1. **Introduction**

1.1 **Businesses of IRPC Public Co., Ltd.**

IRPC Public Company Limited which will be further called “Company” is the entrepreneur for integrated refinery and petrochemistry. The company started by producing and selling of plastic pellets in B.E. 2525 and continue expanded the production line for various plastic pellets, including the expansion of plants and basic infrastructures for the integrated petrochemical industry. Nowadays, IRPC Group is the first integrated petrochemical industrial entrepreneur in the Southeast Asia. The IRPC plant is located at Tambol Cheongneon, Muang District, Rayong Province which is the Industrial Park under the control and management of IRPC with fully infrastructure support for the integrated petrochemical industry such as deep-water port, fuel oil depot and power plant etc.

1.2 **Objectives of project**

IRPC Public Company Limited has planned to develop the project entitled “Muang Rayong Combined Heat and Power Project” which will be further called "Project". The capacity of the power producing is 240 MW.

1.3 **Necessity for project development**

From the expansion of population and economy of Thailand, it is resulted in the increasing demand for energy consumption of households, businesses and industries. The company has operated the business related to petrochemical industry, oil refinery and energy industry as the public company in order to develop land utilization for industrial development, and provide facilities and infrastructures for the operation of industries. Per surveying data, it is found that the demand of steam and power for industries inside the IRPC Industrial Park is now continuously increasing as a result of expansion of industrial capacity and plants.
Ministry of Energy together with Electricity Generating Authority of Thailand (EGAT) have provided the power development plan (PDP) to supply the energy for the country, to buy power from neighboring countries, to buy power from the Small Power Producer (SPP) and Very Small Power Producer (VSPP) and to distribute the power consumption for electricity production as indicated in PDP 2010 (B.E.2553-B.E.2573). In addition, they are concerned also on the power security, greenhouse gases reduction, increasing power efficiency and promoting of efficient process for electricity production. The cogeneration processes came as the efficient technology and utilized the highest efficiency for natural gas consumption, particularly the Small Power Producer (SPP) cogeneration.

From the mentioned Power Development Plan of Thailand, the company has planned to develop the SPP cogeneration with power and thermal productions under the capacity of 240 MW using the natural gases as fuel. The project is entitled “Muang Rayong Combined Heat and Power Project” in order to build up the power security for Eastern region of Thailand and reduce the burden of Thai’s government for power investment, including build up the security related to electricity for the industries in the IRPC Industrial Park.

1.4 Governmental policies related to project

Ministry of Energy together with Electricity Generating Authority of Thailand (EGAT) have provided the power development plan (PDP) by the cabinet on March 23, B.E. 2553 and approved following the resolution of Energy Regulatory Commission (ERC) on March 12, B.E.2553 for the power development plan of Thailand B.E.2553-B.E.2573 (PDP2010). The plan is to provide security for power consumption in the near future, stimulate the investment for power, enhance reliability for power producers and respond to the policies of GHGs reduction from the power generation sector. In addition, the security for power generation is aimed to achieve together with environmental quality conservation by promoting the renewable power generation which is harmonized with the renewable power plan (within 15 years) and increasing the efficiency of power consumption and promoting the efficient electricity generation using the cogeneration system.

The cabinet on November 30, B.E. 2553 has approved the resolution of Energy Regulatory Commission (ERC) for the short-term plan (B.E.2554-2562) to handle the increasing demand of electricity as projected following the PDP 2010 as well as the slowing down of development of independent power producers (IPP). Thus, the revised plan was proposed for the power development plan of Thailand B.E.2553-2573 (PDP2010-Revision No.1).
The cabinet on May 3, B.E.2554 has approved the resolution of Energy Regulatory Commission (ERC) on April 27, B.E.2554 for the delay of the development of nuclear power plant for 3 years to revise for the security and safety issues after the accidents of nuclear power plant in Fukushima that resulted in unrecognition of people in many countries. With these reasons, the second revised plan was proposed for the power development plan of Thailand B.E.2553-2573 (PDP2010-Revision No.2).

The cabinet on December 27, B.E.2554 has approved the resolution of Energy Regulatory Commission (ERC) on November 30, B.E.2554 for the renewable and alternative power development plan of 25% within 10 years (B.E.2555-2564) and the power conservation plan for 20 years (B.E.2554-2573). Thus, the third revised plan was proposed for the power development plan of Thailand B.E.2553-2573 (PDP2010-Revision No.3) to be harmonized with the increasing demand of power consumption following the Governmental New Action Plan in which there are a number of infrastructure development plans such as development of railway transportation (i.e. 10 lines of electricity trains in Bangkok and high speed trains etc.). In addition, to enhance the power security and mitigation of global warming impacts, appropriate distribution of power, import of electricity and backup of electricity should be conducted. However, the portion of CO₂ should be remained the same as specification in the PDP2010-Revision No.2.

For the clean power development and increasing efficiency of power consumption, it was addition proposed from the PDP2010-Revision No.2 to enhance the efficiency of power consumption by promoting the cogeneration system for electricity generation. The electricity produced by SPP and VSPP with the concentration system will be purchased more during the final stage of the plan without the specified period and quantity (excluding the Firm type).

1.5 Options for project development

Development of Muang Rayong combined heat and power project using natural gas as fuel is harmonized with the PDP in which power will be purchased from the small power producer (SPP) as stated in PDP2010 (B.E.2553-B.E.2573). This plan is to focus on efficiency of power consumption and of power production via combined heat and power system (Cogeneration). The Electricity Generating Authority of Thailand (EGAT) selected IRPC Public Company Limited for the small power producer as firm type of contract with cogeneration system B.E.2553. The project is under the demand framework of 1,500 MW. The distribution of power to the system is indicated in the Schedule Commercial operation Date (SCOD) approved by the Energy Regulatory Commission (ERC) on February 11, B.E.2554.
1.6 Benefits of the project development

Muang Rayong combined heat and power project will bring out the benefits for the country both at national and local levels as follows.

1) National level

(1) Building up the power security in Eastern Region of Thailand.

(2) Reduction of investment burdens for Thai’s Government for electricity generation and mega project that is mainly from taxes by handing over to the private sector.

(3) Reduction of power import from other countries and hence reducing the total trade balance.

(4) Promotion of efficient power generation of combined heat and power system with clean and advance technology.

2) Local level

(1) Project will co-fund for “power development fund of IRPC Public Company Limited” for the community to be used to enhance their living quality and environmental sustainability. Representatives of communities surrounded the project will be joined as committee for fund management under supervision of the Energy Regulatory Commission (ERC).

(2) People will be able to participate for the management of power development fund. This is recognized as the promotion of people participation.

(3) IRPC Public Company Limited will be fully and appropriately support various types of community development project to enhance the local development.

(4) Taxes generated by the project will be directly paid to the Local Administration Organization that will be help enhancing the project development of the community.
1.7 Necessity for EIA report preparation

Muang Rayong Combined Heat and Power Project using natural gas with the capacity of 240 MW is accounted as the thermal power plant having higher than 10 MW in capacity. Thus, the project included in the types of thermal power plant specified in the attachment of the Notification of Ministry of Natural Resources and Environment entitled “specified type and capacity of project or business that must prepare the environmental impact assessment report (EIA report) and criteria, methodology, procedure and guideline for the preparation of EIA report (April 24, B.E.2555)”. Thus, the project must submit the EIA report to the Office of Natural Resources and Environment Policy and Planning (ONEP).

Therefore, IRPC Public Company Limited has appointed Thai Environmental Technic Limited (which will be further called “Consultant”) to study and prepare the EIA report for the Muang Rayong Combined Heat and Power Project to be submitted to ONEP for further consideration in accordance with the Enhancement and Conservation of National Environmental Quality Act B.E. 2535 for further approval.

1.8 Objectives

The EIA report for Muang Rayong Combined Heat and Power Project has the following objectives:

1) To study the project description such as location, project components, processes, infrastructure system, pollution and control, emergency prevention and control and risks of project development, and other details related the construction and operation of project.

2) To study the existing environment, natural resources and use values of the study area in which there are physical resources, biological resources, human use values and quality of life values.

3) To assess the expected impacts of construction and operation of project to the environment, natural resources and use values in 4 categories: physical resources, biological resources, human use values and quality of life values as well as health impact assessment, respectively.

4) To specify the prevention and mitigation measures for the possible impacts on environment, natural resources and various use values from construction and operation of project in order to minimize the severity of impacts.

5) To specify the monitoring programs for the possible impacts on environment, natural resources and various use values from construction and operation of project and to inspect the efficiency of the environmental prevention and mitigation measures.
1.9 Scopes and methodology

1.9.1 Area scope

For the assessment of environmental impacts of project, consultant has studied the existing environmental situation covering the project and surrounding area in the distance of 5 km radius. This area is classified as the potential area for environmental impacts. The area will be further called “study area” that covers some parts of Tambol Cheongneon, Tambol Tapong, Tambol Banlaeng and Rayong City Municipality, Muang Rayong District, Tambol Natakwan, Muang Rayong District and Tambol Takhan, Bankai District, Rayong Province. The covering area is shown in Figure 1.9.1-1.

1.9.2 Technical scope

For the technical scope of the study and the components of EIA report, consultant has specified it in according to the guidelines and criteria for preparation and consideration of EIA report, particularly for the power project of the Office of Natural Resources and Environmental Policy and Planning (ONEP) including guidelines for people participation and social environmental impact assessment in the EIA of the Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Natural Resources and Environment, August B.E.2549.

1.10 Operation plan of project

Operation plan for Muang Rayong Combined Heat and Power Project will spend around 48 months starting from design, construction, starting up and distribution of electricity to the system following the plan shown in Table 1.10-1. Project will start the construction in B.E.2556 and start up the electricity operation in B.E.2560. Nowadays, project is in the stage of engineering design.
Figure 1.9.1-1 Project location and study area
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Source: IRPC PCL, 2013