



Green Financing Framework IRPC Public Company Limited 2022



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Section 1: Introduction to IRPC

Founded in 1978, IRPC Public Company Limited (“IRPC” or “Company”), a subsidiary of PTT Group, is a Southeast Asia’s integrated petrochemical pioneer. The Company began producing applications of petroleum and petrochemical products in the early 1980s, before venturing out its business line to include a fully integrated petrochemical complex. Today, IRPC’s main operations are located within the IRPC Industrial Park in Rayong, Thailand which features the infrastructure needed for its business, including a deep-sea port, an oil depot, and a power plant. The Company’s mission is “to deliver with innovations the better attributes and solutions of sustainable material and energy for the future”. IRPC is committed to conducting its business with fairness, legality and good corporate governance, coupled with social and environmental supports, in order to create balance in all aspects and live together sustainably.

Section 1.1: IRPC’s Approach to Sustainability

Despite operating in a high (environmental) impact industry, IRPC is committed to striking a balance between business operations and the sustainability of the economy, society, and the environment. The Sustainability Management Office oversees IRPC’s sustainable strategy to be in accordance with the Company, PTT group and other international standards. Placing environmental considerations within its heart of operations, IRPC’s Sustainability Excellence Framework that was first introduced in 2015 was designed based on the Company’s Environmental Management Policy. With this, the framework underwent revision in 2019 in order to comply with laws and regulations in all countries of operations and to align with PTT Group Sustainability Management Framework, sufficient economy framework, and other international standards.

As the Company strongly believes that a sustainable business shall act in the best interest of all groups of stakeholders, sustainability development strategy is embedded within its corporate strategy, planning, and business development unit. In 2021, IRPC further strengthened its sustainability management scheme by applying three material issues to its operations, all of which are in line with the UN Sustainable Development Goals (“UNSDGs”).



Climate Change Strategy

Develop and execute strategies relating to climate change including the plan to reduce greenhouse gas emissions by 20% by 2030.



Develop comprehensive water management strategies, such as water risk management, promote efficient use of water, raising awareness of water, promote employees' cooperation, including enhancing knowledge and understanding of the topic as well as sharing water with the community. Empowering agricultural communities facing water scarcity so that they are able to cope with drought, while working to improve the quality of life of Agricultural communities.



Study projects relating to renewable and clean energy, such as Floating Solar Power. Established long-term goals relating to IRPC's energy efficiency (Energy Intensity Index: EII) to reduce and use energy efficiently.



Circular Economy

Allocate budget in order to onboard professionals of doctoral level to perform the research and development as well as promote culture and knowledge of innovation within the organization while seeking innovative business opportunities and providing grant money for research purposes.



Set targets to reduce scope 1 and 2 greenhouse gas emissions, air pollution emissions, Volatile Organic Compounds from incinerators and spills, and promote investments in projects to achieve goals, including the adoption of the 3Rs principle in the production process.



Creating Social Value:

Promote health and education among the surrounding community of IRPC Industrial Park through projects that create shared values for the society.



Provide technical and professional education to the youth community using IRPC technology and its strategy to deliver quality education as complied with the international standards while emphasizing on vocational capacity building targeting the petrochemical and energy and other fields that meet the needs of the country.



In an effort to deliver transparency and reinforce trust among stakeholders, IRPC publishes an annual sustainability report to showcase its performance and progression towards ESG targets. This report has been designed to meet the international standards as well as is externally verified to make sure they follow the principles for Defining Report Content as issued by the GRI Standards.

Despite a number of business challenges faced during the Covid-19 pandemic, such as fluctuations of crude oil and petrochemical products and decreased consumer demand from the lockdown measures, IRPC continues to operate its businesses sustainably, throughout its supply chain, aligning with the national strategy and the UNSDGs as can be seen below.

- **Climate Change Strategy “Low carbon plus”**

In strengthening its Clean Energy business and aligning with mission to “Shape Material and Energy Solutions in Harmony with Life”, IRPC follows the climate change leadership scheme as aligned with the Paris Agreement to limit global temperature rise to well below 2 degrees Celsius through a Greenhouse Gas Reduction Program. This target was set with the main objective to reduce greenhouse gas emissions and strengthen technological potential and investment capability. IRPC has also implemented plans to reduce GHG emission by 20% within 2030. With this, the Company is currently working internally to identify and implement the annual limit for GHG emission. The Company also established the pathway to achieve the Net Zero Emission to be in line with its business plan as well as the PTT Group's greenhouse gas emission reduction targets.

The Company’s enhanced energy efficiency in the production process has enabled them to achieve maximum utilization of natural resources and bring about minimal impact to the environment. The result has been seen in several operational control projects such as the reduction in electricity consumption and internal heat loss and steam consumption in the operational process as well as process improvement projects such as equipment installation, electricity production facilities improvement.

Installed on a 200-rai (32 Ha) raw water reservoir, the 12.5MW floating solar which features pontoons made from innovative special-grade gray high-density polyethylene (HDPE) under POLIMAXX brand, is currently the largest in Southeast Asia. This solar farm contributes to the power stability in IRPC

Industrial Park and is considered an innovation that not only increases business opportunities but also acts as an eco-friendly alternative. This HDPE is able to reduce temperature under solar panels by 5-8 degrees Celsius and thus further enhance the power generation efficiency. The project is expected to decrease electricity consumption from coal power plants and natural gas, thus lowering greenhouse gas emissions by approximately 9,459 tons of CO₂ equivalent per year, an equivalent of planting 10,000 trees. This floating solar farm also maximizes the utilization of water surfaces in reservoirs intended for drought and flooding management in Rayong. In strengthening its solar power capability, IRPC has established a promising plan to extend its existing floating solar area to include a new “Floating Solar Expansion Project”. With this, the Company also keep open the possibility of further solar expansion projects in the future.



(IRPC's 12.5MW Floating Solar)

- **Circular Economy Strategy “Living Plus”**

Circular Economy represents an alternative method that is being used around the world to manage vast amount of plastic waste. The need to solve global warming from climate change, mission for a Low Carbon Society, coupled with the zero-carbon emissions target, have driven the global adoption of recycled products. This initiative has brought circular economy into one of the Company's sustainability strategies for sustainable growth.

IRPC has been implementing circular economy projects, together with partnering with potential business partners, by assessing the level of application Circular Economy Principles for PTT Group (BS 8001: 2017) in order to acknowledge the level of application of circular economy principles. Along the path, IRPC has implemented various projects to enhance the value of Post-Industrial Recycled (PIR) and recycled plastic (Post-Consumer Recycled). For the second consecutive year, IRPC remained in collaboration with KFC and its 21 branches to maximize use of recycled plastic. IRPC adheres to 3Rs principle (Reduce, Reuse, and Recycle) to utilize the use of resources, promote use of natural products and reduce use of non-replaceable materials. This has been seen in number of Company's collaborations with different partners to create range of sustainable/ recycled materials.

Project with Daiso

With aim to replace the use of natural wood, bio-based Polypropylene Grade W1561RW, a type of plastic made from the combination of Polypropylene and 30% wood powder (residues) has been created. This plastic has been used as raw material for products such as a plant pot, which is certified by US FDA 21 with CFR 177.1520 (Olefin Polymers) and Regulation (EU) No 10/2011.



(Plant pot(s) made using Bio-based Polypropylene and 30% wood powder)

Project with KFC

IRPC, together with Thai World Ware Polyproducts Co., Ltd., have been producing cutlery including spoon, fork, and knife made of Bio-based Polystyrene Grade PK150B20 which is made from a mixture between Polystyrene plastic and 20% starch, to use in KFC branches. The product has been certified by US FDA 21 with CFR 177.1640 (Styrene Polymers), and Regulation (EU) No 10/2011.



(Cutlery made of Bio-based Polystyrene Grade PK150B₂₀)

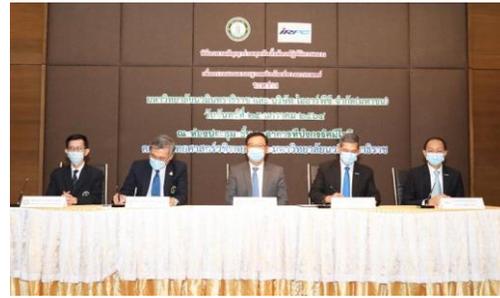
- **Creating Social Value Recognition Plus”**

IRPC recognizes the importance in the understanding of drought-related issues among its community. The Company has taken actions to develop a contingency plan for the water shortage situation where they effectively manage and maximize water efficiency through diverting water into reserves during wet seasons

in order to ensure smooth operations in the event of drought. Additionally, the Company continues to implement water sharing initiatives by sharing water supplies to communities affected by the long drought seasons from 2019 to the present. Recently, IRPC together with Navamindradhiraj University has built the first medical supply examination room in Thailand and Southeast Asia. This initiative will significantly contribute to Thailand's public health system by allowing domestic manufacturers to produce medical supplies at global standards, reduce dependence on supplies from abroad, and control the production quality and quantity, and safety of the public and health care professionals throughout the pandemic. In improving the quality of life among the disabled community and creating shared value, PP plastic beads have been donated by IRPC to the Prostheses Foundation of H.R.H the Princess Mother.



(IRPC Plastic beads donation)



(Collaboration with Navamindradhiraj University)

Section 1.2: IRPC's ESG Awards and Recognition



IRPC's involvement in environmental management has resulted in number of awards and recognition such as the following:

- For the 8th year, IRPC has been selected as a **member of the 2021 Dow Jones Sustainability Indices (DJSI)**.
- **Bronze Class: 2022 Sustainability Yearbook (Oil and Gas Refining and Marketing Sector) by S&P Global.**
- **Honorary plaque** as being among the listed companies in the **Thailand Sustainability Investment (THSI) 2021** in the resource category.
- **2021 SET Sustainability Awards of Honour** which offers to role model with outstanding sustainability commitment and governance with consideration towards all stakeholders.
- IRPC was awarded the **Model Organization for Human Rights award 2021** by the Minister of Justice. The Company is the only large organization to have received the award for the third consecutive year. The award recognizes efforts to respect human rights; prevent human rights, violations of employees, customers, and consumers; and reduce the number of human rights violation complaints as well as IRPC's strategy for applying the human rights principles to IRPC's corporate culture for production, excellent service, while creating value for all stakeholders as part of a good society, and sustainable development of human well-being.
- **UN WOMAN 2021 THAILAND WEPS AWARD in COMMUNITY ENGAGEMENT & PARTNERSHIP** for exemplary practice embracing the Women's Empowerment Principles (WEP's) in Asia Pacific.
- For the 7th consecutive year, IRPC has been awarded with **ECO-Factory Certificates** in recognition of its excellent resource and environmental impact management in the vicinity of IRPC Industrial Park including
 - REFY
 - Nano Chemical Plant
 - Lube Base Oil Plant



- Combined Heat and Power Plant
- Polypropylene Compound Plant
- Ethylene Plant

Section 2 Green Financing Framework

The Green Financing Framework (“Framework”) has been published with the aim of demonstrating how IRPC intends to raise its funding to support the financing and/or refinancing of its “Eligible Green Projects” as part of the Company’s mission to “deliver with innovations the better attributes and solutions of sustainable material and energy for the future”.

This Green Financing Framework has been designed accordingly with the following guidelines:

- The Green Bond Principles (“GBP”), issued by the International Capital Market Association (ICMA) in June 2021¹
- The ASEAN Green Bond Standards (“GBS”), issued by the ASEAN Capital Markets Forum (ACMF) in October 2018²
- The Green Loan Principles (“GLP”) issued by the Loan Market Association (LMA) in May 2020³

In order to ensure the alignment of IRPC project activities against the above guidelines, the Green Financing Framework has been designed to illustrate IRPC’s activities based on the following 4 components as recommended by the Second Party Opinion (“SPO”) provider:

- 1) Use of Proceeds
- 2) Project Evaluation and Selection
- 3) Management of Proceeds
- 4) Reporting

The Company intends to adhere to best practices in the market and will review the Framework’s alignment to updated versions of the GBP, the GBS, and the GLP as and when they are released. As such, this Framework may be updated and amended in the manner described in Section 4 (“Amendments to this Framework”) below.

Section 2.1: Use of Proceeds

- **Eligible Green Project Categories**

IRPC intends to allocate an amount of at least equivalent to its net proceeds from the upcoming green financing instrument under this Framework. The net proceeds will be exclusively used for the financing and/or refinancing of Eligible Green Project(s), with initial investment up to 40 months prior to the issuance date of the instrument.

¹ In alignment with ICMA Green Bond Principles, June 2021, <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/>

² In alignment with ASEAN Green Bond Standards, October 2018, <https://www.theacmf.org/initiatives/sustainable-finance/asean-green-bond-standards>

³ In alignment with LMA Green Loan Principles, May 2020, <https://www.lsta.org/content/green-loan-principles/>

The Eligible Green Project(s)/Asset(s) are or will be carried out by IRPC or its direct or indirect subsidiaries.

Eligible Green Category	Eligible Green Project(s)/ Asset(s) Description	Environmental Benefits	Alignment with ICMA GBP / ACMF GBS / UN SDGs
<p>Renewable Energy (Solar Power)</p> 	<ul style="list-style-type: none"> Expenditures to support the development, installation, operation, maintenance, and connection of renewable energy, including floating solar power to be installed on inland water. 	<ul style="list-style-type: none"> Minimize overall energy consumption and lower greenhouse gas (GHG) emissions 	<p>Renewable Energy</p>  

• Exclusions (Non-Eligible Green Projects)

As for any expenditure used to fund or related to the following activities (Non-Eligible Green Projects) will be seen as misuse of proceeds.

- Fossil fuel power generation projects;
- Large scale hydropower plants (>25MW capacity);
- Generation of nuclear power;
- Biomass plants, waste to energy power plants and geothermal plants with CO2 emission level of more than 100g CO2 /kWh;
- Child labor; and
- Forced labor

Section 2.2: Project Evaluation and Selection

In order to ensure the eligibility of the above Eligible Green Project(s), the Green Finance Working Group, comprising a number of highly experienced professionals from various departments, specifically the Corporate Strategy Planning and Business Development, Corporate Accounting and Finance, and Innovation and Operation Excellence Department, Petrochemical & Refinery Operation, were put together. The team shall be responsible for the evaluation and selection of the Eligible Green Project(s). Every potential Green Eligible Project will have to be evaluated using financial analysis while taking into account strategic consideration towards sustainable energy in order to identify the best and most appropriate project to be awarded with the proceeds, in which an approval from the Company’s Board of Directors is required.

Throughout the life of those green financing instruments, the Green Finance Working Group will perform its responsibilities including but not limited to

- Review and validate the existing Eligible Green Project(s)
- Monitor the allocation of proceeds in order to ensure maximum efficiency and optimal result of the proceeds, as well as to facilitate the ongoing reporting
- Decide to replace Eligible Green Project(s) if these no longer meet the eligibility criteria
- Oversee any ESG controversy (such as controversies that may impact local communities or changes in ecosystems) and consider to replace with new Eligible Green Project(s)
- Facilitate regular reporting on any Green issuance in alignment with the section 2.4 on 'Reporting'
- Manage any future update of the Green Financing Framework

Section 2.3: Management of Proceeds

The net proceeds from green financing instruments under this framework will be managed by Green Finance Working Group who is held responsible for allocating the net proceeds amount to the above Eligible Green Project(s).

The net proceeds will be deposited in a general account with the amount being put aside and marked for allocation to the Eligible Green Project(s) in accordance to this Framework. With this, IRPC shall maintain its funding towards such project to be at least equal to or exceed the net proceeds received and will track its use of net proceeds from instruments issued under this Framework. The balance figure shall be adjusted on an annual basis in order to ensure accurate spending on eligible project(s) during the period. As for the remaining (unallocated) amount issued under this Framework, IRPC may hold the proceeds in form of either cash or investments in short-term liquid instruments which is in-line with its policy and shall aim to allocate the amount to eligible green projects within 2 years of issue date.

In the event that the above project fails to maintain its quality in accordance with the eligibility criteria, IRPC will replace such project with the alternative projects as soon as it/they are identified and approved.

Section 2.4: Reporting

Reporting of IRPC’s use of net proceeds from the instruments will start within a year after the issuance/financing and will be updated and reviewed to reflect the latest data on an annual basis until the full amount has been allocated.

a) Allocation Reporting

Until the total net proceeds from the instrument has been fully allocated, the Green Finance Working Group will prepare and make available through the Company’s website, a report on the allocation progress. This report is designed to include the following but not limited to:

- The net proceeds figure along with amount or portion (%) of allocated funds towards the Eligible Green Project(s)
- Brief description and summary of projects financed by the Eligible Green Project(s)
- The amount or portion (%) used in financing as well as refinancing
- The balance or the portion (%) of net proceeds that is yet to be allocated
- Location and status of Eligible Green Project(s)

b) Impact Reporting

IRPC aims to communicate its impact of the above Green Eligible Projects on the environment on an annual basis. Although this is subjected to the availability of data as well as methodologies that will be available publicly. The report will also incorporate information on the methodology and assumption used for calculation of results shown for the below impact indicators.

- **Examples of Indicators:**

Eligible Green Category	Example of impact indicators
Renewable Energy (Solar Energy)	<ul style="list-style-type: none">• % Annual reduction in energy consumption from conventional power plant• Annual reduction in GHG emission (unit: tonnes of CO2 equivalent)• Annual renewable energy generation or installed capacity (unit: MWh)

Section 3 External Review

IRPC will engage DNV, an internationally recognized SPO provider, to provide the assessment on the alignment of the allocation of funds with Framework's criteria until the full allocation of the proceeds. The report will be made available to investors on the relevant section of IRPC's website.

Section 4 Amendments to this Framework

IRPC will review this Framework on a regular basis, including its alignment to updated versions of the Green Bond Principles, ASEAN Green Bond Standards and Green Loan Principles, as and when they are released, with the aim of adhering to best practices in the market. Such review may result in this Framework being updated and amended. The updates, if not minor in nature, will be subject to the prior approval of IRPC and the independent third-party viewer. Any future updated version of this Framework that may exist will either keep or improve the current levels of transparency and reporting disclosures, including the corresponding review by an External Reviewer. The updated Framework, if any, will be published on IRPC's website and will replace this Framework.

