRPC's wastewater management starts from the plants where Internal Control Range is used to assess water discharge quality before they reach the central wastewater treatment system. The Internal Control Range helps manage and maintain efficiency of the central wastewater treatment system, which consisted of Activated Sludge system and Ultrafiltration Membrane system, to ensure that the quality of water is within the relevant standards before being discharged. Moreover, the internal water quality laboratory also assesses and records treated wastewater quality at the discharge points on a weekly basis, and the external water quality laboratory do so on a monthly basis. IRPC also install the 24 hour Chemical Oxygen Demand (COD) online monitoring system to assess water discharge quality at the discharge point from its plants. In 2018, as part of the Odor Treatment Project, IRPC installed covers on the wastewater treatment ponds, which resulted in 50% less complaints about odors from surrounding communities compared to 2017.



**No significant Oil
and Chemical Spills
throughout
operational
period**



Spills Management

IRPC is committed to improving its operations to securely prevent significant spills, to minimize the impacts of spills on environment and surrounding communities, and strengthen the company's operational reliability. Therefore, IRPC adopts contingency plans for onshore and offshore oil and chemical spills, evacuation plans, and disaster prevention and mitigation plans in consultation with communities in the area, and government agencies at local, provincial and national levels. IRPC also organize annual contingency plan drills in coordination with relevant agencies in Ranong province. In addition, IRPC analyzes and identify lesson learnt from previous spills incidents, to avoid repetition of such incidents and identify proper measures for equipment maintenance. With all these efforts, there was no significant spills of oil or chemicals in 2018.

Climate Change Adaptation & Water Related Risk Management

The governments and international organizations have strengthened and intensified the enforcement of GHG emission policies, causing companies globally to adapt their strategies in reducing risks through cutting down energy and fuel uses. This, in turn, may have a direct impact to IRPC's revenues; however, IRPC also recognizes the growing business opportunities for low-carbon products. In addition, climate change may also affects the physicality of water resources, which may pose as challenges for the business and communities. Amidst these challenges, IRPC recognizes its responsibility as a leading organization in climate change management, both through proactive and reactive measures. In doing so, the company is committed to reducing GHG emission from its operations and take initiatives in cooperation with external parties. IRPC also aims to develop product innovations and promote water resource conservation to minimize risks, while elevate the quality of life for the community.

Management Approach

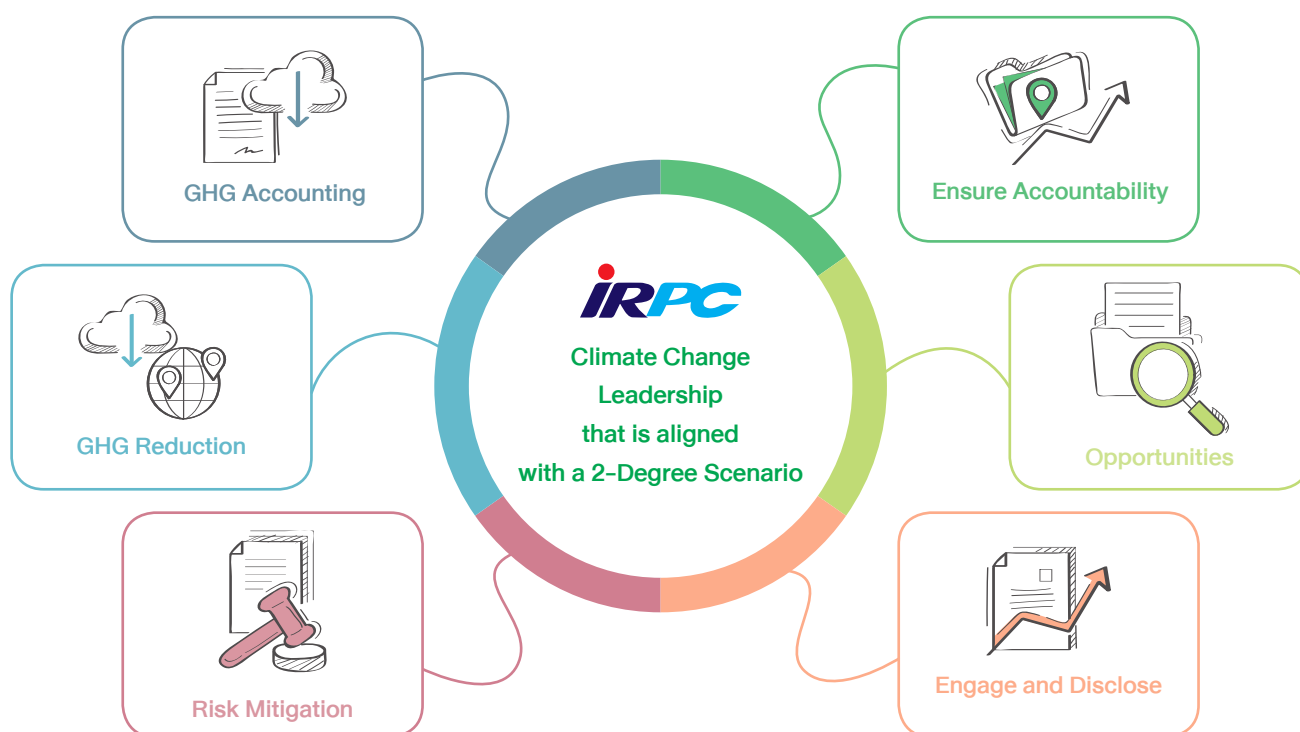
Climate Change Adaptation




Climate change management is under the supervision of Sustainability Management Office, whose responsibilities include formulating, governing, and reviewing strategy and policy directions, as well as monitoring KPIs related to climate change, such as Energy Intensity Index (EII) which is an element of Operational Excellence Management System (OEMS). EII is also set as a key performance indicator of employees at all levels, from President to employees in production units and other relevant supporting functions in production operations. All employees are required to report their performances to the Environmental Management Committee (EMC), VP Meeting, and Board of Directors. As for other indicators, such as GHG Reduction and Water Management, set as functional KPIs, reported to EMC and Rayong Management Committee (RMM).

Climate Change Strategy

IRPC recognizes the risks incurred from intensified enforcements of climate change regulations in the foreseeable future. In the national context, Thailand has declared intention to reduce its GHG emissions to limit the world's rising average temperature according to the 2016 Paris Agreement. IRPC is also aware of the risks caused by shifted demands to low carbon products and advanced carbon technology, such as Electrified Vehicles, as well as aggravating physical risks such as extreme climate, floods and water shortages. Amidst these challenges, IRPC sees a wealth of business opportunities in various low carbon products and continues to invest in product development and process improvement towards low carbon future. Furthermore, refining industry may also benefit from biofuels in respond to the growing demands of aviation fuel market, which will be required by regulations to increase the proportion of bio-fuel in jet fuel in line with Thailand's Bio-economy policy.

To manage these risks and prepare for opportunities that align with IRPC's vision to objectively become the leader in climate change management, IRPC has determined strategy for climate change framework from 2017 to 2020 encompassing the following 6 aspects.



| | Past Achievements | Performance 2018 | Target 2018 | Future Plans |
|---|--|---|---|--|
|  1. GHG Accounting Increase awareness of the organization's performances in GHG emission through GHG Accounting that collect data from all points of emissions | <ul style="list-style-type: none"> Completed scope 1 and 2 GHG accounting Consolidating scope 3 GHG accounting records |  Completed | Verification of information of scope 1 and 2 emissions throughout the organization. | <ul style="list-style-type: none"> Improve the database for faster data analysis, expected to be completed in 2019. |
|  2. Ensure Accountability Establish governance structure and responsibility of relevant units to ensure effective climate change management and development of GHG-related incentive program | The strategic planning department acknowledges its roles in leading climate change management |  Completed | Organize activities to promote the participation of various departments in climate change related issues. | <ul style="list-style-type: none"> Adopt the governance system and seek approval from the Board of Directors Set up GHG-related incentive program to create incentives for climate change management among relevant departments by 2020. |

| | Past Achievements | Performance 2018 | Target 2018 | Future Plans |
|---|--|---|--|--|
|  3. GHG Reduction Set a science based target in line with global GHG emissions reduction plans, through the prioritization of measures and cost effectiveness of initiatives, as well as setting internal carbon price | Study the internal carbon price for investment decisions within the organization. | Work in progress | Conduct an assessment of GHG emissions in the operational area, and develop GHG marginal abatement cost curve (MAC Curve). | <ul style="list-style-type: none"> Review science-based target by 2019 |
|  4. Opportunities IRPC seeks potential business opportunities in respond to climate change for future business operations. | Assess revenue generation opportunities from GHG reduction in all business units from 2017-2020 | Work in progress | | <ul style="list-style-type: none"> Assess revenue generation opportunities from GHG reduction in all business units by 2020 |
|  5. Risk Mitigation IRPC has assessed high-risk assets, both physical risks and regulatory risks, for planning and risk mitigation | Assess climate change risks from 2017 - 2020 | Work in progress | | <ul style="list-style-type: none"> Assess all assets with high-risk of climate change by 2019 |
|  6. Engage and Disclose Show leadership in climate change management while driving and exchanging best practices within the industry and academic sector, while disclose the company's performances for transparency | Create partnerships and engage with Thailand's Greenhouse Gas Management Organization (TGO), industry group, and universities. |  Completed | <ul style="list-style-type: none"> Reporting performances in line with the TCFD framework in 2018 | <ul style="list-style-type: none"> Complete risk assessment in accordance with the approach |

Climate Change Management Targets

IRPC has a strong commitment to minimize environmental impacts from GHG emission by 2020. The targets were set in line with the national and industrial GHG emission reduction efforts, technological capacities, and investment capacity for GHG reduction initiatives.

GHG Emissions Reduced by

12.34 % in 2020

Compared to 2012 Base Year



Initiatives

Energy Efficiency Improvement Project

In 2018, IRPC has initiated Improvement of Energy Efficiency in Production Project under Energy Conservation Project and E4E Project, through various initiatives including improving valves and insulators of steam pipes in the power plant, increasing the temperature of the high pressure water prior to feeding into power plant boilers (High Pressure Feed Water Heater) to increase efficiency of the boilers, and directing

waste gases to be used in the refinery and lube base oil plant from the UHV plant to minimize resources wasted in production process. In 2018, these initiatives resulted in IRPC's reduced energy use by 604,997 gigajoules, and reduction of GHG emissions by 45,299 tons of carbon dioxide equivalent in 2018.

Floating Solar Power Project

IRPC plans to deploy Floating Solar Power with the capacity of 12.5 megawatt (MWp) in the company's water reservoirs situated in IRPC's operational complex in Rayong province. With the total area of 150 rai, the floating solar power will generate renewable energy and replace electricity generated from coal and natural gas. The plant can produce up to 17.25 megawatt hours per year, contributing to 12% reduction of usage of non-renewable power from 146.09 megawatt hours per year to 128.84 megawatt hours per year. The initiative also contributes to reduction of GHG emissions up to 10,510 tons of carbon dioxide equivalent per year. This project has been sponsored by BOI, with an approximate budget of THB 625 Millions. The installation of the floating solar power is expected to be completed by 2020.



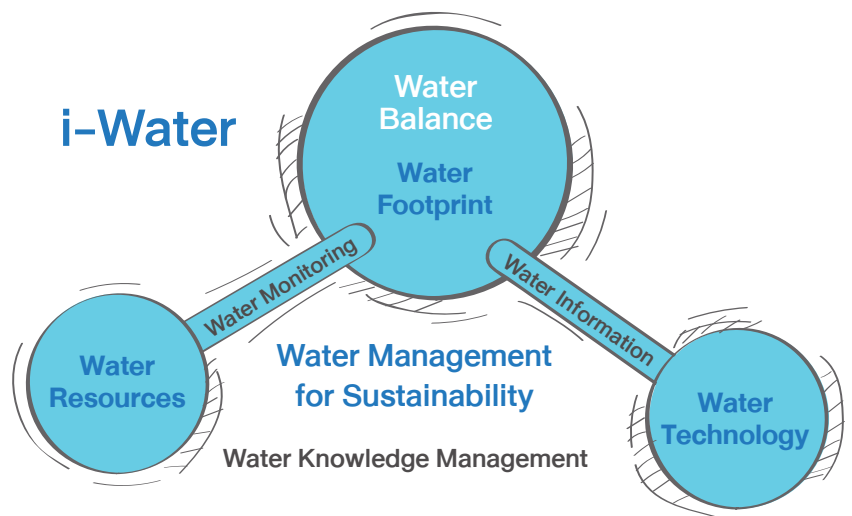
Carbon Footprint for Organization Certification

IRPC has adopted the 'Carbon Footprint for Organization' approach and its criteria to keep track of GHG emissions from the operations, in order to reduce energy uses and GHG emissions from operations through the improvement of operational efficiency. Throughout the process of improving its GHG emissions performances, this initiative also provide lesson learnt to IRPC, which improves environmental performances of the company. In 2018, IRPC's refinery and condensate plant were certified Carbon Footprint Organization (CFO) by Thailand Greenhouse Gas Management Organization (Public Organization).



Water Management

Located in Rayong in the Eastern seaboard basin, IRPC's plants use fresh water allocated by the Royal Irrigation Department. Water quality is improved and mainly used in the cooling system, while the rest of water intakes is demineralized, which will be used for steam production in the power plant or other operations. In addition, IRPC also withdraw sea water to be used in Flue Gas Desulfurization (FGD) in the power plant and steam plants. IRPC controls the quality of water discharge in accordance with the standard set by the Department of Industrial Works and other related agencies, as well as the requirements specified as a result of the Environmental Impact Assessment (EIA).



Water-related Risk Management Strategy

IRPC recognizes the significance of water for surrounding communities and ecosystems. In this light, the company adopted the 321RSPD water management strategy with the aim to lessen dependencies on natural water sources, as well as to develop and manage water resources for adequate water availability for the sustainable development of both business and communities as well as to create cooperation with the communities in terms of water management, which is believed to lead to mutual sustainable development.

In order to improve the efficiency of water management, IRPC plans to implement the project 'i-water' in 2019 to improve integrated water management database system, which contains the information including Water Balance, Water resources, Water Knowledge Management, Water

Monitoring, Water Information, Water Technology, Water footprint and Water management for sustainability. The purpose is to increase efficiency in performance monitoring and to utilize the data for future planning and management of water resources.

Water-related Risk Assessment

IRPC conducts water related risk assessments using the Aqueduct Water Tool developed by World Resources Institute. The result of the assessment showed that IRPC operations are situated in low baseline water stress¹ area, and the overall water risk is at low to medium level. The overall risk was assessed based on physical risks, such as water availability, water quality and relevant regulations. Consequently, IRPC has integrated the assessment results into future water management planning as well as to research and predict water demands in business operations up to the year 2040.

Stakeholder Engagement for Water-related Risk Management

In addition to managing water resources for business operations, IRPC recognizes the significance of the well-being and sustainable cohabitation of business and surrounding communities. In response to droughts in the Eastern Region in 2005, industrial entrepreneurs and stakeholders of water resources management in the eastern region, including the Royal Irrigation Department, Provincial Waterworks Authority, Industrial Estate Authority of Thailand and The Federation of Thai Industries, established the 'Water War Room' committee of the eastern region. Today, the committee members include 120 representatives from relevant government and private sectors from 3 provinces in the eastern region: Chachoengsao, Chonburi and Rayong province. The objective of this cooperation is to acknowledge the problem and agree on solutions to prevent and address water usage issues in the region. It is also the mechanism to adopt plans and measures for effective, systematic and sustainable water uses in industries and household consumptions in the eastern region.

Ask questions, report concerns or share opinions on water resource management at Public utilities management department, IRPC industrial zone
Address: 299 Moo 5, Sukhumvit Road, Choeng Noen, Muang District, Rayong
Phone: 038-611333 ext. 2689
Email: thanawat.t@irpc.co.th

As part of the Key Man War Room sub-committee of the Eastern Water War Room Management, IRPC cooperated with the sub-committee members to monitor the situation of water in the Khlong Yai basin. The basin is home to important reservoirs including Dok Krai Reservoir, Nong Pla Lai Reservoir and Khlong Yai Reservoir. The sub-committee also works together to assess overall water situation in the eastern region by examining risks of water shortages in dry season and floods in rainy season, in order to avoid any negative impacts on the industrial and agricultural sectors. In addition, the sub-committee also prepares preventive and corrective plans, such as water diversion for drought preparation. Accordingly, in 2018, the water situation assessment revealed no risks of water shortages. Furthermore, as the lowland areas often get affected by floods in rainy seasons, IRPC constantly monitors the water level and implements the plan to prevent floods in community areas, both within and surrounding its operational sites.



Water Management for the Community

Flash floods and water logging are main concerns of communities surrounding IRPC operational areas. IRPC takes significance efforts to address these issues, through adoption of the preventive measures and plans for flood preparedness and prevention, as well as dredging public canals and waterways since 2016. Moreover, IRPC has

also cooperated with the Royal Irrigation Department to source information for planning on water converting from reservoirs to collect water from heavy rains and to reserves the water for dry season. This effort resulted in increase of water availability for surrounding communities during period of water shortages. This project also lessened concerns of flash floods among neighbouring communities, and lessened the needs for IRPC to improve water quality for internal water uses in dry season.



Canal dredging to improve drainage capability



Collaboration with government agents



Increase waterway

Water Resource Management Targets

IRPC has set water resource management targets based on the predictions of water situation in the area, increasing water demands among communities and industry sectors, proportion of water allocation from the government, and the capacity to reserve water resources for business uses. These approaches of water management target setting is to ensure business continuity, minimize environmental impacts, and improve quality of life in the neighbouring communities. The targets also induce better efficiency in water uses, in line with IRPC's QSSHE policy.

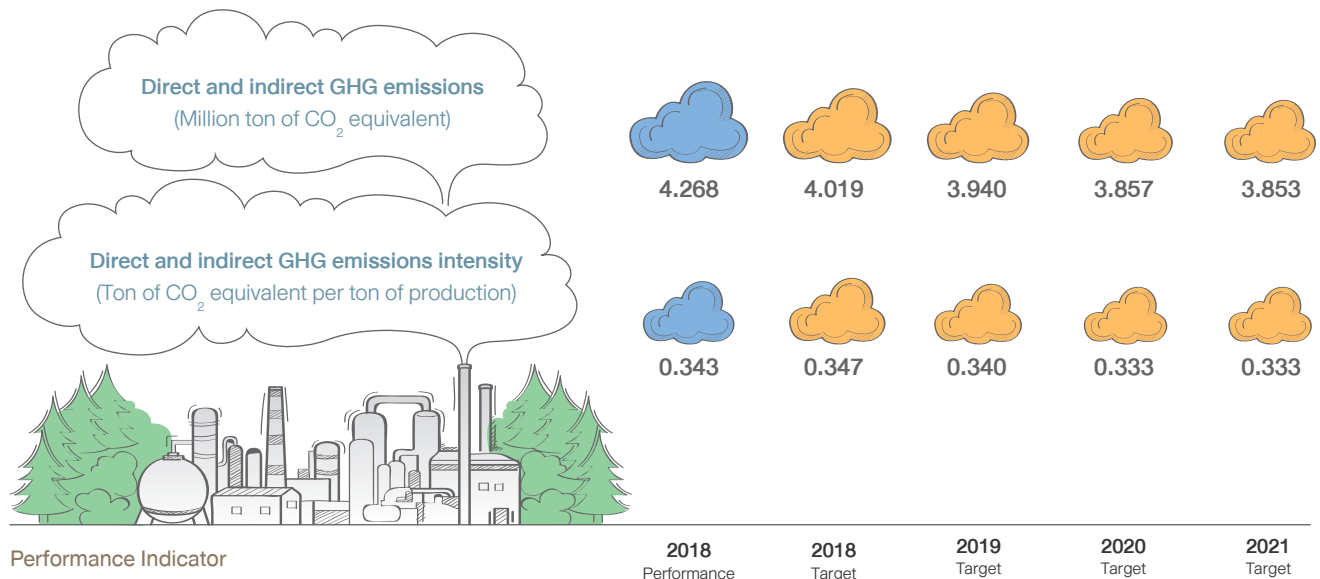


The Amount of Water Withdrawn from Natural Water Sources

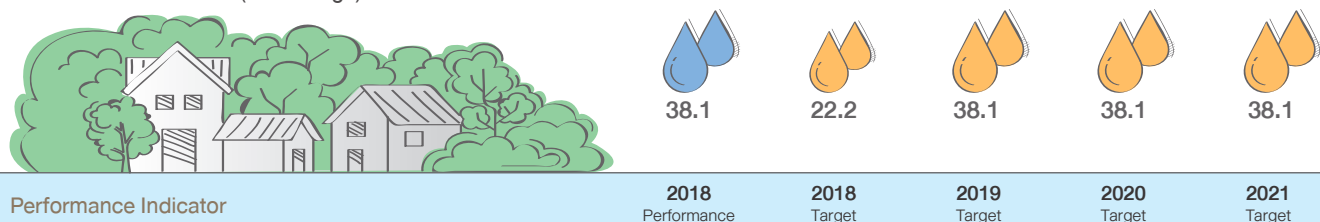
Reduced by **38.1 %**

In 2020, Compared to 2014 Base Year.

Performance



Accumulated Reduction of Water Withdrawal from Natural Water Sources (Percentage)



PERFORMANCE SUMMARY



2018 Performance Summary to communicate
the business's sustainability performance,
impacts to sustainability material issues, and
management measures.





Financial Performance

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|---|-------------|---------|---------|---------|---------|
| 201-1 | G4-EC1 | Sale Revenues ⁽¹⁾ | THB Million | 214,172 | 185,041 | 214,101 | 280,551 |
| | | Operating Costs | THB Million | 197,913 | 164,900 | 192,946 | 264,637 |
| | | Operating Profit (Loss) | THB Million | 14,434 | 11,303 | 15,220 | 10,197 |
| | | Employee Wages and Benefits | THB Million | 8,243 | 8,460 | 9,074 | 9,270 |
| | | Payments to Providers of Capital | THB Million | 7,582 | 9,587 | 7,341 | 10,435 |
| | | Payment to Governments ⁽²⁾ | THB Million | 14,990 | 17,467 | 15,520 | 21,850 |
| 201-4 | G4-EC4 | Tax Privileges from the Board of Investment, Thailand | THB Million | 659 | 2,004 | 1,873 | 2,459 |
| | | Tax Compensation from Export | THB Million | 172 | 147 | 130 | 79 |

Remark:

(1) Sales includes Petroleum Sales (including excise tax), Petrochemical Sales, Power and Utilities Sales, Sales of storage tank and port service, etc.

(2) Taxes paid to government agencies and local officials such as corporate income taxes, local taxes, building taxes, and specific business taxes are paid directly to Thai government agencies and local officials as all IRPC operations are located only in Thailand.



| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|-------------------|------|------------|------------|------------|------------|
| N/A | N/A | Annual Production | Ton | 10,518,179 | 11,098,684 | 10,748,499 | 12,442,052 |



| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|---|-------------|-------|-------|-------|-------|
| N/A | N/A | Percentage of critical supplier and contractor who have undergone sustainability assessment | % | 100 | 100 | 100 | 100 |
| N/A | N/A | Number of suppliers and contractors audit | Company | 0 | 0 | 15 | 21 |
| 308-1 | G4-EN32 | Percentage of new suppliers that were screened using environmental criteria | % | 100 | 100 | 100 | 100 |
| 414-1 | G4-LA14 | Percentage of new suppliers that were screened using Labour practices criteria | % | 100 | 100 | 100 | 100 |
| | G4-HR10 | Percentage of new suppliers that were screened using human right criteria | % | 100 | 100 | 100 | 100 |
| | G4-SO9 | Percentage of new suppliers that were screened using criteria impacts on society | % | 100 | 100 | 100 | 100 |
| 204-1 | G4-EC9 | Spending on purchasing of products and services from suppliers and contractors in Rayong | THB Million | 2,312 | 2,900 | 2,894 | 2,568 |
| | | Percentage of spending in Rayong comparing to the total general procurement budget | % | 20.29 | 28.30 | 20.87 | 18.90 |



CUSTOMER RELATIONSHIP MANAGEMENT

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|------------------|--------|---|------|------|------|------|------|
| 102-43 102-44 | G4-PR5 | Annual customer satisfaction survey results ⁽¹⁾ | % | 91 | 91 | 91 | 89 |
| 416-2 | G4-PR5 | Incidents of non-compliance concerning the health and safety impacts of products and services | Case | 0 | 0 | 0 | 0 |
| 417-3 | G4-PR7 | Incidents of non-compliance concerning marketing communications | Case | 0 | 0 | 0 | 0 |
| 418-1 | G4-PR8 | Number of substantiated complaints received concerning breaches of customer privacy | Case | 0 | 0 | 0 | 0 |
| | | Total number of identified leaks, thefts, or losses of customer data | Case | 0 | 0 | 0 | 0 |
| 419-1 | | Non-compliance with laws and regulations in the social and economic area | Case | 0 | 0 | 0 | 0 |

Remark: (1) Annual customer satisfaction rate has been calculated from Petroleum and Petrochemical Business only.



PEOPLE

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|--------------------------------|--------|-------|-------|-------|-------|
| 102-8 | G4-10 | Employee ⁽¹⁾ | Person | 5,262 | 5,418 | 5,498 | 5,466 |
| | | Total employees by area | | | | | |
| | | Bangkok | Person | 717 | 701 | 706 | 695 |
| | | Male | Person | 304 | 296 | 297 | 291 |
| | | Female | Person | 413 | 405 | 409 | 404 |
| | | Rayong | Person | 4,232 | 4,414 | 4,493 | 4,478 |
| | | Male | Person | 3,824 | 3,907 | 3,981 | 3,963 |
| | | Female | Person | 408 | 507 | 512 | 515 |
| | | Other | Person | 313 | 303 | 299 | 293 |
| | | Male | Person | 289 | 279 | 276 | 270 |
| | | Female | Person | 24 | 24 | 23 | 23 |
| | | Employees by level | | | | | |
| | | Executive (Level 13-18) | Person | 72 | 79 | 78 | 78 |
| | | Male | Person | 60 | 62 | 60 | 57 |
| | | Female | Person | 12 | 17 | 18 | 21 |
| | | Middle Management (Level 9-12) | Person | 708 | 757 | 772 | 810 |
| | | Male | Person | 563 | 590 | 599 | 619 |
| | | Female | Person | 145 | 167 | 173 | 191 |

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|-------------------------|----------------------|-------|-------|-------|-------|
| 102-8 | G4-10 | Supervisory (Level 6-8) | Person | 2,407 | 2,576 | 2,801 | 3,125 |
| | | Male | Person | 1,948 | 2,103 | 2,292 | 2,531 |
| | | Female | Person | 459 | 473 | 509 | 594 |
| | | Operation (Level 1-5) | Person | 2,075 | 2,006 | 1,847 | 1,453 |
| | | Male | Person | 1,846 | 1,726 | 1,606 | 1,317 |
| | | Female | Person | 229 | 280 | 241 | 136 |
| 405-1 | G4-LA12 | Employees by age | | | | | |
| | | Over 50 years old | Person | 458 | 535 | 631 | 763 |
| | | Male | Person | 375 | 432 | 506 | 615 |
| | | Female | Person | 83 | 103 | 125 | 148 |
| | | 30-50 years old | Person | 4,324 | 4,243 | 4,199 | 4,086 |
| | | Male | Person | 3,604 | 3,515 | 3,478 | 3,366 |
| | | Female | Person | 720 | 728 | 721 | 720 |
| | | Below 30 years old | Person | 480 | 640 | 668 | 617 |
| | | Male | Person | 438 | 534 | 589 | 543 |
| | | Female | Person | 42 | 106 | 79 | 74 |
| 401-3 | G4-LA1 | New Employees | | | | | |
| | | Total new employees | Person | 69 | 125 | 32 | 63 |
| | | | % of total employees | 1.31 | 2.31 | 0.58 | 1.15 |
| | | Male | Person | 56 | 104 | 9 | 41 |
| | | | % of total employees | 1.06 | 1.92 | 0.16 | 0.75 |
| | | Female | Person | 13 | 21 | 23 | 22 |
| | | | % of total employees | 0.25 | 0.39 | 0.42 | 0.40 |
| | | New employees by area | | | | | |
| | | Bangkok | Person | 1 | 4 | 6 | 11 |
| | | | % of total employees | 0.02 | 0.07 | 0.11 | 0.20 |
| | | Male | Person | 0 | 0 | 1 | 3 |
| | | | % of total employees | 0.00 | 0.00 | 0.02 | 0.05 |
| | | Female | Person | 1 | 4 | 5 | 8 |
| | | | % of total employees | 0.02 | 0.07 | 0.09 | 0.15 |
| | | Rayong | Person | 68 | 121 | 24 | 52 |
| | | | % of total employees | 1.29 | 2.23 | 0.44 | 0.95 |
| | | Male | Person | 56 | 104 | 7 | 38 |
| | | | % of total employees | 1.06 | 1.92 | 0.13 | 0.70 |
| | | Female | Person | 12 | 17 | 17 | 14 |
| | | | % of total employees | 0.23 | 0.31 | 0.31 | 0.26 |

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|-------------------------|----------------------|------|------|------|------|
| 401-3 | G4-LA1 | Others | Person | 0 | 0 | 2 | 0 |
| | | | % of total employees | 0.00 | 0.00 | 0.04 | 0.00 |
| | | Male | Person | 0 | 0 | 1 | 0 |
| | | | % of total employees | 0.00 | 0.00 | 0.02 | 0.00 |
| | | Female | Person | 0 | 0 | 1 | 0 |
| | | | % of total employees | 0.00 | 0.00 | 0.02 | 0.00 |
| | | New employees by age | | | | | |
| | | Over 50 years old | Person | 1 | 1 | 2 | 2 |
| | | | % of total employees | 0.02 | 0.02 | 0.04 | 0.04 |
| | | Male | Person | 0 | 1 | 2 | 0 |
| | | | % of total employees | 0.00 | 0.02 | 0.04 | 0.00 |
| | | Female | Person | 1 | 0 | 0 | 2 |
| | | | % of total employees | 0.02 | 0.00 | 0.00 | 0.04 |
| | | 30-50 years old | Person | 1 | 8 | 17 | 11 |
| | | | % of total employees | 0.02 | 0.15 | 0.31 | 0.20 |
| | | Male | Person | 0 | 3 | 14 | 5 |
| | | | % of total employees | 0.00 | 0.06 | 0.25 | 0.09 |
| | | Female | Person | 1 | 5 | 3 | 6 |
| | | | % of total employees | 0.02 | 0.09 | 0.05 | 0.11 |
| | | Below 30 years old | Person | 67 | 116 | 147 | 50 |
| | | | % of total employees | 1.27 | 2.14 | 2.67 | 0.91 |
| | | Male | Person | 56 | 100 | 130 | 36 |
| | | | % of total employees | 1.06 | 1.85 | 2.36 | 0.66 |
| | | Female | Person | 11 | 16 | 17 | 14 |
| | | | % of total employees | 0.21 | 0.30 | 0.31 | 0.26 |
| | | Employee Turnover | | | | | |
| | | Total Employee turnover | Person | 69 | 144 | 61 | 55 |
| | | | % of total employees | 1.31 | 2.66 | 1.11 | 1.01 |
| | | Male | Person | 55 | 118 | 48 | 44 |
| | | | % of total employees | 1.05 | 2.18 | 0.87 | 0.80 |
| | | Female | Person | 14 | 26 | 13 | 11 |
| | | | % of total employees | 0.27 | 0.48 | 0.24 | 0.20 |

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|---------------------------|----------------------|------|------|------|------|
| 401-3 | G4-LA1 | Employee Turnover by area | | | | | |
| | | Bangkok | Person | 14 | 29 | 6 | 10 |
| | | | % of total employees | 0.27 | 0.54 | 0.11 | 0.18 |
| | | Male | Person | 7 | 16 | 2 | 4 |
| | | | % of total employees | 0.13 | 0.30 | 0.04 | 0.07 |
| | | Female | Person | 7 | 13 | 4 | 6 |
| | | | % of total employees | 0.13 | 0.24 | 0.07 | 0.11 |
| | | Rayong | Person | 54 | 106 | 53 | 40 |
| | | | % of total employees | 1.03 | 1.96 | 0.96 | 0.73 |
| | | Male | Person | 47 | 93 | 45 | 35 |
| | | | % of total employees | 0.89 | 1.72 | 0.82 | 0.64 |
| | | Female | Person | 7 | 13 | 8 | 5 |
| | | | % of total employees | 0.13 | 0.24 | 0.15 | 0.09 |
| | | Others | Person | 1 | 9 | 2 | 5 |
| | | | % of total employees | 0.02 | 0.17 | 0.04 | 0.09 |
| | | Male | Person | 1 | 9 | 1 | 5 |
| | | | % of total employees | 0.02 | 0.17 | 0.02 | 0.09 |
| | | Female | Person | 0 | 0 | 1 | 0 |
| | | | % of total employees | 0.00 | 0.00 | 0.02 | 0.00 |
| | | Employee Turnover by age | | | | | |
| | | Over 50 years old | Person | 12 | 37 | 5 | 11 |
| | | | % of total employees | 0.23 | 0.68 | 0.09 | 0.20 |
| | | Male | Person | 10 | 33 | 5 | 9 |
| | | | % of total employees | 0.19 | 0.61 | 0.09 | 0.16 |
| | | Female | Person | 2 | 4 | 0 | 2 |
| | | | % of total employees | 0.04 | 0.07 | 0.00 | 0.04 |
| | | 30-50 years old | Person | 39 | 97 | 22 | 32 |
| | | | % of total employees | 0.74 | 1.79 | 0.40 | 0.59 |
| | | Male | Person | 30 | 48 | 16 | 26 |
| | | | % of total employees | 0.57 | 0.89 | 0.29 | 0.48 |
| | | Female | Person | 9 | 49 | 6 | 6 |
| | | | % of total employees | 0.17 | 0.90 | 0.11 | 0.11 |

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|---|---|-------|-------|-------|-------|
| 401-3 | G4-LA1 | Below 30 years old | Person | 18 | 18 | 34 | 12 |
| | | | % of total employees | 0.34 | 0.33 | 0.62 | 0.22 |
| | | Male | Person | 16 | 12 | 27 | 9 |
| | | | % of total employees | 0.30 | 0.22 | 0.49 | 0.16 |
| | | Female | Person | 2 | 6 | 7 | 3 |
| | | | % of total employees | 0.04 | 0.11 | 0.13 | 0.05 |
| 401-3 | G4-LA3 | Parental Leave | | | | | |
| | | Employees Entitled for Parental Leave | Person | 5,262 | 5,418 | 5,498 | 5,466 |
| | | Male | Person | 4,417 | 4,482 | 4,554 | 4,524 |
| | | Female | Person | 845 | 936 | 944 | 942 |
| | | Number of Employees Taking Parental Leave | Person | 136 | 129 | 114 | 131 |
| | | Male | Person | 126 | 112 | 100 | 115 |
| | | Female | Person | 10 | 17 | 14 | 16 |
| | | Number of Employees Return to Work After Parental Leave | Person | 136 | 127 | 114 | 131 |
| | | Male | Person | 126 | 112 | 100 | 115 |
| | | | % of employees taking parental leave | 100 | 100 | 89 | 100 |
| | | Female | Person | 10 | 15 | 14 | 16 |
| | | | % of employees taking parental leave | 100 | 88 | 82 | 100 |
| | | Employees Entitled for Parental Leave Who are Still Employed for the Next 12 Months | Person | 166 | 134 | 126 | 110 |
| | | | % of employees returning to work after parental leave | 99 | 99 | 99 | 84 |
| | | Male | Person | 151 | 124 | 112 | 98 |
| | | | % of employees returning to work after parental leave | 99 | 98 | 100 | 85 |
| | | Female | Person | 15 | 10 | 14 | 12 |
| | | | % of employees returning to work after parental leave | 100 | 100 | 93 | 75 |
| 102-41 | G4-11 | Total Employees Covered by Collective Bargaining | % | 87 | 86 | 86 | 75 |

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|-----------------|--------|--|------|---------|---------|---------|---------|
| 404-1 | G4-LA9 | Training Hours of Male Employees Based in Bangkok | Hour | 7,683 | 6,892 | 10,326 | 13,212 |
| | | Executive (Level 13-18) | Hour | 477 | 815 | 771 | 1,100 |
| | | Middle Management (Level 9-12) | Hour | 3,552 | 3,154 | 4,006 | 5,256 |
| | | Supervisory (Level 6-8) | Hour | 3,264 | 2,671 | 5,030 | 6,350 |
| | | Operation (Level 1-5) | Hour | 390 | 252 | 519 | 507 |
| | | Training Hours of Female Employees Based in Bangkok | Hour | 10,273 | 9,112 | 15,776 | 17,560 |
| | | Executive (Level 13-18) | Hour | 213 | 331 | 418 | 1,154 |
| | | Middle Management (Level 9-12) | Hour | 3,791 | 3,722 | 5,059 | 6,450 |
| | | Supervisory (Level 6-8) | Hour | 6,058 | 4,626 | 9,843 | 9,278 |
| | | Operation (Level 1-5) | Hour | 211 | 433 | 457 | 678 |
| | | Training Hours of Male Employees Based in Rayong | Hour | 143,162 | 132,785 | 150,027 | 194,056 |
| | | Executive (Level 13-18) | Hour | 574 | 1,065 | 1,038 | 1,629 |
| | | Middle Management (Level 9-12) | Hour | 14,189 | 21,648 | 25,374 | 24,141 |
| | | Supervisory (Level 6-8) | Hour | 85,671 | 74,328 | 84,661 | 122,578 |
| | | Operation (Level 1-5) | Hour | 42,728 | 35,744 | 38,956 | 45,708 |
| | | Training Hours of Female Employees Based in Rayong | Hour | 9,288 | 9,738 | 36,192 | 15,590 |
| | | Executive (Level 13-18) | Hour | 0 | 0 | 0 | 0 |
| | | Middle Management (Level 9-12) | Hour | 1,696 | 1,497 | 2,733 | 2,647 |
| | | Supervisory (Level 6-8) | Hour | 4,668 | 5,140 | 7,726 | 10,757 |
| | | Operation (Level 1-5) | Hour | 2,924 | 3,101 | 3,092 | 2,186 |
| | | Training Hours of Male Employees Based in Other Areas | Hour | 10,661 | 8,589 | 12,593 | 11,298 |
| | | Executive (Level 13-18) | Hour | 0 | 0 | 0 | 0 |
| | | Middle Management (Level 9-12) | Hour | 882 | 736 | 1,650 | 816 |
| | | Supervisory (Level 6-8) | Hour | 4,230 | 4,091 | 7,610 | 7,548 |
| | | Operation (Level 1-5) | Hour | 5,549 | 3,762 | 3,333 | 2,934 |
| | | Training Hours of Female Employees Based in Other Areas | Hour | 803 | 542 | 877 | 813 |
| | | Executive (Level 13-18) | Hour | 0 | 0 | 0 | 0 |
| | | Middle Management (Level 9-12) | Hour | 5 | 2 | 65 | 0 |
| | | Supervisory (Level 6-8) | Hour | 364 | 226 | 529 | 537 |
| | | Operation (Level 1-5) | Hour | 434 | 314 | 284 | 276 |
| 403-9 (2561) | G4-LA6 | Absentee Rate ⁽²⁾ | | | | | |
| | | Male | % | 0.632 | 0.661 | 0.696 | 0.679 |
| | | Female | % | 0.184 | 0.206 | 0.217 | 0.201 |

Remark: (1) IRPC does not employ any part-time employees

(2) This represents absentee rates for only full-time employees.



Process Safety

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|--|------|------|------|------|------|
| N/A | G4-OG13 | Number of Tier 1 Process Safety Events | Case | 0 | 1 | 1 | 0 |
| | | Number of Tier 2 Process Safety Events | Case | 4 | 0 | 1 | 2 |

Occupational Health and Safety ⁽¹⁾

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | | 2018 | |
|---------------------------|--------|---|---------------------------|------|------|------|--------|-------|--------|
| | | | | | | Male | Female | Male | Female |
| 403-9 403-10 (2561) | G4-LA6 | Total number of hours worked | Million hours worked | 43.3 | 32.8 | 30.2 | | 20.35 | |
| | | Employees | Million hours worked | 11.1 | 11.5 | 11.5 | | 11.25 | |
| | | | | | | 9.54 | 1.96 | 9.44 | 1.81 |
| | | All Workers | Million hours | 32.2 | 21.3 | 18.7 | | 9.1 | |
| | | Total Recordable Injury Rate (TRIR) ⁽²⁾ | Case/Million hours worked | 0.46 | 0.60 | 0.45 | | 0.39 | |
| | | Employees ⁽³⁾ | Case/Million hours worked | 0.99 | 0.85 | 0.75 | 0 | 0.36 | 0 |
| | | All Workers ⁽⁴⁾ | Day/Million hours worked | 0.30 | 0.47 | 0.27 | 0 | 0.44 | 0 |
| | | Lost Time Injuries Frequency Rate (LTIFR) | Case/Million hours worked | 0.14 | 0.32 | 0.19 | | 0.25 | |
| | | Employees | Case/Million hours worked | 0.27 | 0.57 | 0.17 | 0 | 0.27 | 0 |
| | | All Workers | Case/Million hours worked | 0.11 | 0.19 | 0.21 | 0 | 0.22 | 0 |
| | | Total Recordable Occupational Illness Rate (TROIR) ⁽⁵⁾ | Case/Million hours worked | 0 | 0 | 0 | | 0 | |
| | | Employees | Case/Million hours worked | 0 | 0 | 0 | 0 | 0 | 0 |
| | | All Workers | Case/Million hours worked | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Lost Day Rate (LDR) ⁽⁶⁾ | Day/Million hours worked | 0.58 | 1.52 | 1.79 | | 5.26 | |
| | | Employees | Day/Million hours worked | 2.07 | 2.85 | 1.67 | 0 | 8.18 | 0 |
| | | All Workers | Day/Million hours worked | 0.13 | 0.85 | 1.86 | 0 | 1.65 | 0 |
| | | Fatalities | Person | 1 | 0 | 0 | | 0 | |
| | | Employees | Person | 0 | 0 | 0 | 0 | 0 | 0 |
| | | All Workers | Person | 1 | 0 | 0 | 0 | 0 | 0 |

Remark: (1) Health and safety statistics refer to OSHA and are measured per million hours worked.

Employees of IRPC Public Company Limited, including its subsidiaries with more than 50% of the shares held by IRPC.

All workers exclude Employees.

(2) TRIR does not include first aid cases.

(3) Main types of work-related injury for employees are Fatalities, Permanent Total Disabilities, Lost Workday Case, Restricted Workday Case, Medical Treatment Case

(4) Main types of work-related injury for all workers are Fatalities, Permanent Total Disabilities, Lost Workday Case, Restricted Workday Case, Medical Treatment Case

(5) TROIR was obtained from the results of annual employee health check-ups and diagnosed by a doctor Occupational Medicine.

(6) LDR accounts injuries or being ill result in inability to work on the next day.



Materials Consumption

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|-----------|------|-----------|-----------|-----------|-----------|
| 301-1 | G4-EN1 | Crude Oil | Ton | 8,737,143 | 8,863,305 | 8,592,344 | 9,943,352 |
| | | Naphtha | Ton | 787,527 | 682,215 | 700,113 | 961,415 |

Energy Consumption ⁽¹⁾

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|--|----------------------|------------|------------|------------|------------|
| 302-1 | G4-EN3 | Total energy consumption ^{(2), (3), (4)} | GJ | 45,015,598 | 50,610,551 | 52,080,051 | 59,020,452 |
| | | Fuel Oil | GJ | 49,427,071 | 51,564,793 | 52,512,622 | 59,221,327 |
| | | Natural Gas | GJ | 3,639,238 | 3,556,753 | 1,994,818 | 2,429,764 |
| | | LPG | GJ | 18,002,986 | 20,241,297 | 19,326,121 | 21,783,924 |
| | | Diesel | GJ | 1,151,317 | 1,118,996 | 707,990 | 684,881 |
| | | Gasoline | GJ | 395,884 | 365,560 | 282,617 | 295,826 |
| | | Fuel Gas | GJ | 18,082,921 | 16,173,055 | 17,469,024 | 20,214,853 |
| | | Coke | GJ | 2,383,627 | 4,580,035 | 6,189,950 | 6,269,004 |
| | | Propane | GJ | 0 | 0 | 0 | 0 |
| | | H ₂ | GJ | 447,583 | 336,115 | 303,062 | 297,061 |
| | | H ₂ S | GJ | 134 | 245 | 269 | 298 |
| | | Purge Gas | GJ | N/A | N/A | 925,442 | 1,030,912 |
| | | Recycle monomer | GJ | 22,440 | 26,068 | 28,360 | 30,361 |
| | | Coal | GJ | 5,300,941 | 5,166,668 | 5,284,968 | 6,184,444 |
| | | Total indirect energy consumption | GJ | 889,249 | 4,371,882 | 4,016,112 | 4,502,344 |
| | | Electricity purchased from PEA ⁽⁴⁾ | GJ | 89,268 | 158,838 | 472,087 | 301,578 |
| | | Electricity purchased from IRPC Clean Power | GJ | 292,062 | 1,221,417 | 833,180 | 1,505,209 |
| | | Steam purchased by IRPC Clean Power | GJ | 507,919 | 2,991,627 | 2,710,845 | 2,695,557 |
| | | Total electricity sold | GJ | 2,108,913 | 2,200,936 | 1,963,211 | 2,242,431 |
| | | Total steam sold | GJ | 3,191,809 | 3,125,188 | 2,485,472 | 2,460,788 |
| 302-3 | G4-EN5 | Energy intensity ⁽⁵⁾ | GJ/Ton of production | 4.28 | 4.56 | 4.49 | 4.75 |
| 302-4 | G4-EN6 | Energy saved due to conservation and efficiency improvements | GJ | 1,611,884 | 756,750 | 1,914,021 | 604,997 |
| N/A | G4-EN30 | Total diesel consumed by IRPC owned marine vessels | Liter | 852,094 | 615,199 | 620,054 | 719,941 |

Remark: ⁽¹⁾ Standards and methodologies used to calculate are based on relevant laws and regulations.

⁽²⁾ Energy use increased between 2015 to 2016 due to added the new UHV plant, which began COD in JUNE 2016.

⁽³⁾ Energy used increased between 2016 to 2017 due to production in UHMWPE PPE and PPC plants, which began COD in 2017

⁽⁴⁾ Electricity use of the Bangkok office purchased from the Metropolitan Electricity Authority since 2015

⁽⁵⁾ Energy intensity not including energy used during major turnaround period in year 2017

Flared and Vented Hydrocarbon ⁽¹⁾

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|--|-----------------------------------|-------|-------|-------|-------|
| N/A | G4-OG6 | Volume of flared hydrocarbon | Million M ³ | 36.19 | 62.17 | 70.01 | 57.44 |
| | | Volume of continuously flared hydrocarbon | Million M ³ | N/A | 58.89 | 59.67 | 55.37 |
| | | Volume flared hydrocarbon for oil & gas production in relation to volume produced | M ³ /Ton of production | 3.44 | 5.60 | 6.51 | 4.61 |
| | | Volume of Vented hydrocarbon | Million M ³ | N/A | N/A | 3.78 | 4.54 |
| | | Production process ⁽²⁾ | Million M ³ | N/A | N/A | 1.09 | 1.42 |
| | | Tank & Marketing & Terminal ⁽³⁾ | Million M ³ | N/A | N/A | 2.69 | 3.12 |
| | | Volume Vented hydrocarbon for oil & gas production in relation to volume produced ⁽³⁾ | M ³ /Ton of production | N/A | N/A | 0.10 | 0.11 |
| N/A | N/A | Methane Emission of flared hydrocarbon | Ton | 31.39 | 80.65 | 90.83 | 74.52 |

Remark: (1) The amount of flared hydrocarbon is calculated accordingly to IRPC's hydrocarbon management manual, in reference to HM31: Guide to HC Management in Petroleum Refinery Operation and HM32: Guide to Product HC management at Petroleum Product Marketing and Distribution, Management in Petroleum Refinery Operation and HM32: Guide to Product HC management at Petroleum Product Marketing and Distribution.

(2) Hydrocarbons released from production processes gathered from ACB Data (Calculated HC from the differences of feed to products as stored in SAP) and EPS data (Calculated from Feed going into the reactor in each batch 7.5% and products contain Pentane 6.6% each month)

(3) Hydrocarbons released from storage tanks and product and raw material handling, gathered from Ton VOCs of Tank calculations and Marketing & Terminal as Nm3. All reported in the VOCs Inventory.

Greenhouse Gas ⁽¹⁾

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|-------------------------|-------------------------------|---|--------------------------------------|-------|-------|--------|--------|
| 305-1 305-2 305-3 | G4-EN15 G4-EN16 G4-EN17 | Operational Control | | | | | |
| | | Direct emissions of greenhouse gas (Scope 1) ^{(2),(3)} | Million tCO ₂ e | 3.223 | 3.469 | 3.681 | 3.953 |
| | | CO ₂ | Million tCO ₂ e | 3.190 | 3.438 | 3.674 | 3.946 |
| | | CH ₄ | Million tCO ₂ e | 0.028 | 0.026 | 0.002 | 0.002 |
| | | N ₂ O | Million tCO ₂ e | 0.004 | 0.003 | 0.003 | 0.004 |
| | | HFC | Million tCO ₂ e | 0.001 | 0.002 | 0.002 | 0.000 |
| | | SF6 | tCO ₂ e | N/A | 397 | 38 | 863 |
| | | Biogenic CO2 Emissions | tCO ₂ e | 195 | 19 | 184 | 192 |
| | | Indirect emissions of greenhouse gas (Scope 2) ⁽³⁾ | Million tCO ₂ e | 0.070 | 0.280 | 0.296 | 0.315 |
| | | Location Based ⁽⁴⁾ | Million tCO ₂ e | 0.011 | 0.020 | 0.049 | 0.029 |
| | | Market Based ⁽⁵⁾ | Million tCO ₂ e | 0.059 | 0.287 | 0.247 | 0.287 |
| | | Other indirect emissions of greenhouse gas (Scope 3) ⁽⁶⁾ | Million tCO ₂ e | 7.662 | 7.495 | 17.903 | 20.295 |
| | | Equity Basis | | | | | |
| | | Direct emissions of greenhouse gas (Scope 1) | Million tCO ₂ e | 3.307 | 3.992 | 3.905 | 4.403 |
| | | Indirect emissions of greenhouse gas (Scope 2) ⁽³⁾ | Million tCO ₂ e | 0.070 | 0.280 | 0.297 | 0.315 |
| 305-4 | G4-EN18 | GHG Emission Intensity ⁽⁷⁾ | tCO ₂ e/Ton of production | 0.313 | 0.338 | 0.370 | 0.343 |

Remark: (1) GHG calculations refer to API 2009, IPCC 2006, ISO14064-1, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition), and GWP refers to the IPCC Fourth Assessment Report (AR4-100 year) from the Group's subsidiaries include those from IRPC PCL, IRPC Oil Co., Ltd., IRPC Polyol Co., Ltd., UBE Chemicals Co., Ltd (Asia), and IRPC Clean Power Co., Ltd/

(2) This does not include GHG emissions released from process vents.

(3) Scope 1 and Scope 2 GHG emissions increased between 2016 to 2017 as a result of commercial production processes of the UHV Plant in June and commercial production processes of UHMWPE, PPE & PPC in 2017

(4) GHG Emission from Electricity bought from EGAT is Calculated in reference to PDP 2015 Conversion factors calculation.

(5) GHG Emission from Electricity and Steam bought from private Power Plant (Local) is calculated in reference to Allocation of GHG Emission from combined heat and power (CHP) plant Guide to calculation worksheet V.10 (A WRI/WBCSD GHG Protod. Initiative Calculation Tool)

(6) Scope 3 GHG emissions come from employee transportation and use of B5, E10, and E20 inclusion of sales and transport data, electricity loss data (PTT Tool).

(7) GHG emission intensity was calculated from Scope 1 and Scope 2 GHG emissions.

Air Emissions ⁽¹⁾

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|--|---------------------------------|-------|-------|-------|-------|
| 305-7 | G4-EN21 | Total NOx | Ton | 1,778 | 1,722 | 1,418 | 1,759 |
| | | NOx Intensity | Ton/Thousand Tons of production | 0.169 | 0.155 | 0.132 | 0.141 |
| | | Total SOx ^{(2), (3)} | Ton | 1,491 | 2,164 | 2,154 | 1,566 |
| | | - SOx from Normal Operation | Ton | 1,491 | 1,987 | 1,219 | 1,566 |
| | | - SOx from Commissioning and Major Turnaround (Acid Flare) | Ton | 0 | 177 | 935 | 0 |
| | | SOx Intensity ⁽³⁾ | Ton/Thousand Tons of production | 0.142 | 0.195 | 0.113 | 0.126 |
| | | Total Suspended Particulate (TSP) | Ton | 298 | 308 | 238 | 270 |
| | | TSP Intensity | Ton/Thousand Tons of production | 0.028 | 0.028 | 0.022 | 0.022 |
| | | Total VOCs | Ton | 1,690 | 2,420 | 2,015 | 2,107 |
| | | VOCs Intensity ⁽⁴⁾ | Ton/Thousand Tons of production | 0.161 | 0.218 | 0.187 | 0.169 |

Remark: (1) This comes from direct measurements and relevant standards and regulations.

(2) Sulfur oxide quantities in the form of sulfur dioxide.

(3) SOx Intensity was not included in the calculations of oxide in sulfur during major turnaround in February 2017.

(4) VOCs increased from 2016 due to commercial productions from UHV plant and other petroleum depots outside of Rayong. Calculation methodologies for gas flaring were adjusted in reference to US EPA 2015, and there were also changes in calculations for the storage of raw materials and products.

Water Consumption and Wastewater

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|-----------------|---------|--|----------------|------------|------------|------------|------------|
| 303-3 (2561) | G4-EN8 | Total water withdrawal ⁽¹⁾ | M ³ | 45,004,720 | 47,603,605 | 41,478,791 | 45,258,298 |
| | | Fresh water | M ³ | 26,806,997 | 29,492,493 | 29,781,252 | 32,373,637 |
| | | Surface water | M ³ | 26,784,603 | 29,468,570 | 29,579,064 | 32,350,169 |
| | | Ground water | M ³ | 769 | 7,715 | 7,589 | 8,362 |
| | | Produced water | M ³ | 0 | 0 | 0 | 0 |
| | | Third-party water | M ³ | 21,625 | 16,208 | 14,599 | 15,106 |
| | | Other water | | | | | |
| | | Sea water | M ³ | 18,197,723 | 18,111,112 | 11,697,539 | 12,884,661 |
| | | Total third-party water withdrawal by withdrawal source | | | | | |
| | | Fresh water | M ³ | 21,625 | 16,208 | 14,599 | 15,106 |
| | | Surface water | M ³ | 21,625 | 16,208 | 14,599 | 15,106 |
| | | Ground water | M ³ | 0 | 0 | 0 | 0 |
| | | Produced water | M ³ | 0 | 0 | 0 | 0 |
| | | Third-party water | M ³ | 0 | 0 | 0 | 0 |
| | | Other water | | | | | |
| | | Sea water | M ³ | 0 | 0 | 0 | 0 |
| 303-5 (2561) | | Total water consumption | M ³ | 38,938,454 | 40,227,843 | 34,958,802 | 37,313,675 |
| 303-4 (2561) | G4-EN22 | Total volume of water discharge by type and destination ⁽²⁾ | M ³ | 26,585,627 | 28,587,582 | 22,119,583 | 24,774,318 |
| | | Fresh water | M ³ | 6,657,323 | 8,073,512 | 8,238,515 | 9,687,249 |
| | | Surface water | M ³ | 591,057 | 697,750 | 1,718,526 | 1,655,326 |
| | | Ground water | M ³ | 0 | 0 | 0 | 0 |
| | | Third-party water sent for use to other organizations | M ³ | 6,066,266 | 7,375,762 | 6,519,989 | 7,944,623 |
| | | Other water | | | | | |
| | | Sea water | M ³ | 19,928,304 | 20,514,071 | 13,881,067 | 15,087,069 |
| | | Fresh water withdrawal intensity ⁽³⁾ | M ³ | 1.91 | 1.99 | 1.87 | 1.96 |

Remark: (1) Water use from various sources of all IRPC Group businesses.

(2) All wastewater, including sea water used as sulfur scrubber which is treated before release to the ocean. The amount of total effluent is measured from the amount of wastewater sent into WWT system (except sea water, which uses water in is water out as in process design)

(3) Freshwater use intensity does not include water used to test machines for the UHV plant, seawater, water use of customers, and water use during Major Turnaround in February 2017.

Solid Waste

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|--|------|--------|--------|--------|--------|
| 306-2 | G4-EN23 | Total waste disposal ^{(1), (2), (3)} | Ton | 34,405 | 41,704 | 54,691 | 55,598 |
| | | Waste from routine operations | Ton | 34,351 | 40,460 | 54,222 | 55,129 |
| | | Non-hazardous waste | Ton | 28,843 | 26,476 | 28,287 | 38,460 |
| | | Composition | Ton | 0 | 293 | 1,540 | 0 |
| | | Export | Ton | 89 | 0 | 0 | 0 |
| | | Incineration | Ton | 0 | 0 | 276 | 65 |
| | | Landfill | Ton | 6,302 | 3,460 | 2,665 | 97 |
| | | Waste water treatment | Ton | 0 | 0 | 0 | 0 |
| | | Recovery | Ton | 48 | 15 | 707 | 1,298 |
| | | Recycling | Ton | 20,548 | 22,680 | 22,406 | 27,689 |
| | | Reuse | Ton | 0 | 0 | 0 | 0 |
| | | On-site storage | Ton | 1,856 | 28 | 693 | 0 |
| | | Land reclamation | Ton | 0 | 0 | 0 | 9,312 |
| | | Hazardous waste | Ton | 5,507 | 13,984 | 25,936 | 16,669 |
| | | Composition | Ton | 0 | 0 | 0 | 0 |
| | | Export | Ton | 0 | 23 | 522 | 1,054 |
| | | Incineration | Ton | 813 | 5,587 | 17,038 | 12,620 |
| | | Landfill | Ton | 766 | 419 | 269 | 57 |
| | | Waste water treatment | Ton | 0 | 162 | 0 | 0 |
| | | Recovery | Ton | 3,255 | 6,858 | 5,957 | 2,707 |
| | | Recycling | Ton | 452 | 838 | 2,023 | 156 |
| | | Reuse | Ton | 32 | 62 | 36 | 37 |
| | | On-site storage | Ton | 189 | 34 | 90 | 38 |
| | | Waste from non-routine operations | Ton | 54 | 1,244 | 469 | 469 |
| | | Non-hazardous waste | Ton | 16 | 1,125 | 36 | 78 |
| | | Incineration | Ton | 0 | 0 | 0 | 0 |
| | | Landfill | Ton | 16 | 0 | 36 | 0 |
| | | Recovery | Ton | 0 | 0 | 0 | 5 |
| | | Recycling | Ton | 0 | 1,125 | 0 | 73 |
| | | Hazardous waste | Ton | 38 | 119 | 433 | 390 |
| | | Incineration | Ton | 21 | 0 | 0 | 201 |
| | | Landfill | Ton | 2 | 0 | 2 | 33 |
| | | Recovery | Ton | 14 | 119 | 428 | 115 |
| | | Recycling | Ton | 0 | 0 | 3 | 41 |

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|---|------|-------|--------|--------|--------|
| 306-4 | G4-EN25 | Hazardous waste transportation | Ton | 5,536 | 14,103 | 26,275 | 17,019 |
| | | Hazardous waste import to IRPC | Ton | 0 | 0 | 0 | 0 |
| | | Hazardous waste export from IRPC | Ton | 5,536 | 14,103 | 26,275 | 17,019 |
| | | Hazardous waste treated | Ton | 0 | 0 | 0 | 24 |
| | | Hazardous waste shipped internationally | Ton | 89 | 23 | 522 | 1,054 |

Remark: (1) Waste management information was gathered from service providers certified from the Department of Industrial Works
(2) All discarded waste increased between 2015 to 2016 due to commercial productions at the UHV plant in JUNE 2016
(3) All discarded waste increased between 2016 to 2017 due to major turnaround activities.

Oil and Chemical Spills

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|-----------------------------------|----------------|------|------|------|------|
| 306-3 | G4-EN24 | Significant Oil & Chemical Spills | Case | 0 | 0 | 0 | 0 |
| | | | M ³ | 0 | 0 | 0 | 0 |

Environmental Protection Expenditures and Investment and Fines

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|---------|---|-------------|-------|-------|-------|-------|
| 201-1 | G4-EN1 | Environmental protection expenditures and investments (e.g. operation related costs, etc.) ⁽¹⁾ | THB Million | 1,059 | 803 | 609 | 194 |
| N/A | N/A | Benefit from environmental investment ⁽²⁾ | THB Million | 1,124 | 2,287 | 2,581 | 2,616 |
| 307-1 | G4-EN29 | Monetary value of significant fines | THB Million | 0 | 0 | 0 | 0 |
| | | Number of non-monetary sanctions | Case | 0 | 0 | 0 | 0 |
| | | Case brought through dispute resolution mechanisms | Case | 0 | 0 | 0 | 0 |

Remark: (1) Calculated Environmental protection expenditures and investments by including investment in energy saving projects and Everest projects that can reduce GHG emissions.
(2) Benefit from environmental investment such as cost saving, cost avoidance, income, tax incentives, etc.

Philanthropy

| GRI Standard | GRI-G4 | Data | Unit | 2015 | 2016 | 2017 | 2018 |
|--------------|--------|------------------------------------|-------------|-------|-------|--------|--------|
| 201-1 | G4-EC1 | Cash contribution ⁽¹⁾ | THB Million | 465 | 360 | 413 | 165 |
| N/A | N/A | Products and services contribution | THB Million | 0.81 | 0.72 | 1.98 | 0.84 |
| | | Employee volunteering hours | Hour | 7,651 | 8,704 | 18,807 | 27,954 |
| | | Employee volunteering cost | THB Million | 5.43 | 6.44 | 14.70 | 22.42 |
| | | Community affair overheads | THB Million | 70.68 | 17.22 | 44.71 | 43.00 |
| 102-43 | G4-26 | Community satisfaction | % | 93.31 | 87.49 | 92.29 | 88.50 |

Remark: (1) In 2015, Cash contribution included allocation of the investment fund funding Kamnoetvidya Science Academy (KVIS), and Vidyasirimedhi Institute of Science and Technology (VISTEC).

ABOUT THIS REPORT



IRPC publishes sustainability reports annually to communicate issues that are material to corporate sustainability and are of interest to stakeholders, as well as reporting the progress in compliance with the principle of United Nations Global Compact (UNGC). This report has been prepared in accordance with the GRI Standard Core Option and Oil and Gas Sector Disclosure. This report covers the economic, social and environmental aspects of IRPC's business operations in the period of 1st January to 31st December 2018. This report have been verified with a limited level of assurance by KPMG Phoomchai Audit Ltd.

Further details can be found in the Assurance Statement on page 122.



Scope of Report

Information disclosed in this report covers businesses operated by IRPC Plc., including its subsidiaries with more than 50% of the shares held by IRPC. This comprises of 1) IRPC Oil Co., Ltd., 2) IRPC Polyol Co., Ltd., and 3) IRPC Technology Co., Ltd. Furthermore, it also includes other companies in which IRPC's subsidiaries hold more than 50% shares, comprising of 1) IRPC A&L Co., Ltd., and 2) Rak Pa Sak Co., Ltd. The scope of this report is in accordance with the 2018 annual report in which the reference can be found in IRPC's annual report and on the website: www.irpc.co.th

Materiality

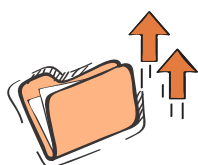
IRPC has adopted the GRI Reporting Principles for Defining Report Content for evaluating and reporting management approach, in addition to the performance that is relevant to the materiality issues in this particular sustainability report.

Procedure of IRPC's Sustainability Materiality Assessment



Identification of Materiality and Scope of Report

- Identified issues material to stakeholders by listening to their opinions.
- Identified IRPC's relevant material issues and context of sustainability.
- Identified scope of the related issues to cover all relevant stakeholder groups.



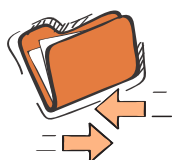
Prioritization of Material Issue

- Prioritized material issues based on company's ESG (Environment, Social, and Governance) risk assessment criteria and significance of the issues among stakeholders.



Validation and Approval of the Material Issues

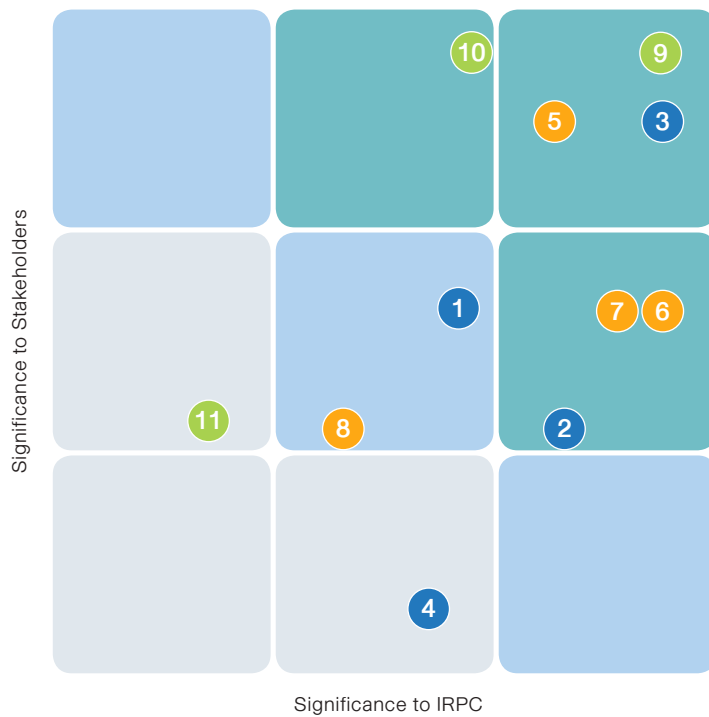
- Presented results of materiality assessment to the management committee, chaired by the CEO for validation and approval.



Review of Material Issues

- Both internal and external issues will be gathered and reviewed.
- Reviewed reported materiality and examine the materiality assessment outcome to ensure completeness of the report.

Outcome of IPRC's Sustainability Materiality Assessment 2018



● Economic

- 1 Supply Chain Management
- 2 Customer Relationship Management
- 3 Innovation & Product Development
- 4 Cyber Security

● Social






- 5 Human Capital Development
- 6 Occupational Health and Safety
- 7 Community Well-Being
- 8 Respect to Human Rights





● Environment

- 9 Operational Eco-Efficiency
- 10 Climate Change and Water Related Risk Management
- 11 Biodiversity Management




IPRC's Sustainability Material Issues

| Material Issues | GRI Aspects | Scope of Impact | Topic in this Report |
|--|--|---|---|
|  Supply Chain Management | <ul style="list-style-type: none"> • Procurement Practice • Anti-Corruption • Supplier Environmental Assessment • Supplier Social Assessment | <ul style="list-style-type: none"> • IPRC • Subsidiaries • Suppliers | <ul style="list-style-type: none"> • Supply Chain Management • Performance Summary |
|  Customer Relationship Management | <ul style="list-style-type: none"> • Customer Health and Safety • Marketing and Labeling • Customer Privacy • Socioeconomic Compliance | <ul style="list-style-type: none"> • IPRC • Subsidiaries • Customers | <ul style="list-style-type: none"> • Customer Relationship Management • Performance Summary |
|  Innovation and Product Development | <ul style="list-style-type: none"> • Non-GRI Topic | <ul style="list-style-type: none"> • IPRC • Subsidiaries • Customers | <ul style="list-style-type: none"> • Innovation & Product Development • Performance Summary |
|  Human Capital Development, Labor Practice Indicators, Talent Attraction & Retention | <ul style="list-style-type: none"> • Employment • Training and Education | <ul style="list-style-type: none"> • IPRC • Subsidiaries • Employees | <ul style="list-style-type: none"> • Human Capital Development • Performance Summary |
|  Asset Integrity & Occupational Health and Safety | <ul style="list-style-type: none"> • Occupational Health and Safety • Asset Integrity and Process Safety | <ul style="list-style-type: none"> • IPRC • Subsidiaries • Employees • Communities, Society and Environment | <ul style="list-style-type: none"> • Occupational Health and Safety • Performance Summary |

| Material Issues | GRI Aspects | Scope of Impact | Topic in this Report |
|--|---|---|--|
|  Contribution to Community and Society & Managing Impacts on Communities | <ul style="list-style-type: none"> • Indirect Economic Impacts • Local Communities | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Communities, Society and Environment | <ul style="list-style-type: none"> • Community Well-Being • Performance Summary |
|  Respect to Human Rights | <ul style="list-style-type: none"> • Human Rights Assessment | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Customers • Suppliers • Employees • Communities, Society and Environment | <ul style="list-style-type: none"> • Human Rights • Performance Summary |
|  Operational Eco-Efficiency | <ul style="list-style-type: none"> • Energy • Emissions • Effluents and Waste • Compliance with environmental regulations | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Customers • Suppliers • Communities, Society and Environment | <ul style="list-style-type: none"> • Operational Eco-efficiency • Performance Summary |
|  Climate Change Adaptation & Water Related Risk Management | <ul style="list-style-type: none"> • Water consumption and water discharge • Emissions | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Customers • Suppliers • Communities, Society and Environment | <ul style="list-style-type: none"> • Climate Change and Water Management • Performance Summary |

Remarks: When material issues were assessed, Cyber Security and Biodiversity Management were of low importance; therefore, both topics are not reported in this report.

Additionally, other important issues for IRPC which have not been prioritized in the materiality assessment in 2018 but are reported in this Sustainability Report are as follows:

| Important Issues | Scope of Impact | Topic in this report |
|---|---|--|
|  Business Diversification & Digitization | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Shareholders • Employees | <ul style="list-style-type: none"> • Business operation strategy |
|  Corporate Governance and Business Ethics | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Shareholders • Employees | <ul style="list-style-type: none"> • Corporate Governance and Business Ethics |
|  Risk Management | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Shareholders • Customers • Suppliers • Employees • Communities, Society and Environment | <ul style="list-style-type: none"> • Risk Management |
|  Stakeholder Engagement | <ul style="list-style-type: none"> • IRPC • Subsidiaries • Shareholders • Customers • Suppliers • Employees • Communities, Society and Environment | <ul style="list-style-type: none"> • Stakeholder Engagement |



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Independent limited assurance report

To the Directors of IRPC Public Company Limited (“IRPC”)

Conclusion

Based on the procedures performed, as described below, nothing has come to our attention that causes us to believe that the selected subject matters (“Subject Matters”) identified below and included in the Sustainability Report 2018 (the “Report”) for the year ended 31 December 2018, are not, in all material respects, prepared in compliance with the reporting criteria (the “Criteria”).

Our Responsibilities

We have been engaged by IRPC and are responsible for providing a limited assurance conclusion in respect of the Subject Matters for the year ended 31 December 2018 to be included in the Report as identified below.

Our assurance engagement is conducted in accordance with the International Standard on Assurance Engagements ISAE 3000 *Assurance Engagements other than Audits or Reviews of Historical Financial Information*, and ISAE 3410 *Assurance on Greenhouse Gas Statements*. These standards require the assurance team to possess the specific knowledge, skills and professional competencies needed to provide assurance on sustainability information, and that we plan and perform the engagement to obtain limited assurance on whether the Subject Matters are prepared, in all material respects, in compliance with the Criteria. We have complied with the requirements of the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants to ensure their independence. The firm applies International Standard on Quality Control 1 and accordingly maintains a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We have not been engaged to provide an assurance conclusion on any other information disclosed within the Report.

Subject Matters

Subject Matters comprised of the following data expressed numerically or in descriptive text for the year ended 31 December 2018:

- GRI 302-1 Energy consumption within organization (2016 version)
- GRI 303-3 Water withdrawal (2018 version)
- GRI 303-4 Water discharge (2018 version)
- GRI 303-5 Water consumption (2018 version)
- GRI 305-1 Direct (Scope 1) GHG emissions (2016 version)
- GRI 305-2 Energy indirect (Scope 2) GHG emissions (2016 version)
- GRI 305-7 Nitrogen oxide (NOx), sulfur oxides (SOx), and other significant air emissions (2016 version)
- GRI 306-2 Waste by type and disposal method (2016 version)
- GRI 306-3 Significant spill (2016 version)
- GRI 403-9 Work-related injuries (2018 version)
- GRI 403-10 Work-related ill health (2018 version)
- OGSD - OG6 Volume of flared and vented hydrocarbon
- OGSD - OG13 Number of process safety events, by business activity

Criteria

The Subject Matters were assessed according to the following criteria:

- The Sustainability Reporting Standards of the Global Reporting Initiative (“GRI Standards”) with core option; and
- The Oil and Gas Sector Disclosures (“OGSD”);

KPMG Phoomchai Audit Ltd., a Thai limited liability company and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity.



Director's and management's responsibilities

The director and management of IRPC are responsible for the preparation and presentation of the Subject Matters, specifically ensuring that in all material respects the Subject Matters are prepared and presented in accordance with the Criteria. This responsibility also includes the internal controls relevant to the preparation of the Report that is free from material misstatement whether due to fraud or error.

Procedure performed

In forming our limited assurance conclusion over the Subject Matters, our procedures consisted of making enquiries and applying analytical and other evidence gathering procedures including:

- Interviews with senior management and relevant staff at corporate and operating sites;
- Inquiries about the design and implementation of the systems and methods used to collect and process the information reported, including the aggregation of source data into the Subject Matters;
- Inquiries about managements practices and procedures related to identifying stakeholders and their expectations, determining material sustainability matters and implementing sustainability policies and guidelines;
- Visits 2 sites; UHV and CHP/PW site, selected on the basis of risk analysis including the consideration of both quantitative and qualitative criteria;
- Agreeing the Subject Matters to relevant underlying sources on a sample basis to determine whether all the relevant information has been included in the Subject Matters and prepared in accordance with the Criteria.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement and consequently the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed. Accordingly, we do not express a reasonable assurance opinion.

Inherent limitations

Due to the inherent limitations of any internal control structure it is possible that errors or irregularities in the information presented in the Report may occur and not be detected. Our engagement is not designed to detect all weaknesses in the internal controls over the preparation and presentation of the Report, as the engagement has not

been performed continuously throughout the period and the procedures performed were undertaken on a test basis.

Restriction of use of our report

Our report should not be regarded as suitable to be used or relied on by any party wishing to acquire rights against us other than IRPC, for any purpose or in any other context. Any party other than IRPC who obtains access to our report or a copy thereof and chooses to rely on our report (or any part thereof) will do so at its own risk. To the fullest extent permitted by law, we accept or assume no responsibility and deny any liability to any party other than IRPC for our work, for this independent limited assurance report, or for the conclusions we have reached.

KPMG Phoomchai Audit Ltd.

Bangkok




5 March 2019

GRI Content Index




| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|---|---------------------------------------|--|--------------------|------|-------|
| General Disclosures | | | | | | |
| GRI 102: General Disclosures 2016 (Organizational Profile) | 102-1 Name of the organization | Cover, 9, 119, Back Cover | - | | - | - |
| | 102-2 Activities, brands, products and services | 9-13 | Remark: IRPC did not sell any banned or disputed products in 2018. | | - | - |
| | 102-3 Location of headquarters | Back Cover | - | | - | - |
| | 102-4 Location of operations | 9-11 | - | | - | - |
| | 102-5 Ownership and legal form | Website | http://www.irpc.co.th/en/ir_home_th.php | | - | - |
| | 102-6 Markets served | 9-13 | - | | - | - |
| | 102-7 Scale of the organization | 12-13, 104-107 and Annual Report 2018 | Remark: Refer to IRPC Annual Report 2018, Financial Highlights, page 13 | | - | - |
| | 102-8 Information on employees and other workers | 104-107 | Remark: Majority of IRPC's workforce are employees and supervised workers. No significant variation in employment numbers and changes during the reporting year. | | 8 | - |
| | 102-9 Supply chain | 12-13 | - | | - | 2 |
| | 102-10 Significant changes to the organization and its supply chain | This page | Remark: No significant changes (i.e. location, operation, share capital structure, supply chain, etc.) during the reporting year. | | - | 2 |
| | 102-11 Precautionary principle or approach | 24-26 | - | | - | - |
| | 102-12 External initiatives | 16, 18-19, 23, 27, 71, 78, 93, 120 | - | | - | - |
| | 102-13 Membership or associations | 18-19 | - | | - | - |
| GRI 102: General Disclosures 2016 (Strategy) | 102-14 Statement from senior decision-maker | 4-5 | - | | - | 19 |
| | 102-15 Key impacts, risks, and opportunities | 24-26, 34-37, 87, 103 | - | - | - | 19 |
| GRI 102: General Disclosures 2016 (Ethics and Integrity) | 102-16 Values, principles, standards and norms of behaviour | 8, 63 | - | | 16 | 12-14 |
| | 102-17 Mechanisms for advice and concerns about ethics | 21 | - | - | 16 | 12-14 |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|--|--------------------------------|---|---|------|----------|
| GRI 102: General Disclosures 2016 (Governance) | 102-18 Governance structure | 16 and Website | Remark http://www.irpc.co.th/en/cg_chart.php |  | - | 1, 20 |
| | 102-19 Delegating authority | 16-17 | - | - | - | 1, 20 |
| | 102-20 Executive-level responsibility for economic, environmental, and social topics | 16, 119 | - | - | - | 1, 20 |
| | 102-21 Consulting stakeholders on economic, environmental, and social topics | 28-31 and This page | Remark: Communication with the Shareholders refers to Annual Report 2018, page 22-37. | - | 16 | 1, 20 |
| | 102-22 Composition of the highest governance body and its committees | 19 and This page | Remark: Composition of the Board and Committees refers to Annual Report 2018, page 74-90 (Management Structure Section) | - | 16 | 1, 20 |
| | 102-23 Chair of the highest governance body | This page | Remark: Roles of the Chairman refers to Annual Report 2018 page 79. (Roles and responsibilities of the Chairman Section) | - | - | 1, 20 |
| | 102-24 Nominating and selecting the highest governance body | This page | Remark: Nomination and selection process of the Board refers to Annual Report 2018, page 83-84. (Committee and Top Management Recruitment and Appointment and Nomination Process Section) | - | 16 | 1, 20 |
| | 102-25 Conflicts of interest | Website | Remark: http://www.irpc.co.th/en/cg_policy_ethics.php | - | 16 | 1, 2, 20 |
| | 102-26 Role of highest governance body in setting purpose, values, and strategy | This page | Remark: Sustainability Management refers to Annual Report 2018, page 236-241. | - | - | 1, 20 |
| | 102-27 Collective knowledge of highest governance body | This page | Remark: Board Development refers to Annual Report 2018, page 114-116. | - | 4 | 1, 20 |
| | 102-28 Evaluating the highest governance body's performance | This page | Remark: Committee Evaluation refers to Annual Report 2018, page 87 -88. | - | - | 1, 20 |
| | 102-29 Identifying and managing economic, environmental, and social impacts | This page | Remark: Risk Management Committee and Risk Management, refer to Annual Report 2018, page 87-88. | - | 16 | 1, 20 |
| | 102-30 Effectiveness of risk management processes | This page | Remark: Risk Management Committee and Risk Management refers to Annual Report 2018, page 87-88. | - | - | 1, 20 |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|---|--------------------------------|--|---|------|-------|
| GRI 102: General Disclosures 2016 (Governance) | 102-31 Review of economic, environmental, and social topics | This page | Remark: Risk Management Committee and Risk Management refers to Annual Report 2018, page 87-89. | - | - | 1, 20 |
| | 102-32 Highest governance body's role in sustainability reporting | 119 | - | - | - | 1, 20 |
| | 102-33 Communicating critical concerns | 21 | - | - | - | 1, 20 |
| | 102-34 Nature and total number of critical concerns | 21 | - | - | - | 1, 20 |
| | 102-35 Remuneration policies | This page and Website | Remark: Board of Director nomination process refers to Annual Report 2018, page 83-84. http://www.irpc.co.th/en/pdf/bord/Nomination-Committee-Charter-Remunerationeng-rev.pdf | - | - | 1, 20 |
| GRI 102: General Disclosures 2016 (Stakeholder Engagement) | 102-40 List of stakeholder groups | 15, 29-31, 120-121 | - |  | - | - |
| | 102-41 Collective bargaining agreements | 108 | - |  | - | 21 |
| | 102-42 Identifying and selecting stakeholders | 28 | - |  | 8 | - |
| | 102-43 Approach to stakeholder engagement | 28-31 | - |  | - | 21 |
| | 102-44 Key topics and concerns raised | 30-31, 45, 52, 87, 96, 101 | - |  | - | 21 |
| GRI 102: General Disclosures 2016 (Reporting Practice) | 102-45 Entities included in the consolidated financial statements | 119 | - |  | - | - |
| | 102-46 Defining report content and topic boundaries | 119-121 | - |  | - | - |
| | 102-47 List of material topics | 120-121 | - |  | - | - |
| | 102-48 Restatements of information | This page | Remark: No restatement in 2018 |  | - | - |
| | 102-49 Changes in reporting | This page | Remark: No significant changes in scope and boundary from previous reporting periods. |  | - | - |
| | 102-50 Reporting period | 118 | - |  | - | - |
| | 102-51 Date of most recent report | This page | Remark: Most recent previous report is 2017 IRPC Sustainability Report. |  | - | - |
| | 102-52 Reporting cycle | This page | Remark: IRPC publishes Corporate Sustainability Report annually. |  | - | - |
| | 102-53 Contact point for questions regarding the report | Back cover | - |  | - | - |



| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|---|--------------------------------|--|---|------|---------|
| GRI 102: General Disclosures 2016 (Reporting Practice) | 102-54 Claims of reporting in accordance with the GRI Standards | 118 | - |  | - | - |
| | 102-55 GRI content index | 124-132 | - |  | - | - |
| | 102-56 External assurance | 122-123 | Remark: IRPC engages KPMG Phoomchai Audit Ltd. to provide limited independent assurance service to IRPC's 2018 Corporate Sustainability Report. IRPC has process to ensure transparent external assurance. |  | - | - |
| Materials Topics | | | | | | |
| Supply Chain Management | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 38 | - | - | - | - |
| | 103-2 The management approach and its components | 38-43 and Website | Remark: http://www.irpc.co.th/en/sus_supply-chain.php | - | - | - |
| | 103-3 Evaluation of the management approach | 38-43 | - | - | - | - |
| GRI 204: Procurement Practices 2016 | 204-1: Proportion of spending on local suppliers | 41 | - | - | 12 | 2 |
| GRI 205: Anti-corruption | 205-1 Operations assessed for risks related to corruption | 20, 23 | - | - | - | - |
| | 205-2: Communication and training about anti-corruption policies and procedures | 22-23, 43-44 | - | - | - | - |
| GRI 308: Supplier Environmental Assessment 2016 | 308-1: New suppliers that were screened using environmental criteria | 42 | - | - | - | 2, 9-11 |
| GRI 414: Supplier Social Assessment 2016 | 414-1: New suppliers that were screened using social criteria | 42 | - | - | - | 2, 9-11 |
| Customer Relationship Management | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 48 | - | - | - | - |
| | 103-2 The management approach and its components | 48 | - | - | - | - |
| | 103-3 Evaluation of the management approach | 48-49 | - | - | - | - |
| GRI 416: Customer Health and Safety | 416-2 Incidents of non-compliance concerning the health and safety impacts of products and services | 52 | - | - | 16 | - |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|---|-----------------------------------|---|-----------------------|------|------|
| GRI 417: Marketing and Labelling 2016 | 417-3 Incidents of non-compliance concerning marketing communications | 52 | - | - | 16 | - |
| GRI 418: Customer Privacy 2016 | 418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data | 52 | - | - | 16 | - |
| GRI 419: Socioeconomic Compliance 2016 | 419-1 Non-compliance with laws and regulations in the social and economic area | 52 | - | - | 16 | - |
| Innovation and Product Development | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the ma- terial topic and its Boundary | 54 | - | - | - | - |
| | 103-2 The management approach and its components | 54-57 | - | - | - | - |
| | 103-3 Evaluation of the management approach | 58 | - | - | - | - |
| IRPC's own indicator | Percentage of petrochemical revenue invested in research and development | 58 | - | - | - | - |
| | Percentage of sales of specialty products by petrochemical revenue | 58 | - | - | - | - |
| Human Resource Management | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 60 | - | - | - | - |
| | 103-2 The management approach and its components | 62-66 and Website | Remark: http://www.irpc.co.th/en/sus_human_resources.php | - | - | - |
| | 103-3 Evaluation of the management approach | 65-66 | - | - | - | - |
| GRI 401: Employment 2016 | 401-1 New employee hires and employee turnover | 105-108 | - | - | 8 | 6-8 |
| | 401-3 Parental leave | 108 | - | - | 8 | 6-8 |
| GRI 404: Training and Education 2016 | 404-1 Average hours of training per year per employee | 65, 109 | - | - | 4, 8 | 6-8 |
| | 404-2 Programs for upgrading employee skills and transition assistance programs | 63-65 | - | - | 8 | 6-8 |
| | 404-3 Percentage of employees receiving regular performance and career development reviews | 64 | - | - | 5, 8 | - |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|---|---|--------------------------------|---|---|-------------|--------|
| Asset integrity and Occupational Health and Safety | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 67 | - | - | - | - |
| | 103-2 The management approach and its components | 67-75 and Website | Remark: http://www.irpc.co.th/en/sus_occupational_health.php | - | - | - |
| | 103-3 Evaluation of the management approach | 70-71, 73, 75 | - | - | - | - |
| GRI 403: Occupational Health and Safety 2018 | 403-1 Occupational health and safety management system | 67-69, 71-72 and Website | Remark: http://www.irpc.co.th/en/sus_occupational_health.php | - | 8 | 6-8 |
| | 403-2 Hazard identification, risk assessment, and incident investigation | 68-71, 74 | - | - | 3, 8 | 2, 6-8 |
| | 403-3 Occupational health services | 71 | - | - | 8 | 6-8 |
| | 403-4 Worker participation, consultation, and communication on occupational health and safety | 69, 71-74 | - | - | 8 | 6-8 |
| | 403-5 Worker training on occupational health and safety | 73-74 and Website | - | - | 8 | 6-8 |
| | 403-6 Promotion of worker health | 75 and Website | Remark: http://www.irpc.co.th/en/sus_occupational_health.php | - | 8 | 6-8 |
| | 403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships | 73-75 | - | - | 8 | 6-8 |
| | 403-9 Work-related injuries | 75, 110 | - |  | - | 6-8 |
| | 403-10 Work-related ill health | 110 | - |  | - | 6-8 |
| G4-Oil and Gas Sector Disclosure: Asset Integrity and Process Safety 2012 | G4-OG13 Number of process safety events, by business activity | 70, 110 | - |  | 3, 6, 8, 11 | - |
| Community Well-Being | | | | | | |
| GRI 201: Economic Performance 2016 | 201-1 Direct economic value generated and distributed | 117 and website | Remark: http://www.irpc.co.th/en/sus_social_responsibility.php | - | - | - |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 78 | - | - | - | - |
| | 103-2 The management approach and its components | 78-84 and Website | http://www.irpc.co.th/en/sus_social_responsibility.php | - | - | - |
| | 103-3 Evaluation of the management approach | 78-84 | - | - | - | - |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|--|--------------------------------|---|--------------------|----------|------|
| GRI 203: Indirect Economic Impacts 2016 | 203-1 Infrastructure investments and services supported | 79, 81-82 | - | - | - | - |
| | 203-2 Significant indirect economic impacts | 78-84 | - | - | 7, 9, 11 | - |
| G4-Oil and Gas Sector Disclosure: Indirect Economic Impacts 2016 | G4-EC7 Development and impact of infrastructure investments and services supported | This page | Omission: Information is not applicable to IRPC because company does not specifically invest initiatives related to access to energy for local communities. | - | - | - |
| GRI 413: Local Communities 2016 | 413-1 Operations with local community engagement, impact assessments, and development programs | 76-84 | Remark: 100% of operation has local community engagement program and formal grievance process. Environmental and social impact assessment are conducted at all eligible operations in line with local regulatory standards. | - | - | - |
| G4-Oil and Gas Sector Disclosure: Local Communities 2012 | G4-OG10 Number and description of significant disputes with local communities and indigenous peoples | This page | Omission: Information is not applicable to IRPC's business. | - | - | - |
| | G4-OG11 Number of sites that have been decommissioned and site that are in the process of being decommissioned | This page | Remark: There is no site that have been decommissioned and in the process of being decommissioned. | - | - | - |
| Human Rights | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 85 | - | - | - | - |
| | 103-2 The management approach and its components | 40, 43, 44, 85-87 and Website | Remark: http://www.irpc.co.th/en/sus_human_rights.php | - | - | - |
| | 103-3 Evaluation of the management approach | 87 | - | - | - | - |
| GRI 412: Human Rights Assessment 2016 | 412-1 Operations that have been subject to human rights reviews or impact assessments | 87 | - | - | - | - |
| | 412-2 Employee training on human rights policies or procedures | 87 | - | - | - | - |
| Operational Eco-Efficiency | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 90 | - | - | - | - |
| | 103-2 The management approach and its components | 90-94 and Website | Remark http://www.irpc.co.th/en/sus_operational_eco.php | - | - | - |
| | 103-3 Evaluation of the management approach | 90-94 | - | - | - | - |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|---|--|--------------------------------|---|---|--------------------|------|
| GRI 302: Energy 2016 | 302-1 Energy consumption within the organization | 111 | - |  | 7, 8, 12, 13 | 9-11 |
| | 302-3 Energy intensity | 111 | - | - | 7, 8, 12, 13 | 9-11 |
| | 302-4 Reduction of energy consumption | 111 | - | - | 7, 8, 12, 13 | 9-11 |
| G4-Oil and Gas Sector Disclosure: Energy 2012 | G4-OG2 Total amount invested in renewable energy | 98 | - | - | 7, 9, 17 | - |
| | G4-OG3 Total amount of renewable energy generated by source | 98 | - | - | 7 | - |
| GRI 305: Emissions 2016 | 305-6 Emissions of ozone-depleting substances (ODS) | This page | Omission: Information is not applicable to IRPC because the company is in the process of phasing out the usage of the ozone-depleting substances (ODS). | - | 3, 12 | 9-11 |
| | 305-7 Nitrogen oxides (NOx), Sulphur oxides (SOx), and other significant air emissions | 114 | Remark: Standards, methodologies, source of emission factors and assumptions used are identified relevant regulations. |  | 3, 12 | 9-11 |
| GRI 306: Effluents and Waste 2016 | 306-2 Waste by type and disposal method | 116-117 | For non-hazardous waste, IRPC sorted and disposed waste to local contractors and municipality in accordance to law. For hazardous waste transportation and disposal, IRPC sourced contractors who hold license as required by law. |  | 3, 6, 12 | 9-11 |
| | 306-3 Significant spills | 117 | - |  | 3, 6, 12 | 9-11 |
| | 306-4 Transport of hazardous waste | 116-117 | - | - | 3, 12 | 9-11 |
| G4-Oil and Gas Sector Disclosure: Effluent and Waste 2012 | G4-OG5 Volume and disposal of formation or produced water | This page | Omission: Information is not applicable to IRPC. | - | 3, 6, 8, 12 | 9-11 |
| | G4-OG6 Volume of flared and vented hydrocarbon | 112 and This page | Remark: IRPC only reports on vents from Acetylene Carbon Black (ACB) plant, Expandable Polystyrene (EPS) plant, and VOC Emission. The information for process vent and safety control vent that are unavailable due to the ongoing data collection process. |  | 3, 7, 8, 12, 13 | 9-11 |
| | G4-OG7 Amount of drilling waste (drill mud and cuttings) and strategies for treatment and disposal | This page | Omission: Information is not applicable to IRPC. | - | 3, 6, 12 | - |
| GRI 307: Environmental Compliance | 307-1 Non-compliance with environmental laws and regulations | 94, 117 | - | - | 3, 6, 7, 8, 12, 13 | 9-11 |

| GRI Standard | Disclosure | Page number (s) and/or URL (s) | Omissions/Remark | External Assurance | SDGs | UNGC |
|--|--|--------------------------------|--|---|-----------|---------|
| Climate Change and Water Related-Risks | | | | | | |
| GRI 103: Management Approach 2016 | 103-1 Explanation of the material topic and its Boundary | 95 | - | - | - | - |
| | 103-2 The management approach and its components | 95-101 and Website | Remark: http://www.irpc.co.th/en/sus_climate_strategy.php | - | - | - |
| | 103-3 Evaluation of the management approach | 100-101 | - | - | - | - |
| GRI 303: Water and Effluents 2018 | 303-1 Interactions with water as a shared resource | 99-101 | - | - | 6 | 9-11 |
| | 303-2 Management of water discharge-related impacts | 94 | - | - | 6 | 9-11 |
| | 303-3 Water withdrawal | 115 | - |  | 6 | 9-11 |
| | 303-4 Water discharge | 115 | - |  | 6 | 9-11 |
| | 303-5 Water consumption | 115 | - |  | 6 | 9-11 |
| GRI 305: Emissions 2016 | 305-1 Direct (Scope 1) GHG emissions | 113 | - |  | 3, 12, 13 | 9-11 |
| | 305-2 Energy indirect (Scope 2) GHG emissions | 113 | - |  | 3, 12, 13 | 9-11 |
| | 305-3 Other indirect (Scope 3) GHG emissions | 113 | - | - | 3, 12, 13 | 2, 9-11 |
| | 305-4 GHG emissions intensity | 101, 113 | - | - | 13 | 9-11 |
| | 305-5 Reduction of GHG emissions | 98, 101 | Remark: CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, and SF ₆ , NF ₃ are GHGs gas that are not related to IRPC's business. The calculation is based on 2012 base year. Identified GHG reduction is under IRPC's control; as a result, it is considered as GHG emission reduction in Scope 1. | - | 13 | 9-11 |
| Economic Performance | | | | | | |
| GRI 201: Economic Performance 2016 | 201-4 Financial assistance received from government | 120 | - | - | - | - |
| Sustainability Performance | | | | | | |
| GRI 205: Anti-corruption | 205-3 Anti-corruption | This page | Remark: IRPC did not experience any cases of corruption and bribery in 2018. IRPC is accredited as a member in private sector collective action Coalition Against Corruption (CAC) from Anti-Corruption Organization Thailand, in which IRPC is required to report any cases of corruption. | - | - | - |
| GRI 206: Anti-competitive Behavior | 206-1 Anti-competitive behavior | This page | Remark: IRPC did not experience any cases of anticompetitive behaviours in 2018. For reporting of anti-competitive practices, IRPC provides 1) Whistleblower system; 2) submission of feedbacks to website and 3) Annual Reputation Survey. From these several channels IRPC did not experience any cases of anticompetitive behaviours in 2018 and IRPC is not involved in any ongoing anticompetitive cases. | - | - | - |
| GRI 415: Public Policy | 415-1 Political contribution | This page | Remark: IRPC did not contribute to any political activities/campaigns in 2018. However, IRPC has joined trade association, business association and industry association, which shape policies and directions in oil and gas, and refinery sectors. | - | - | - |

Survey of Readers' Opinions

Your suggestions will be valuable inputs for us to improve the better IRPC Sustainability Report.

Please mark X into ☐ and fill the blank.

1 Please specify your personal information

Sex ☐ Female ☐ Male
Age ☐ Under 30 years ☐ 30-45 years ☐ Over 45 years

2. Which best describes you as a stakeholder?

☐ Employee ☐ Customer ☐ Shareholder/investor ☐ Public / communities
☐ Supplier ☐ Academic institution ☐ Financial institution/creditor
☐ Media ☐ Government officer ☐ Others (please specify.....)

3. Which channel did you receive the Sustainability Report

☐ IRPC website ☐ Seminar/ presentation/exhibition ☐ IRPC's employee
☐ Other website ☐ Annual general meeting ☐ Others (pleasespecify.....)

4. What is your objective in reading the Sustainability Report 2016?

☐ Knowing about IRPC ☐ Investment in IRPC ☐ Research and education
☐ Serving as guideline for your Sustainability/CSR report preparation
☐ Special interest (please specify.....) ☐ Others (please specify.....)

5. Please specify your satisfaction on 2016 Sustainability Development Report

| | | | | |
|----------------------|-------------------------------|---------------------------------|------------------------------|---------------------------------------|
| Completeness | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low | <input type="checkbox"/> Dissatisfied |
| Topics | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low | <input type="checkbox"/> Dissatisfied |
| Attractiveness | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low | <input type="checkbox"/> Dissatisfied |
| Ease to understand | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low | <input type="checkbox"/> Dissatisfied |
| Report design | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low | <input type="checkbox"/> Dissatisfied |
| Overall satisfaction | <input type="checkbox"/> High | <input type="checkbox"/> Medium | <input type="checkbox"/> Low | <input type="checkbox"/> Dissatisfied |

6. What issue in the report have you found most interesting? (Please specify your reason)

.....
.....

7. What issue in the report have you found least interesting? (Please specify your reason)

.....
.....

8. Have you found IRPC's strong commitment and intention to perform through the Sustainability Report? How?

.....
.....

9. Have you found the completeness in the report?

☐ Complete ☐ Incomplete

If not, please specify additional issues that should be included in the Sustainability Report?

.....
.....

10. Please provide additional recommendations/ suggestions for the next Sustainability Report improvement. (if any)

.....
.....



Please scan QR Code or fill in the blank and kindly send back to
IRPC PLC. We truly appreciate for your kind cooperation.



บริการธุรกิจตอบรับ

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2018 CORPORATE
SUSTAINABILITY REPORT