

CHAPTER 1 INTRODUCTION

1.1 Background

One of the current main focus of Indonesian government is to build economic corridor in South Sumatra as nation's primary energy sources. PT Bukit Asam, Tbk (PTBA) as a sole State Own Enterprise that focus on Coal mining sector, and one of Coal Mining license holder along with government has good intention to foster this economic corridor project. But, the location of PT Bukit Asam mining that is far from the port requires it to have sufficient transportation infrastructure system to be able to move and transport the coal production. Coal production improvement would only be possible if it is supported with the appropriate/best transportation infrastructure.

After several economic and other consideration, railway construction is chosen due to the fact that it is cheaper than moving coal by road. However, due to all land that is already been used by company, other location is needed to support PTBA's port capacity enhancement.

By concerning this situation, PTBA tried to make several plans, as mentioned below:

1. Developing coal transportation route using train toward northern region, which is Prajin Area, with the capacity of 10 millions ton/year
2. Build new port infrastructure with the capacity of 10 millions ton per year

Apart from that, PT Kereta Api Indonesia as a joint coal transportation operator in South Sumatra alongside with PT Bukit Asam has similar intention to increase transportation capacity. With that similar concern, and with the purpose to create better synergy between SOEs, PT Bukit Asam and PT Kereta Api Indonesia have agreed to work together in increasing coal transportation capacity by using train, that departs from PT Bukit Asam's port in Tanjung Enim.

Coal transportation infrastructure development project can be categorized as a project that have high risk, because it involves big money investment, high labor forces, special regulation, high technology usage, diverse stakeholders, tight finishing time, and environment and social impact that might occurs. Generally, the risks that is inherent in this project can be classified as two, which are internal and external risk. Internal risk is a loss potential that is related with the material. External risk is the risk that lead to great loss due to external factor, which cannot be controlled by project management, including social risk, economic risk, political risk, regulation risk, and environmental risk. Every risk that appears can result in project finishing time delay, budget overruns, and poor work quality, if this risk cannot be managed perfectly by project manager.

Concerning all that aspects, the risk of transportation infrastructure development plan failure should be considered by related party because this impact can hinder those party's performances. By minimizing the risk that might appear, then the deeper study about the identification, analysis, mitigation, and allocation of possible risk, particularly, the decision by related party that is in charge of solving negative consequences that might happen inside this Prajin Area's infrastructure development project.

Risk management, as an integrated system of project management, is very important by projects succeed. Project risk management is functioned to manage the risk and uncertainty that might happen in this project in an effective way. Project risk management, as defined in PMBOK (2013) consist of several aspects such as risk identification, risk analysis, risk evaluation, and risk mitigation process. However, the effectiveness level of project risk management implementation in mining industry that is still low, shows the deficiency in risk management control. In this thesis, the writer will conduct an observation of the case study that is related to risk management in coal transportation infrastructure project in Prajin Area that is conducted by PT Bukit Asam. But, this thesis will be emphasizing more in the risk management implementation when constructing the railway system. This case study is hoped to be able to represent risk management condition of mining industry, particularly in Indonesia.

1.2 Company Profile

Company profile contains of a brief description of the company history from the beginning up to now, vision and mission, and the business field run by PT Bukit Asam.

1.2.1 Company History

The coal mining in Tanjung Enim was commenced by the Dutch Colonial Government in 1919 by running the first coal mine employing open pit mining method in Air Laya. Operation using underground mining method was begun in 1923 and lasted until 1940, while commercial production began in 1938. When the Dutch colonial period was concluded in Indonesia, the mining workers initiated a struggle for nationalization of the mining industry. In 1950, the Indonesian Government sanctioned the establishment of State-Owned Bukit Asam Coal Mine or Perusahaan Negara Tambang Arang Bukit Asam (PNTABA). In 1981, PN TABA transformed into a limited liability company under the name of PTBA. To evolved coal industry in Indonesia, in 1990 the Government decided to merge another State Owned Enterprise namely Perum Tambang Batubara with the PTBA.

On 23 December 2002, PTBA became a publicly listed company on the Indonesian Stock Exchange under the code of PTBA. Since then PTBA has persisted to grow and at the same time broadened its business line through the establishment of company subsidiary.

Over the past 10 years (2008-2018), PTBA is able to keep its growth, with Compound Annual Growth Rate (CAGR) of revenue at 14.54% and net profit at 15.43%. Revenue and net profit year by year can be seen in Figure 1.1.

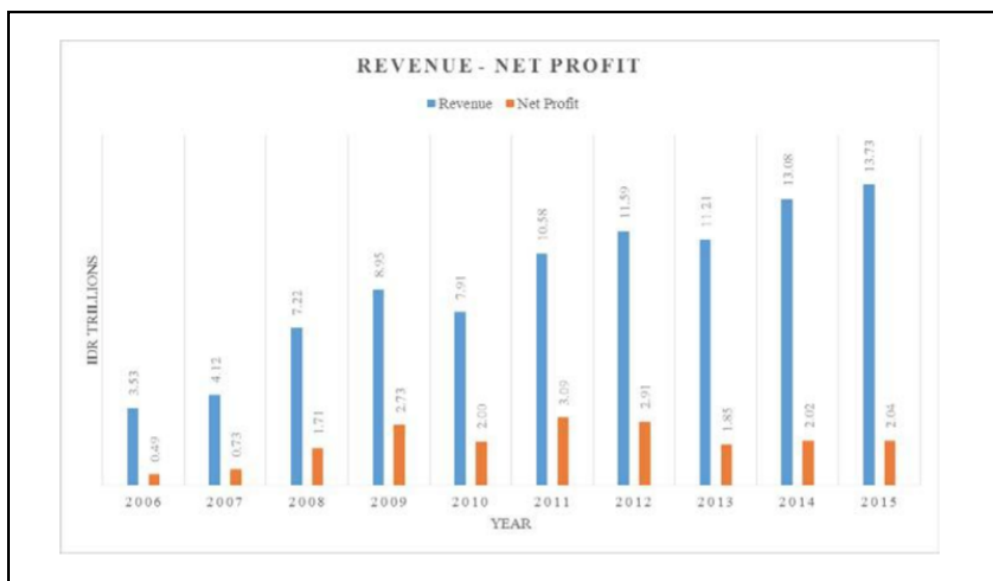


Figure 1.1 Revenue & Net Profit of PTBA
(Source: Annual Report)

1.2.2 Scope of Business Field

The objective of PTBA is to develop coal mining, and its related activities as described below:

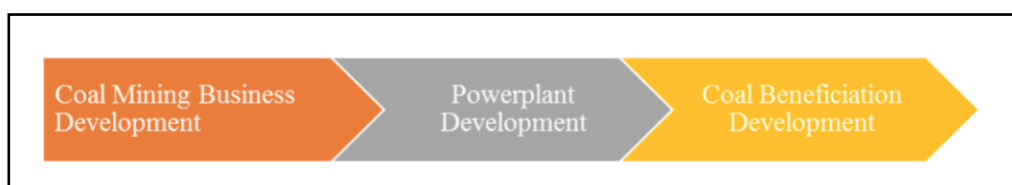


Figure 1.2 Scope of Business Field
(Source: Annual Report)

- Generic Development Mining operation covering general research, exploration, exploitation, processing, production, transporting/logistics, and trading of coal

- Power Plant Development: Managing and operating thermal power plant, for own purpose ((internal consumption) or for others (selling the electricity to PLN).
- Coal Beneficiation Development: Further processing of coal, such as: Coal Bed Methane, Coal Gasification, and Coal Upgrading

1.2.3 Company's Vision and Mission

- Vision: A world-class energy company that cares about the environment
- Mission: Manage energy resources by developing corporate competencies and human excellence to provide maximum value for the stakeholders and environment
- Values:
 - Visionary: Able to look far ahead and make long-term business growth projection
 - Integrity: Being trustworthy, transparent, positive, honest, committed, and responsible
 - Innovative: Working earnestly towards product novelty and service improvement
 - Professional: Competent team performance with creativity, courage, and commitment towards continuous expertise advancement
 - Cost and Environment Conscious: Doing business with concern for maximum advantage and environment conservation

1.2.4 Organization Structure

In accordance with the need to run the company activities, PTBA is led by a board of directors (President Director assisted by 5 director Finance, Operation, Production, Business Development, Commerce, and HR & General Affairs). Furthermore, below in Figure 1.3 is the complete organizational structure of PTBA.

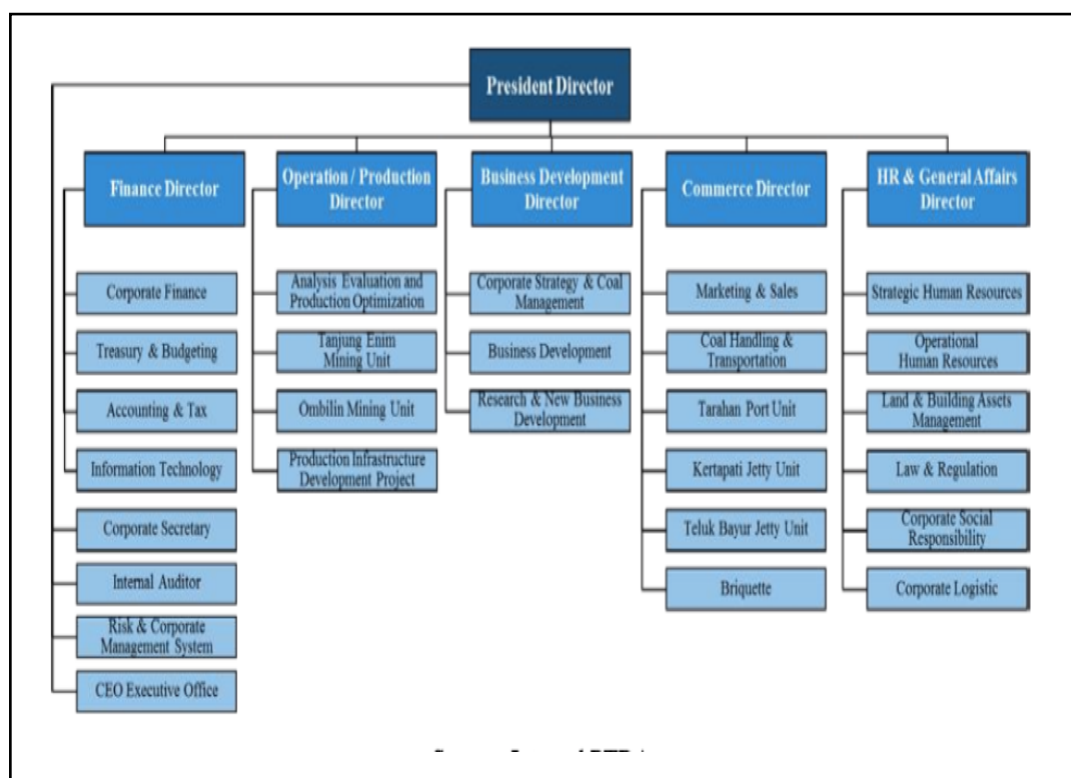


Figure 1.3 Organizational Structure
(Source: Annual Report)

Meanwhile the list of PTBA subsidiaries, can be seen in Figure 1.4 below

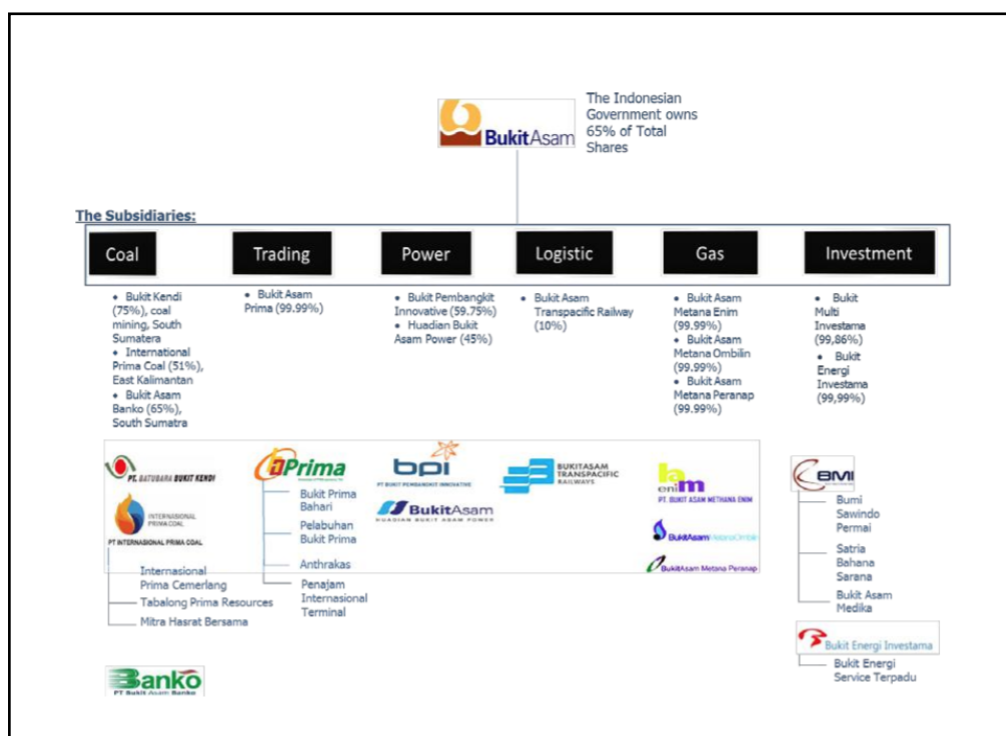


Figure 1.4 PTBA Subsidiaries
(Source: Annual Report)

1.2.5 Business Coverage

Business coverage is type of business that PT Bukit Asam has a focus on.

- **Core Business**

Pursuant to the Company's Articles of Association Article 3, PTBA operates in minerals development sector, especially coal mining, in line with the prevailing regulations and laws by applying the principles of Limited Liability Company, such mentioned below:

- Mining, including general investigation, exploration, exploitation, processing, refining, transportation, and trade of minerals, particularly coal
- Further processing of minerals, particularly coal

- Trading of production outputs from the aforementioned business activities, both from its own business and other parties production output, in the national and international market
- Engaging in and operating special ports and docks for coals, both for its own needs and other parties
- Engaging in and operating steam power plant, both for its own needs and other parties
- Providing consultation and engineering services in the field of coal mining and its processed output

As a State-Owned Enterprise, PT Bukit Asam shall always comply with the rules and regulations that are applied in Indonesia. In accordance with the Regulation of the State Minister of State Owned Enterprises Number: PER01/MBU/2011 Article 25, PT Bukit Asam should execute the following conditions:

- Board of Directors, in every decision-making or corporate action, should consider any risk of the business
- Board of Directors shall establish and implement corporate risk management program in an integrated manner as a part of GCG program implementation
- Implementation of the risk management program can be done by forming a separate unit below the Board of Directors; or giving assignments to the existing and relevant working unit to carry out risk management function.

1.2.6 Enterprise Risk Management at PT Bukit Asam

In business activities, PT Bukit Asam faces several inherent risks. These risks generally can be affected by human factor, infrastructure, funding, methodology, environment, and nature. Based on its characteristics, risk may be in the form strategic risk, operational risk, financial risk, legal risk, and reputation risk. These risks will lead to another specific risk, such as for instance, losses on coal resources, infrastructure development implementation that is not according to the plan, and many more. These various risk then been identified by corporate, before it is been monitored regularly and

continuously for later mitigation stages. Later, these risks are handled through the effort of existing control, risk mitigation, or risk transfer. Evaluation is always conducted periodically in accordance with the change of condition due to the dynamic nature of risks.

PTBA continuously working on perfecting the risk management system, one of them by conducting guidelines change, that previously using AS/NZS 4360:2004 to ISO 31000:2009 that is in line with other control system such as COSO, SOX, Perkap No.24/2004, etc. This enhancement is completed so that risk potential can be recognized earlier, that eventually will minimize risk impacts. This risk management framework is outlined in the policies, procedures, transaction limit, authority, and other provisions as well as various risk management tools applicable across the entire scope of business activities.

PT Bukit Asam is a company that relies much on operational activity. With that concern, a guidelines is highly needed in operational activity, in order to put risk management objectives in operation to be more focus.

The guidelines will direct objectives and benefits of operational risk management, definition and differentiation of type of operational risk, categorization of operational risk, role and responsibilities, impact of operational risk for continuity and its infrastructure if available.

In managing risks, PT Bukit Asam establishes Corporate Risk Management and Management System (CRM & CMS) Work Unit to strengthen its internal audit and control system that is responsible for facilitating the implementation Policy Guideline for Risk Management by Risk Owner and its personnel. In the Company's organizational structure, CMS Work Unit are directly accountable to President Director. In order to adjust with the development with the development of Enterprises Risk Management standard practices, Risk Management Policy of PT Bukit Asam refers to ISO 31000:2009 Risk Management Principles and Guidelines, that is also combined with IT Based Risk management.

1.3 Project Background

1.3.1 Prajin Project

PT Bukit Asam, Tbk (PTBA) as the only state-owned company engaging in coal mining and as one of the holders of coal mining business licenses has a good intention to work with the government and related parties to be successful in the development of the economic corridor of South Sumatra as a national energy barn. The location of the PTBA mine which is far from the sea port requires adequate transportation infrastructure to be able to move coal production. The government desire to increase coal production is only possible if it is supported by adequate transportation infrastructure. The construction of railroads is economically preferable because the cost of transporting coal using railroad transportation is cheaper than using road transportation. Due to inadequate land conditions, another location is needed to support company's plans to increase PTBA's port capacity.

With the objective to increase coal production capacity, PTBA plans to:

- Develop railroad coal transport lines to the north with capacity amounting to 10 million tons per year;
- Building a new infrastructure port with a capacity of 10 million tons per year;

Furthermore, PT Kereta Api Indonesia (PT KAI) as a coal transport operator in the Sumatra region that has been cooperating with PTBA in coal railway transportation has the same desire to increase the capacity of railroad transportation. In connection with the foregoing and in the framework of the synergy of BUMN, PTBA, and PT KAI, they have agreed to work together to increase coal haulage capacity by Railway from PTBA's mine in Tanjung Enim.

PT Bukit Asam Tbk. Tanjung Enim has three mining sources, such as the main mine in Airlaya, in Muara Tiga Besar, which is commonly called MTB, and in Banko Barat. To distribute the mine production, they have marketing target for production, through Tarahan port, Kertapati and to PT. Semen Baturaja. Accumulated coal marketing target

of PT. Bukit Asam has been fulfilled by TLS1, TLS2, TLS3 and TLS4. However, to increase the production capacity of PT. Bukit Asam, it continues to dig in new mining sites such as in Bangko Tengah, with the consequence of adding new TLS facilities. Here described the map of Tanjung Enim mine facilities.



Figure 1.5 Tanjung Enim Mine Facilities

In the year 2017, 3 main sources of PT Bukit Asam Tanjung Enim (TLS 1-4) have produced 15.5 million ton, while Tanjung Enim's own mining capacity is targeted to be able to produce up to 20 million tons per year. So that the target calculation of coal marketing has not been achieved if only relying on CHF / TLS currently available, moreover with the additional target production of 10 million tons per year.

The problem that leads to the development of Prajin project is the lack of achievement of the target of coal production of 10 million tons per year if it relies on CHF / TLS 1-5. By referring to the evaluation of the existing CHF data, it can be seen that in order to achieve the target of additional coal production of 10 million tons per year, a new

TLS is needed apart from the four TLSs that is currently in operation, especially considering the new mine site in Bangko Tengah that is relatively far, which is around 25-30 km from the existing TLS location.

Coal mines in Tanjung Enim have very large coal reserves of 6.36 billion tons. What is believed to be able to be extracted through open-pit mining is 1.59 billion tons. The new production rate is around 20 million tons per year from 3 existing mine locations, namely Air Laya, MTB and Banko Barat. The target of an additional 10 million tons per year is planned to be taken from the new mine site in Central Banko or around 25-30 km to the south from TLS 3 and 4. To achieve the new target, it was proposed to add a new CHF facility with the addition of two TLS units to accommodate the new coal production needs.

PT Bukit Asam already has railway that extends from Tanjung Enim Baru Railstation to Simpang Railstation. However, due to the new coal production target of 10 million tons per year, it is necessary to develop new Coal Handling Facility (CHF) and Train Loading System (TLS), especially in Bangko Tengah mining site, by adding two new TLS (TLS 6 and 7), as well as the addition of TLS to the Prajin port. With the addition of this new TLS, a new railway is automatically need to be developed, which stretches from Bangko Tengah to Tanjung Enim Baru railstation, which is 3 km long, and the railway that stretches from Simpang Raistation to Prajin port, which is 30 km long. The map below will illustrate the existing railway and the projected railway to the north (South Sumatra).



Figure 1.6 Prajin New Railway Development Route

The Figure below is an illustration of the coal journey from Banko Tengah mining site ti Prajin port, to be then transported by the ship to certain destinations.

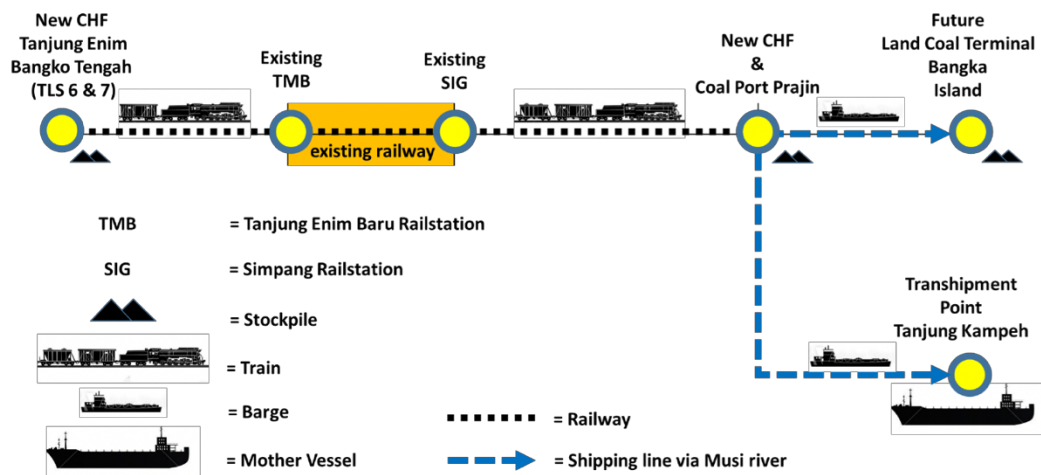


Figure 1.7 Scheme of Coal Transportation From Tanjung Enim

The plan to create new railway from Simpang Station to the port of Prajin will cross numbers of areas, such Kabupaten Ogan Ilir and Desa Prajin, where there will also be crossed Lintas Sumatra toll road, Musi river, Komering river, rice field, and Desa Prajin residents. The vital areas that are passed through are as shown in the Figure below.

Based on that situation, the project development plan of this railway must also consider all of the consequences and impacts to the area which are crossed by the railway.

The stages of project work are currently in the planning stage, namely the preparation of a feasibility study and preliminary design. Preliminary design in this project deal with the initial design, including material type, material quality, and material dimension that will be used in the railway track development project. On the other hand, feasibility study is conducted to assess the feasibility of business implementation. Feasibility studies and preliminary design is positioned in the fourth stage of Prajin Project, which also become one of the important stage to ensure the sustainability of the next stage of the project. This stage is projected to be completed in 5 months. Therefore, at this stage, it is very important to develop a comprehensive and appropriate plan in the context of the preliminary design and feasibility study of the project.

Figure 1.5 below describes the stages of the project that will be conducted, including preliminary design, which become the target of risk management plan implementation in this research.

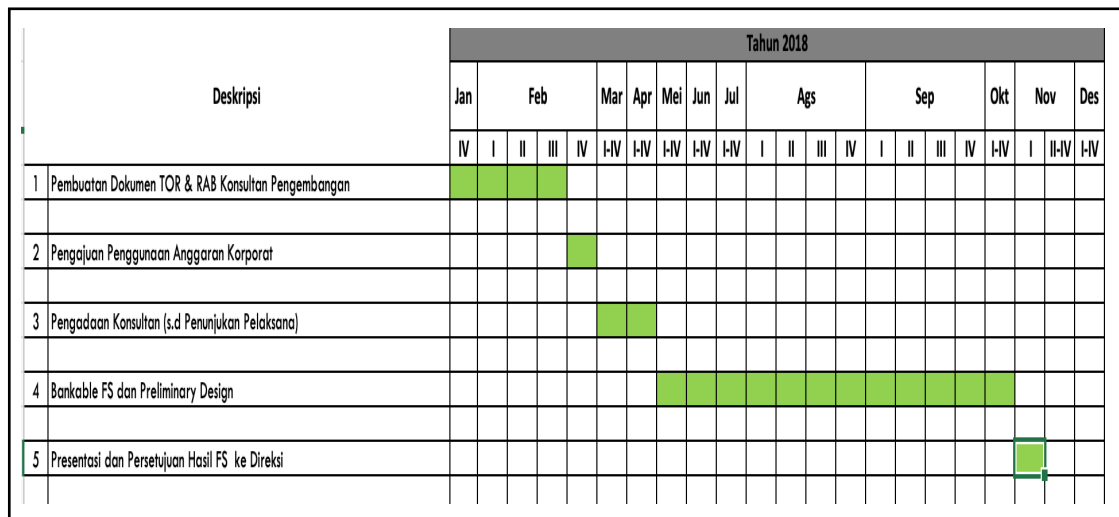


Figure 1.8 Project Schedule
(Source: Project Schedule Document)

The project stage of this Prajin Project is in line with the Project Life Cycle concept that is incorporated in Project Management Body of Knowledge (PMBOK), including project concept determination, project planning, project implementation, and project testing and commissioning. Since the focus of this research is about the implementation of risk management plan in project, then the focal point only revolves around project planning phase, in which one of its important component is risk management plan and risk management plan implementation. Figure 1.6 below will show the typical sequences of phases in a project life cycle based on Project Management Body of Knowledge.

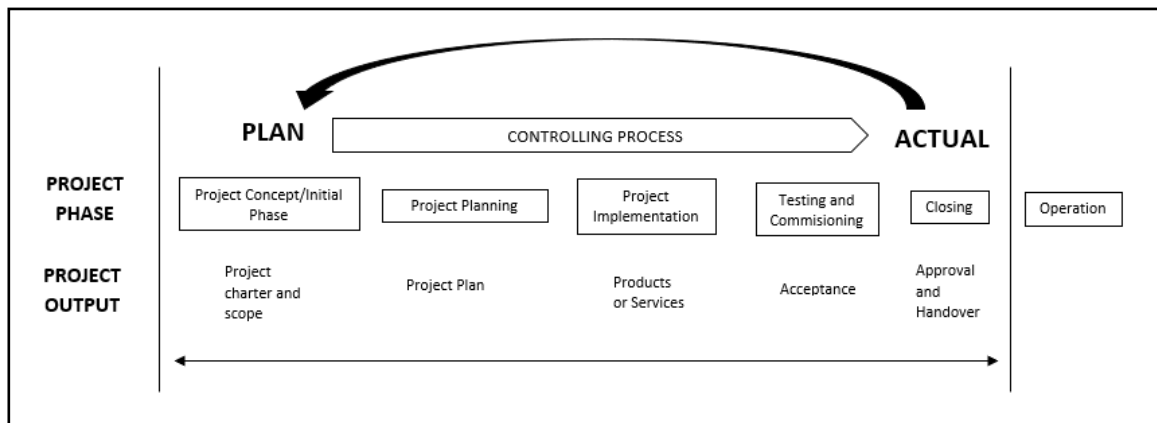


Figure 1.9 Typical Sequences of Phases in a Project Life Cycle
(Source: PMI, 2004:23)

1.3.2 Project Risk Management

In this project, the project risk management that will be used is derived from PMBOK framework, that provides integration between project management and risk management. PMBOK is used because it comprises all the step that is needed in risk management particularly in this project, such as risk management planning, risk identification, risk analysis, and risk response planning. The objective of project risk management are to decrease the probability/impact of negative risks, in order to optimize the chances of project success. In this thesis, the research will be focusing on risk management implementation in the planning phase of the project, which in this research will be focusing on preliminary design stage. Therefore, the relationship between project management plan and risk management plan need to be recognized well.

To find out the relationship between project management planning and risk management planning, flow charts are used in Figure 1.7 below.

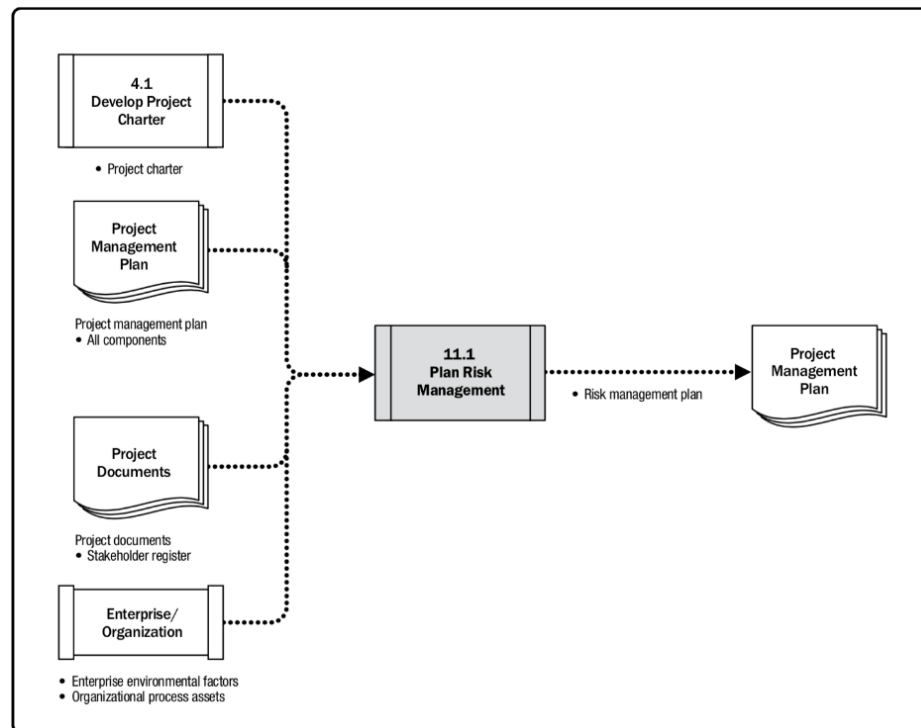


Figure 1.10 Plan Risk Management Data Flow Diagram
(Source: PMI, 2018:402)

Based on the condition of the project, in this study, a risk management plan will be prepared, in accordance with the risk management framework that will be explained in the next chapter. Risk management planning is the output part of project management plan, therefore risk management plan will describe in detail the steps that must be carried out in the implementation of risk management.

1.4 Research Objectives

The objectives of this research is to develop risk management plan that contains several steps that must be followed by project owner in order to prevent and mitigate the risks.

In achieving the objectives of this research, it is expected that the related company and stakeholders could identify risks that might occur in the railway infrastructure development project that can be used as a basis to develop risk response management in another projects.

1.5 Research Benefit

This research contains several benefits such as:

- To inform about risk identification and assessment toward various risk type that might happen regarding the railway infrastructure development project in Prajin Area, South Sumatera
- To provide information about major risk that is related with the railway infrastructure development project
- To provide information toward project owner about the steps that they must conduct, which is stated in risk management plan in order to response to the risks in a more systematic way.

This research is expected to deliver some benefits toward related stakeholders that is working on developing the railway infrastructure development project, including current investor, potential investor, company executive, project managers, project engineers, government, contract, consultant, researcher, and other partners. This research will contribute by the means of risk management knowledge in mining industry that is fit to be implemented in the railway infrastructure development project. This research is expected as a bridge to another research on risk management in mining industry, particularly in Indonesia.

1.6 Research Question

In this particular research, the research question that need to be answered is:

- How could risk management plan in the project be established in a more effective and comprehensive way?

- How could risk management plan help preliminary design stage completion in a better way?

1.7 Research Limitation

This research is limited only on the qualitative research, as mentioned below:

- The research is conducted only related with the preliminary design of railway track infrastructure development project in Prajin Area, South Sumatra, that comprise also the office building, toll road, and the terminal.
- The analysis that is carried out in this study only revolves around the preparation of the risk management plan and its implementation as a reference for the company in implementing risk management in subsequent project