

**BUSINESS FEASIBILITY ANALYSIS
OF SPECIAL ECONOMIC ZONE IN MOROWALI**

UNDERGRADUATE THESIS

Submitted to the International Undergraduate Program
Department of Industrial Engineering in Partial Fulfillment of
The Requirements for the Degree of
Sarjana Teknik Industri
at
Universitas Islam Indonesia



By

Fathiya Mujahidina Siregar (18522314)

INTERNATIONAL UNDERGRADUATE PROGRAM
DEPARTMENT OF INDUSTRIAL ENGINEERING
UNIVERSITAS ISLAM INDONESIA
YOGYAKARTA

2025

AUTHENTICITY STATEMENT

For the sake of Allah SWT, I admit this work is the result of my own work, except for the excerpts and summaries from which I have explained the source. If in the future, it turns out that my confession is proven to be untrue and violates the legal regulations in the paper and intellectual property rights. In that case, I am willing to have the diploma that I have received to be withdrawn by Universitas Islam Indonesia.

Yogyakarta, July 12th, 2025

A handwritten signature in black ink, appearing to read 'fathiyah' with a stylized flourish at the end.

Fathiya Mujahidina Siregar

18522314

SUPERVISOR APPROVAL SHEET

BUSINESS FEASIBILITY ANALYSIS

OF SPECIAL ECONOMIC ZONE IN MOROWALI

UNDERGRADUATE THESIS

Written by:

Name : Fathiya Mujahidina Siregar

Student Number : 18522314

Yogyakarta, July 12th, 2025

Supervisor,



(Dr. Ir. Dwi Handayani, S.T., M.Sc., IPU., ASEAN.Eng.)

EXAMINERS APPROVAL PAGE

BUSINESS FEASIBILITY ANALYSIS OF SPECIAL ECONOMIC ZONE IN MOROWALI

Written by:

Name : Fathiya Mujahidina Siregar

Student Number : 18522314

Has been defended before the board of examiners in partial fulfillment of the requirement for Bachelor Degree in Teknik Industri at the Faculty of Industrial Technology Universitas Islam Indonesia

Yogyakarta, July 12th 2025

Board of Examiners

Dr. Ir. Dwi Handayani, S.T., M.Sc., IPU., ASEAN.Eng.
Chairman

Dr. Harwati, S.T., M.T.
Member I

Dr. Agus Mansur, S.T., M.Eng.Sc.
Member II

[Signature]

[Signature]

[Signature]

الجامعة الإسلامية
الاستاذ المساعد الدكتور

Acknowledge by,

Head of Undergraduate Program in Industrial Engineering

Faculty of Industrial Technology

Universitas Islam Indonesia



(Ir. Muhammad Ridwan Andi Purnomo, S.T., M.Sc., Ph.d., IPM)

DEDICATION PAGE

This undergraduate thesis, which has required considerable time, effort, and resources, is respectfully dedicated to my beloved family—particularly Papa, Mama, Kak Laras, and Kak Wisha—whose unwavering support, encouragement, and presence have been a constant source of strength throughout this academic journey.

I also wish to convey my sincere appreciation to my dearest friends, who have stood by my side through both joyful and challenging moments, offering companionship and motivation when it was needed most.

*Furthermore, I would like to express my deepest gratitude to my thesis supervisor,
Ibu Dr. Ir. Dwi Handayani, S.T., M.Sc., IPU., ASEAN.Eng.
for her invaluable guidance, insightful advice, and continuous support, which have played a crucial role in the completion of this thesis.*

MOTTO

"Fighting has been made obligatory upon you, though you dislike it. Perhaps you dislike something, which is good for you, and like something, which is bad for you. Allah knows and you do not know."

(Qs. Al-Baqarah : 216)

PREFACE

Assalamu 'alaikum Warahmatullahi Wabarakatuh.

All praise and gratitude be to Allah SWT, the Most Gracious and the Most Merciful, whose endless blessings and guidance have enabled the author to complete this undergraduate thesis. It is only by His will and permission that every step of this academic journey was made possible.

Peace and blessings be upon the Prophet Muhammad SAW, the final messenger, who led mankind from the darkness of ignorance into the light of Islam. May his noble example continue to inspire, and may we all receive his intercession on the Day of Judgment.

This report is prepared as a requirement for obtaining a Bachelor's degree in Industrial Engineering at Universitas Islam Indonesia. The author acknowledges that the completion of this undergraduate thesis would not have been possible without the unwavering support, prayers, and encouragement from many individuals. Therefore, the author would like to express her sincere gratitude to :

1. Mr. Prof. Dr. Ir. Hari Purnomo, M.T., IPU, ASEAN.Eng. as Dean of Industrial Technology Faculty, Universitas Islam Indonesia.
2. Mr. Ir. Muhammad Ridwan Andi Purnomo, S.T., M.Sc., Ph.D., IPM. as the Head of Undergraduate Program in Industrial Engineering, Universitas Islam Indonesia.
3. Mr. Danang Setiawan, S.T., M.T. as the Secretary of International Undergraduate Program Industrial Engineering, Universitas Islam Indonesia.
4. Mrs. Dr. Ir. Dwi Handayani, S.T., M.Sc., IPM as the supervisor whose kindness, patience, and unwavering support have accompanied the author since the very beginning of this journey. The author is truly grateful for every lesson, encouragement, and time shared throughout the completion of this thesis.
5. Mrs. Devy Nurrahmah, S.Kom. as the staff of the International Undergraduate Program in Industrial Engineering, Universitas Islam Indonesia who has consistently assisted the author with administrative matters throughout the completion of this undergraduate thesis.
6. The author's beloved parents, Papa Zulian Hasian Siregar and Mama Endang Srigati. The one who understands the author in ways no one else ever could. Their constant support and belief in the author's potential have served as a driving force during the most challenging times. This thesis stands as a reflection of their sacrifices and encouragement, and is respectfully dedicated to them with deepest gratitude.
7. The author's beloved siblings, Kak Laras and Kak Wisha, who have always been present during times of need. Offering a listening ear, thoughtful advice, and quiet wisdom that continues to inspire. Through their words, actions, and unwavering presence, they have taught the author lessons far beyond what can be measured. The author remains sincerely grateful for their constant companionship and support throughout this journey.
8. A treasured friend of the author, Alya Aqilah Madhani, who has been a constant companion through all circumstances. This friend, with unwavering determination and hard work, has been a true source of inspiration. The writer deeply admires her

relentless spirit and perseverance, which has greatly motivated and encouraged her throughout this journey.

9. The author's friends, who have always been there in moments of exhaustion and mental fog, whose presence brings warmth, laughter, and the perfect excuse to pause for a good meal or a comforting drink.

The author is fully aware that this undergraduate thesis is not without its shortcomings. Therefore, constructive criticism and suggestions from readers are highly appreciated for the purpose of improvement. It is the author's sincere hope that this report may contribute positively and provide valuable insights for all relevant parties.

Wassalamu'alaikum Warahmatullahi Wabarakatuh.

Yogyakarta, July 12th, 2025

A handwritten signature in black ink, appearing to read 'fathiya' with a stylized flourish at the end.

Fathiya Mujahidina Siregar

ABSTRACT

This study investigates the business feasibility of developing a Special Economic Zone (SEZ) in Morowali Regency, Central Sulawesi, Indonesia. Initiated by PT. XYZ, the project aligns with the Indonesian government's policy to accelerate regional development, enhance industrialization, and promote downstream processing of mineral resources, particularly nickel. The proposed SEZ is designed to become an integrated industrial hub for nickel smelting, stainless steel manufacturing, and lithium battery raw material production. The feasibility analysis focuses on financial evaluation. Financial feasibility is assessed using investment appraisal techniques such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). The findings indicate an NPV of Rp 236.810.093.836, an IRR of 12.61%—surpassing the company's Weighted Average Cost of Capital (10.26%)—and a payback period of 11.61 years, establishing the project's financial viability. The revenue model comprises land sales and leases as well as recurring income from utility services, including electricity, water, wastewater management, and port logistics. This diversification ensures long-term sustainability and resilience against market fluctuations. Operating and production costs were projected conservatively, accounting for fixed and variable components, inflation, and regional benchmarks. The project is expected to stimulate local employment, infrastructure development, and foreign investment, contributing positively to national economic growth. This study concludes that the proposed SEZ development in Morowali is financially viable. Strategic recommendations include phased infrastructure implementation, robust risk management frameworks, enhancement of utility services, and partnership development with stakeholders. These measures are expected to ensure the project's long-term success and its role as a key contributor to Indonesia's industrial and economic advancement.

Keywords: Special Economic Zone (SEZ), Feasibility Analysis, Nickel Downstream Industry

TABLE OF CONTENTS

TITLE PAGE	i
AUTHENTICITY STATEMENT	ii
SUPERVISOR APPROVAL SHEET	iii
EXAMINERS APPROVAL PAGE.....	Error! Bookmark not defined.
DEDICATION PAGE	v
MOTTO	vi
PREFACE	vii
ABSTRACT.....	ix
TABLE OF CONTENTS.....	x
LIST OF TABLES	xii
LIST OF FORMULAS	xiii
LIST OF FIGURES	xiv
CHAPTER I INTRODUCTION	1
1.1. Background	1
1.2. Problem Formulation	4
1.3. Research Objective	4
1.4. Scope of Research.....	4
1.5. Benefit of Research.....	5
1.6. Systematic of Research	5
CHAPTER II LITERATURE REVIEW	8
2.1. Deductive Study.....	8
2.1.1. Feasibility Business Analysis.	8
2.1.1.1. Market and Marketing Aspect.	9
2.1.1.2. Technical and Technological Aspect.	9
2.1.1.3. Management Aspect.	10
2.1.1.4. Financial Aspect.	11
2.1.1.4.1. Net Present Value (NPV).	11
2.1.1.4.2. Internal Rate of Return (IRR).....	12
2.1.1.4.3. Payback Period (PP).....	13
2.1.1.5. Economic Aspect.	14
2.1.2. Special Economic Zone.	14
2.1.3. Nickel Smelter.....	15
2.2. Inductive Study	16
CHAPTER III RESEARCH AND METHODOLOGY	20
3.1. Research Object	20
3.2. Research Instrument	20
3.3. Data Collection Method.....	21
3.4. Data Processing Method	24
3.4.1. Investment Feasibility Analysis	24
3.4.2. Sensitivity Analysis	24
3.4.3. Risk Analysis through Scenario Approach	25
3.5. Data Analysis Method	26
3.6. Research Flowchart.....	28
CHAPTER IV DATA COLLECTING AND PROCESSING	31
4.1. Data Collecting	31

4.1.1. Business Model.....	31
4.1.2. Required Initial Investment.....	32
4.1.3. Revenue Data.....	33
4.1.4. Cost Data.....	38
4.1.4.1. Production Cost.....	38
4.1.4.2. Operational Cost.....	41
4.1.5. Profit and Loss Data.....	47
4.1.6. Cashflow Data.....	50
4.2. Data Processing.....	51
4.2.1. Financial Feasibility Analysis.....	51
4.2.2. Sensitivity Analysis.....	54
4.2.3. Risk Analysis through Scenario Approach.....	57
CHAPTER V DISCUSSION.....	62
5.1. Overview of Financial Performance.....	62
5.2. Revenue Structure Analysis.....	62
5.2.1. Land Sales and Leases.....	62
5.2.2. Service Charges.....	63
5.3. Cost and Operational Expenditure Analysis.....	63
5.4. Capital Expenditure and Investment Evaluation.....	63
5.5. Sensitivity Analysis Discussion.....	64
5.6. Risk Analysis through Scenario Approach Discussion.....	65
CHAPTER VI CONCLUSION AND RECOMMENDATION.....	68
6.1. Conclusion.....	68
6.2. Recommendation.....	69
6.2.1. Enhance Service Quality and Utility Integration.....	69
6.2.2. Establish a Robust Risk Management Framework.....	69
6.2.3. Develop a Phased Development Strategy.....	69
6.2.4. Leverage Government and Strategic Partnership.....	70
6.2.5. Establish Performance Monitoring and Adaptive Planning.....	70
REFERENCES.....	71

LIST OF TABLES

Table 2. 1 Inductive Study	16
Table 4. 1 Initial Investment	32
Table 4. 2 Revenue Analysis	37
Table 4. 3 Cost of Goods	41
Table 4. 4 Salary of Management Employee	43
Table 4. 5 Operational Cost	47
Table 4. 6 Profit and Loss	48
Table 4. 7 Cashflow Data.....	50
Table 4. 8 NPV, IRR, and PP Calculation	51
Table 4. 9 Financial Feasibility Analysis.....	53
Table 4. 10 Pessimist Case on Sensitivity Analysis	55
Table 4. 11 Financial Feasibility Result of Pessimist Sensitivity Analysis	55
Table 4. 12 Optimist Case on Sensitivity Analysis.....	56
Table 4. 13 Financial Feasibility Result of Optimist Sensitivity Analysis	57
Table 4. 14 Worst Scenario on Risk Analysis	58
Table 4. 15 Financial Feasibility Result of Worst Scenario Risk Analysis	59
Table 4. 16 Best Scenario of Risk Analysis.....	60
Table 4. 17 Financial Feasibility Result of Best Scenario Risk Analysis.....	61

LIST OF FORMULAS

Formula (1)	12
Formula (2)	12
Formula (3)	13

LIST OF FIGURES

Figure 3. 1 Research Flowchart 28

Figure 4. 1 Organization Structure..... 42

CHAPTER I

INTRODUCTION

1.1. Background

Economic growth and regional development are among the key priorities for many developing countries, including Indonesia. To stimulate investment, increase exports, and generate employment opportunities, the Indonesian government has implemented several strategic initiatives, one of which is the establishment of Special Economic Zones (SEZs). Indonesia has implemented regulations regarding Special Economic Zones 12 years ago in Law Number 39 of 2009. These zones offer both fiscal and non-fiscal incentives aimed at attracting domestic and foreign investors, facilitating industrial clustering, and improving national competitiveness.

Among the various SEZs being developed, the Special Economic Zone in Morowali holds significant potential. Located on the coast, Morowali has a strategic logistical advantage for both import and export activities. More importantly, the region is well-known for its abundant nickel reserves, making it an ideal location for industrial processing and smelting operations. By developing downstream industries within the SEZ, the government aims to boost the added value of natural resources and support sustainable industrialization.

Based on Government Regulation Number 40 of 2021, SEZ can be proposed by Business Entities and Regional Governments. In connection with these regulations, PT. XYZ will propose the formation of the Morowali SEZ, with the hope that it will have a significant impact on the surrounding community and the public at large. In its management, PT. XYZ

will collaborate with local governments and Indonesian Chamber of Commerce and Industry (KADIN) in providing goods and services, providing training based on jobs needed in the area, as well as collaborating with the Regency Government in the context of development of Job Training Center (BLK) to improve the skills of prospective workers.

PT. XYZ will serve as the Developer and Operator Enterprise (Badan Usaha Pembangun dan Pengelola, or BUPP) for the Morowali SEZ. As BUPP, PT. XYZ is responsible for overseeing the planning, construction, and overall management of the SEZ infrastructure and operations. The success of this role is crucial in ensuring that the zone is not only physically developed but also effectively attracts and retains investors through efficient service delivery and long-term strategic vision.

As BUPP, PT. XYZ is responsible for overseeing the planning, construction, and overall management of the SEZ infrastructure and operations. PT. XYZ will collaborate with an international mineral processing firm and will also bring in several other investors who work in the field of processing and refining nickel ore, a stainless-steel smelting factory and a factory for making basic raw materials for electric vehicle batteries with a capacity of 608.000 tons of Ferronickel. The success of this role is crucial in ensuring that the zone is not only physically developed but also effectively attracts and retains investors through efficient service delivery and long-term strategic vision. If the ferronickel smelter, stainless steel and battery precursors are in one place, the downstream process and value chain process will be more efficient and possibly reduce logistics costs. This stainless-steel smelter uses desilication furnace and AOD technology, which this technology adopts an evaporation process to recycle the heat used to drive the steel fan and dust directly with steam. This technology will reduce secondary energy conversion and production costs.

It is hoped that the wealth of natural resources, especially nickel minerals, in Central Sulawesi Province, especially Morowali Regency, can encourage economic growth. With rapid global economic growth, such as free markets, and social, political, and cultural transformation,

the need for various commodities, including nickel minerals, can lead to increased exports in countries that have mineral resources, in this case, Indonesia.

Mining can indeed have significant impacts on an economy on the positive side by increasing the absorption of workers in the surrounding area from engineers and geologists to equipment operators and laborers. This can create employment opportunities, particularly in regions where there may be limited job prospects. Mining projects often require significant infrastructure development, such as roads, railways, ports, and power facilities. The construction and maintenance of these infrastructures can create additional employment opportunities and stimulate economic activity. Besides that, mining projects often attract foreign investment, which can bring in capital, technology, and expertise. This influx of foreign capital can stimulate economic development and contribute to the growth of related industries and sectors.

Despite the strategic importance of SEZs, the topic remains underexplored in academic research, especially among university students. Many studies focus on broader economic development, but few delve into the actual financial feasibility of these government-led initiatives. With SEZs being a relatively recent policy program in Indonesia, analyzing their viability is essential to ensure effective planning and implementation.

This research narrows its focus to the financial feasibility of developing the Morowali SEZ. By calculating key financial indicators, Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP), this study aims to determine whether the investment is financially viable. The analysis is based on secondary data provided by a company, which is further processed and interpreted by the researcher.

The findings of this study are expected to contribute both theoretically and practically. For the government, they offer a reference point for evaluating future SEZ investments. For investors, the results can support decision-making related to capital deployment. Lastly, the

public may benefit indirectly through economic growth, infrastructure improvement, and job creation if the SEZ proves feasible and is successfully developed.

1.2. Problem Formulation

Based on the background, the problem formulation that can be made, as follows:

1. What is the Net Present Value (NPV) of the Morowali Special Economic Zone?
2. What is the Internal Rate of Return (IRR) of the Morowali Special Economic Zone?
3. What is the Payback Period (PP) of the Morowali Special Economic Zone?
4. Is the Morowali Special Economic Zone considered financially feasible based on the results of financial analysis?

1.3. Research Objective

Based on the problem formulation, the objectives to be achieved through this research:

1. To identify the Net Present Value (NPV) of Morowali Special Economic Zone.
2. To identify the Internal Rate of Return (IRR) of Morowali Special Economic Zone.
3. To identify the Payback Period (PP) of Morowali Special Economic Zone.
4. To determine whether the Morowali Special Economic Zone is financially feasible based on the results of financial analysis.

1.4. Scope of Research

There are several limitations in conducting this research. The existing limitations are as follows:

1. This research is only conducted within the limited geographical area of Morowali, Central Sulawesi. It does not cover other Special Economic Zones or regions outside this area.

2. The data used in this study were obtained from the financial and operational data provided by PT. XYZ, and are based on the company's internal projections and assumptions.
3. The analysis and results are provided primarily as a recommendation for the government regarding the financial feasibility of the establishment of Special Economic Zone in Morowali, and do not serve as an official investment decision-making tool.
4. The financial analysis in this research focuses only on three investment criteria: Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). Other potential factors such as social, environmental, and political aspects are beyond the scope of the study.

1.5. Benefit of Research

This research provides several benefits, including:

1. For the government
As a basis for strategic decision making related to the development of the SEZ in Morowali.
2. For investors
As a reference to assess the financial feasibility, risks, and potential returns of investing in the SEZ.
3. For the local community
To understand potential economic impacts such as job opportunities and regional development.
4. For the academic community
To enrich the literature on financial feasibility analysis of SEZs and serve as a reference for future research.

1.6. Systematic of Research

The chapters which collectively make out this undergraduate research will be detailed below:

CHAPTER I INTRODUCTION

This chapter contains background and problem formulation. Together with it, the introduction also includes the objective of the research, the scope of the research, and the benefits of the research.

CHAPTER II LITERATURE REVIEW

Chapter 2 will provide an overview of the findings from earlier studies and research that are in accordance with this research. After carefully examining earlier studies and research, it will serve as a guide for this undergraduate thesis to address the current issues.

CHAPTER III METHODOLOGY

This section outlines the undergraduate research's framework, flow chart, and data gathering strategy. This will facilitate the organization and structure of the research. To help the readers grasp the research technique, the flow of the study will be thoroughly detailed below.

CHAPTER IV DATA COLLECTION AND PROCESSING

This chapter outlines the data collecting method in the form of an overview of the problem issues and data that was afterward processed to create a Special Economic Zone proposal based on a financial feasibility analysis.

CHAPTER V RESULT AND DISCUSSION

In chapter 5, the research findings will be covered. The research outcome will be examined financially, based on the studies and research findings as well as theoretical justifications. The conclusions required to meet the goals of the study. There will be calculations and recommendations for the development of a Special Economic Zone based on the analysis in this chapter.

CHAPTER VI CONCLUSION AND SUGGESTION

In chapter 6, the undergraduate thesis is concluded, and recommendations are made. The discussion and results form the basis of the conclusion, which also has to address the research's goal.

CHAPTER II

LITERATURE REVIEW

In this chapter, there are two types of literature review will be outlined in this chapter. Deductive study is one that explains a fundamental principle in relation to research that will be done using a textbook. Additionally, an inductive study is one that is based on reliable prior research. To identify the difference between the previous study and the proposed research and to prevent plagiarism, deductive and inductive studies must be conducted. There will be various subchapters in this literature review.

2.1. Deductive Study

2.1.1. Feasibility Business Analysis.

Business feasibility analysis is a process carried out to evaluate whether a business has the potential to be successful and profitable. This is an important step in planning and starting a new business or expanding an existing business. Business feasibility is considered practical if it can provide more benefits for everyone than negative impacts (Rofa, 2021). Identifying problems, opportunities, defining goals, describing the state of the business, and assessing the various benefits generated are part of this job. Business viability requirements must be satisfied by a concept before it can be put on the market. This is an overview of the research and development procedure needed prior to the execution of the business plan (Wibowo, 2022). Businesses can use this study to help them make good decisions. This study is very important because it can prevent business people from experiencing losses. The following are several aspects of conducting a business feasibility analysis:

1. Market and Marketing Aspect.

When we want to build a business, determining the target market is the most important thing to do. The marketing strategy we will use really depends on this target market. The most significant aspect of our industry study is our target market. We will determine the true identities of our clients in this manner. As a result, we must clearly identify and comprehend our target market (Wibowo, 2022). When starting a business, conducting market analysis is also important. The goal is to target the right market so that we do not lose a lot of money. Using market analysis is one approach to comprehend that our clients hold the key to our success when launching a business. It will be challenging for us to create items that genuinely satisfy our clients' demands if we do not have a thorough understanding of who they are. In the context of business feasibility analysis, market and marketing aspects are two key components that need to be evaluated.

Therefore, market analysis is needed to support business processes towards customers. First, we must describe the current state of our industry and our goals. Then, by looking at the number of customers and the desired needs, we must determine the target market for the products we have. On the other hand, we must also consider the current competition, looking at the strengths and weaknesses of our competitors. Most importantly, we also have to determine the selling price of the product. This will help us determine our company's position in the market and estimate our expected market share.

2. Technical and Technological Aspect.

Technology and engineering are crucial to the company investigation procedure. Technical and technological factors are connected to operational management because it is focused on production process (Irsan, 2021). During this process, methods and innovations can be used to make better decisions, analyze information, and collect data. This examination is done to make

sure that the goods or services being supplied are of high quality and that the business operations and production process can run smoothly.

Analysis of goods or services to be sold as well as production processes and business operations are examples of technical aspects that help in determining and managing risks associated with business projects. An intelligent feasibility analysis system, consisting of a user interface, inference engine, rule-base, database, and database management, is designed to perform technical feasibility analysis. This computer-based system combines data from many sources, gives intelligent access to knowledge and information, and helps decision-makers conduct feasibility analyses in situations that would otherwise be complicated, time-consuming, and large-scale. It also offers a competitive advantage over rivals, shortens the analysis time, and enhances the decision-process's outcome's reliability (Vafadar, 2016). The purpose of this technical component is to determine production costs, production schedules, and the availability of raw materials and equipment needed for the production process and business operations, as well as ensuring that the products or services sold are of good quality and in accordance with market needs.

3. Management Aspect.

The management aspect includes organizing the business planning process so that it is successful. In business feasibility studies, resource management is a management component. According to Sari (2023), the form and objectives of the business must be in accordance with the chosen organizational structure as well, and business products will only be successful if they are managed by skilled people, starting with planning, implementation, and control if deviations occur. Without project management, it will be difficult for construction to achieve its goals in terms of cost, time, and quality. Scope Management and Scheduling Management are two project management components of a business feasibility study.

In addition to project management, there is also operational management, which deals with how a business is organized. Thus, power requirements are also considered in this matter. According to Yasmiana (2021), the management part serves planning purposes, specifically determining the course of action and the tasks required to meet predetermined objectives. Organizing, or dividing up labor or activities into units, is the second role. The goal is to as precisely as possible define roles, responsibilities, and authority as well as work relationships within their respective domains. Actuating, or carrying out tasks or activities inside the organization, is the third function. The final one, controlling, looks to see if tasks are being carried out in line with the plan.

4. Financial Aspect.

The purpose of evaluating financial aspects for business feasibility analysis is to determine the amount of financing funds needed for the project, which consists of fixed capital funds, which are the funds needed to build the project, and working capital funds, which are the funds needed to turn around the project. Apart from that, in this aspect, the project capital structure is prepared, which discusses the sources of funds used to run the project. This aspect also includes calculating debt and interest payments, purchasing raw materials and supporting materials, and paying employee salaries. This part describes the need for funds and where it comes from, the expenses of investments, depreciation, forecasts of profit and loss, cash flow, the computation of cost of goods sold, and investment criteria (Puspita, 2022). Profit calculations are also carried out to produce adequate social and economic benefits.

1) Net Present Value (NPV).

NPV is an indicator of the value of an investment. In more detail, NPV is the difference between the present value of cash inflows and cash outflows in a certain period of time (Singh, 2022). NPV analysis is a useful tool for estimating the value of a project, investment, or sequence of cash flows. In calculating the time value of money, Net Present Value analysis is very useful. We can also use it to compare the rate of return of various assets and to calculate

the profitability of an investment. When we calculate the NPV before making an investment, we expect that the NPV will have a positive impact on the company's financial performance.

$$\text{Net Present Value (NPV)} = \text{total PV of net cash flow} - \text{total PV of investment} \quad (1)$$

If the NPV is positive, it indicates that the project is expected to generate more cash than it costs, thus adding value. If the NPV is negative, the project is likely to result in a loss. A zero NPV suggests that the project would neither gain nor lose value, but it may still be worth considering depending on other factors such as strategic importance or intangible benefits.

2) *Internal Rate of Return (IRR).*

The technique used to determine the interest rate on an investment is called internal rate of return. When performing financial research to determine the profitability of an investment, someone can utilize the internal rate of return (IRR) as an indicator of the investment's level of efficiency. The discount rate used to calculate an investment opportunity's net present value is called the internal rate of return, or IRR based on Ulfa (2020). There is no requirement to wait to invest because the IRR calculation will return a percentage figure that is far more than the cash used. This indicates that the investment falls into the practical group. However, the investment ought to be avoided if the computation's outcomes come out lower than the cost of capital.

$$\text{IRR} = i_1 + \frac{NPV_1}{NPV_1 - NPV_2} (i_2 - i_1) \quad (2)$$

Where :

NPV_1 = Value at the lowest interest rate with a positive NPV.

NPV_2 = Value at the lowest interest rate with negative NPV.

i_1 = The lowest interest rate that provides a positive NPV value.

i_2 = The lowest interest rate that gives a negative NPV value.

3) Payback Period (PP).

The payback period is the time required to recover investment costs. In short, the payback period is the time required for investment funds to enter and be returned in full. The period of time needed to recover the initial investment was called the payback period (PP) and it was predetermined by the decision-maker and reported in years (Singh, 2022). Companies invest money to be repaid, that is why calculating payback period is very important. The shorter the investment period, the more attractive the investment itself. Initial investment divided by average cash flow is a way to calculate payback time.

$$\text{Payback Period} = \frac{\text{Cost of Investment}}{\text{Average Annual Cash Flow}} (12 \text{ month}) \quad (3)$$

With the selection criteria, if the payback period calculation result is smaller than the investment return target, then the investment project is declared feasible, whereas if the payback period calculation result is greater than the investment return target, then the project is declared unfeasible.

5. *Economic Aspect.*

The economic aspect focuses more on the influence of external conditions and the economic environment on the business, in contrast to the financial aspect, which focuses more on the internal financial health of the business. While both are interrelated and important to consider simultaneously, understanding the differences between the two helps in crafting the right strategy for the business under analysis. The purpose of economic analysis is to determine whether the implementation of a project is feasible on the basis of the existence or absence of the project, which determines the economic benefits that will be obtained by implementing the project.

The analytical tool that is often used to carry out economic feasibility analysis is cost-benefit analysis. This analytical tool aims to measure how much economic benefit is generated compared to the economic costs incurred, after adjusting for externalities, market inefficiencies, and distortions. The result of Cost Benefit Analysis is in the form of Economic Net Present Value (ENPV) and Economic Internal Rate of Return (EIRR). A thorough and comprehensive benefit and cost analysis of the national and social economy must be carried out as part of the preparation of a company feasibility analysis, based on the criteria for assessing the project that have been established (Adnyana, 2020). An economic feasibility analysis concentrates on how a project will sbenefit society at large by taking into account the economic net present value and also the economic internal rate of return (Dhaniswara, 2023).

2.1.2. *Special Economic Zone.*

Special Economic Zones (SEZs) are Indonesian districts or areas designated by the government to promote investment, economic growth, and the development of specific sectors. Based on Indonesia Investment Guidebook, a Special Economic Zone is a defined territory under the Republic of Indonesia's sovereignty that has been allocated specific borders for the purpose of conducting economic activities and obtaining specific facilities. SEZ offers a range of facilities and incentives, including tax breaks, easier access to customs and more flexible rules, with the

goal of luring investors and promoting economic activity in the area. The administration wants to see a rise in investor interest in SEZ investment. As a result, the activities permitted in the SEZ stated in Indonesia Investment Guidebook include production and manufacturing, logistics and distribution, technology development, tourism, education, health, energy, and additional financial objectives determined by the National Economic Council. SEZ contributes to faster economic expansion. SEZs are predicted to promote regional and national economic growth, create new jobs, and boost production in certain industries through sustainable investment. The main aim of SEZ is to increase the competitiveness of the Indonesian economy, create jobs, and diversify economic sectors.

The purpose of Special Economic Zone is to stimulate economic expansion. They improve economic growth through generating new business opportunities, attracting foreign and domestic investment, and raising exports and production. More human resources are required as large-scale industrial locations develop. Due to the numerous job opportunities this has created, the area has benefited.

Certain economic sectors, including tourism, manufacturing, agroindustry, or energy, are frequently the focus of SEZ. This supports attempts to diversify the country's economy and lessen its reliance on a single industry.

2.1.3. Nickel Smelter.

From Sabang to Merauke, all minerals in Indonesia are found. Not personal gain, but rather the greater wealth and wellbeing of all Indonesians, is the goal of managing the country's mineral resources. Unfortunately, these plentiful natural resources cannot yet be fully utilized. Even now, some mined resources are shipped overseas without first undergoing processing (Damayanti, 2014). Mineral resources abound in Indonesia, particularly minerals containing nickel. But up until now, the majority of mineral exports have taken the form of raw commodities with poor market value. In order for the selling price of nickel to increase, it is

necessary to hold a nickel smelter. Based on Damayanti (2014), smelters are facilities for processing mining products that are used to add metals like tin, nickel, copper, gold, and silver to products until the necessary amount is present. A nickel smelter is a facility where nickel ore is processed to extract and refine nickel metal. The process involves several steps, including mining, crushing, and concentrating the ore, followed by smelting and refining.

The process of purifying mineral materials involves either extracting undesirable chemicals or combining minerals with other materials to create products that are more valuable or pure. In order to create good quality mineral products or high-quality metals, this procedure is typically used on mineral ores or raw minerals.

2.2. Inductive Study

The earlier research that correlates with this current study about the financial feasibility of Special Economic Zone in Morowali regency is included in the inductive review.

Table 2. 1 Inductive Study

No	Author	Title	Research Method	Result
1	Mochamad Chaerul and Revrian Fajhri	Valuation of Nickel Smelter Processing with Cost Benefit Analysis Approach	Cost Benefit Analysis	The result of the environmental economic valuation of the smelter impact area are worth IDR Rp 690,981,051,000.00 which the external benefit component used to calculate the benefit cost ratio. Thus, with a

No	Author	Title	Research Method	Result
				benefit cost ratio of 1.07 and total benefit value of IDR 1,040,441,890,003.89, respectively we may conclude that the company's nickel smelter offers advantages and merits further investigation.
2	Berglind Hoskuldsdottir	Feasibility Analysis of Implementing Real-time Elemental Analysis in Aluminum Smelter Potroom	Financial assessment using Net Present Value (NPV), Internal Rate of Return (IRR), and Modified Internal Rate of Return (MIRR).	The financial model's findings suggest that the investment would be beneficial for ISAL (Rio Tinto Iceland's potroom). The NPV, IRR, and MIRR calculation produced positive result. Furthermore, the payback period considered short, estimated to be around 1 year. Based on the assumptions made, the profitability simulation indicates that there is no danger that the project will not be profitable, with an average of 871

No	Author	Title	Research Method	Result
				KUSD for NPV at the end of year 11.
3	Rosalendro Eddy Nugoroho and Agung Jaka Raharja	Financial Analysis and Fast Tracking of Sponge Ferro Alloy Smelter Construction Project at PT Sebuk Iron Lateritic Ores in Sebuk Island, South Kalimantan	The following is several financial analysis that being used are Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period (PBP), Benefit Cost Ratio (BCR), and Break Even Point (BEP).	The outcomes demonstrated the project's financial viability with NPV of US\$ 86,209,478; IRR of 16.18%; PBP for 12.76 years; BCR of 1.0520; and BEP at US\$ 253.51/ton for the production of 1,617,000 DMT/year. Fast tracking allows projects to be completed in four months while still being financially feasible.
4	Ankit Kumar Singh, Boris Bravo-Ureta, and Xiusheng Yang	Financial Feasibility Study of GREENBOX Technology For Crop Production in an Urban Setting	Financial analysis using Net Present Value, Internal Rate of Return, Payback Period, and sensitivity analysis.	GREENBOX farming was shown to be a financially feasible venture by the base case scenario's financial analysis. Compared to the reference IRR of 8%, the IRR was 15% higher, at 23%. With a two-year payback period and a positive NPV of \$220,340, the investment was

No	Author	Title	Research Method	Result
				profitable for the investor.
5	Febrian Maramis and Ahmad Danu Prasetyo	Financial Feasibility Analysis of Borrow-to-Use Permit of Forest Area to Maximize Coal Reserve in PT. XYZ	The financial feasibility using capital budgeting method, sensitivity analysis, Monte Carlo.	The study's findings demonstrate that the project can be carried out financially with additional cashflow having a net present value of US\$ 76.764.736, which is larger than zero. The risk analysis also demonstrates that the project still satisfies the level of acceptability specified by PT. XYZ and has a 69.6% chance of adding value to the business.

CHAPTER III

RESEARCH AND METHODOLOGY

3.1. Research Object

The object of this study is the evaluation of the business feasibility of the Special Economic Zone (SEZ) in Morowali, with a focus on its financial aspects. The research aims to assess the potential benefits and viability of the SEZ by conducting a financial feasibility analysis using key indicators: Net Present Value (NPV), Payback Period (PP), and Internal Rate of Return (IRR). These indicators measure projected returns, investment recovery time, and overall project profitability.

The data used in this study are obtained from comprehensive financial and operational records provided by PT. XYZ, the company leading the SEZ development in Morowali. By analyzing these financial indicators, the study aims to determine whether the project is financially feasible and worth investing in. Ultimately, this research seeks to support stakeholders with a clear financial perspective to guide strategic decision-making regarding the future of the SEZ.

3.2. Research Instrument

The primary research instrument in this study is secondary data obtained from the company. These data consist of financial and operational records, which serve as the basis for conducting the financial analysis, including the calculation of NPV, IRR, and Payback Period.

3.3. Data Collection Method

The data used in this study are secondary data provided by PT. XYZ. Secondary data refer to information that has been previously collected and documented for purposes other than this specific research. In this study, the data obtained from the company include total investment, revenue, and cost figures, which serve as the foundation for the financial feasibility analysis.

In addition to company-provided data, supporting secondary sources such as government reports, academic journals, previous research, and relevant websites are also utilized to enrich the analysis related to the business feasibility of the Special Economic Zone (SEZ).

1. Business Model

The Morowali Industrial Special Economic Zone (SEZ) has a vision to become an integrated area for downstream nickel commodities. For this reason, the company, as the sponsor, will sell and lease land for the construction of a Nickel Smelter and processing needs for stainless steel and lithium. PT. XYZ has a business model that will be promoted. Based on market analysis, in 2021 the global stainless-steel market reached a volume of 49,493 KMT and PT.XYZ will project a CAGR of 2.8% starting from 2022 to 2027 with a market projection of 58,497.2 KMT in the 4th quarter of 2027. PT. XYZ has a business scheme with investor investment from a Chinese steel producer and a technology company, amounting to 51% and a global mining company with 49%. The production process will be facilitated by PT. XYZ and the technology partner, with nickel ore supply from the mining company, and then the product will be marketed.

2. Required Initial Investment

The required initial investment refers to the total capital needed at the beginning of the project to initiate operations within the Special Economic Zone (SEZ). This investment includes the cost of acquiring tangible fixed assets such as land, as well as construction and infrastructure development necessary to support business activities.

In this study, the data regarding required initial investment was obtained directly from the company and consists of detailed cost components such as land acquisition costs, construction costs, and other infrastructure-related expenditures. This data is essential as a foundation for conducting the financial feasibility analysis in the next stage, particularly in the calculation of Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP).

3. Revenue Data

Revenue refers to the total income generated from the sale of goods or services, after deducting any discounts, returns, and indirect taxes such as value-added tax and duties (Shubina, 2022). In this study, revenue data were obtained directly from the company and represent projected earnings from the core business activities planned within the Special Economic Zone (SEZ).

These data serve as one of the primary inputs for the financial feasibility analysis conducted in this research, particularly in the calculation of Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). The revenue projections include estimated income from land management and security service operations.

4. Cost Data

Cost data refers to the estimated expenses required to operate the business activities within the Special Economic Zone (SEZ). These costs include both fixed and variable components, such as operational expenses, employee salaries, maintenance, utility bills, administrative expenses, and other supporting costs.

The data were obtained directly from the company and are used as fundamental inputs in the financial feasibility analysis. These cost components play a crucial role in determining the profitability and financial viability of the project through tools such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP).

5. Profit and Loss Data

Profit and loss data present the financial performance of the project by comparing total revenues and total costs over a specific period. This data illustrates whether the business activities within the Special Economic Zone (SEZ) generate profit or incur losses (Putri, 2021).

The data were obtained from the company and include key components such as total revenue, operating costs, and net income. This information is essential in evaluating the financial feasibility of the project, as it provides insight into the project's ability to generate positive returns and sustain its operations over time.

6. Cashflow Data

Cashflow data represent the inflows and outflows of funds over a given period and are crucial in assessing the liquidity and financial sustainability of the project. This data shows how much cash is generated from operations and how it is used for investment and financing activities.

The cash flow statement shows if the business has produced enough money to cover expenses, replace assets, and distribute profits as announced (Hasibuan, 2023).

The data used in this study were obtained from the company in the form of projected cash inflows (such as revenues) and outflows (such as operating and investment expenses). These cashflow figures are essential for conducting financial feasibility calculations, including Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP), which rely on accurate cash projections to evaluate the project's profitability and financial viability.

3.4. Data Processing Method

3.4.1. Investment Feasibility Analysis

Investment feasibility analysis is an action taken to determine the prospects of an investment project in decision making. A suitable financial structure that strikes a balance between the finance structure's risks and rewards is determined, along with funding sources and costs, in the financial feasibility study. The project's cash inflows and outflows, together with each of its components, are also specified (Saleh, 2020). Investment feasibility analysis approach using Internal Rate of Return (IRR), Net Present Value (NPV), and Payback Period (PP).

3.4.2. Sensitivity Analysis

Sensitivity analysis is a technique used to determine how variations in key input variables affect the outcome of a financial feasibility analysis. This method helps to identify how sensitive the project's performance indicators, such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP), are to changes in critical assumptions.

In this study, sensitivity analysis is conducted by simulating two scenarios based on revenue fluctuations:

1. Pessimist : Revenue is assumed to decrease by 10% from the base case.
2. Optimist : Revenue is assumed to increase by 10% from the base case.

By analyzing these scenarios, the study aims to assess how resilient the project's financial feasibility is under different market conditions. This analysis assists decision-makers in understanding the impact of revenue uncertainty and highlights the importance of accurate forecasting and strategic planning.

3.4.3. Risk Analysis through Scenario Approach

Risk analysis through a scenario approach involves evaluating the potential outcomes of a project under various possible future conditions. This method provides a structured way to consider uncertainty by creating different scenarios, such as best-case, base-case, and worst-case situations.

The risk analysis in this study is conducted using a scenario approach to evaluate the financial feasibility of the Morowali SEZ project under different levels of uncertainty. This method involves creating alternative scenarios that reflect potential fluctuations in key variables such as revenue and cost. The objective is to assess how these uncertainties may impact the project's financial performance, particularly in terms of NPV, IRR, and Payback Period. Three main scenarios are developed:

1. Worst Scenario

Assumes revenue decreases by 20% and costs increase by 10%. This scenario represents a highly unfavorable condition and is used to examine the resilience of the project under financial stress.

2. Best Scenario

Assumes revenue increases by 20% and costs decrease by 10%. This scenario reflects optimistic conditions where the project performs better than expected.

Each scenario is analyzed using the same financial indicators to determine how sensitive the project's feasibility is to risk factors, and to support decision-making under uncertainty.

3.5. Data Analysis Method

The data analysis method in this research involves interpreting the processed financial data to assess the feasibility of the Morowali Special Economic Zone (SEZ) project. The financial metrics used in this analysis include Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). These metrics are calculated based on the data obtained from the company regarding initial investment requirements, projected revenues, operating costs, profit and loss, and cash flows.

The analysis is carried out in two main stages. Financial feasibility analysis evaluates the overall profitability and viability of the project under base-case assumptions. And further evaluation through sensitivity and risk analysis, which explores how changes in key variables, especially revenue, may influence the project's financial outcomes. Sensitivity analysis

includes scenarios where revenue is decreased by 10% (pessimist) and increased by 10% (optimist), while risk analysis uses a scenario-based approach (worst, base, best) to assess risk exposure.

3.6. Research Flowchart

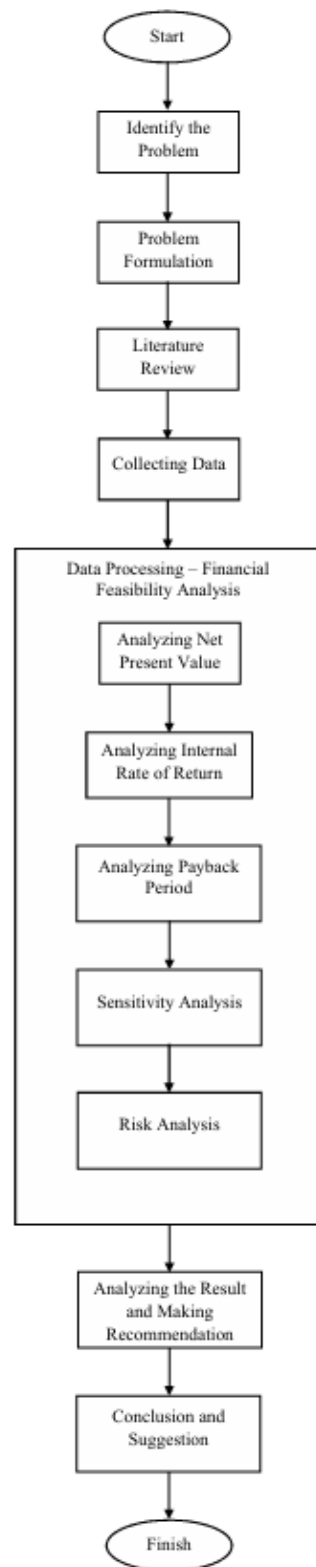


Figure 3. 1 Research Flowchart

Based on the figure above, the research flow chart will be explained below:

1. Problem Identification

Problem identification is obtained from the results of observations made to find the problems to be discussed. The issues that have been discovered are the ones that will be the focus of this research and its solution.

2. Problem Formulation

The determination of the problem is in line with the non-maximization of mineral materials, especially nickel, which are exported without any further processing, so that the selling price is relatively low and there are ways to increase the selling price. Therefore, the problem formulation that is formed is to find out whether the business managed by PT. XYZ will pass the business feasibility analysis based on financial aspects.

3. Literature Review

Locating the research on this emerging issue to use as a reference. Citing current studies on business feasibility analysis, the literature reviews strengthen the research. A literature review may consist of books, journals, and current studies. Both inductive and deductive studies might be used for the case study.

4. Data Collection

Primary and secondary data are the two kinds of data used in this study's data collection. Through direct observation of the object and interviews, primary data are gathered. For the actual interview, the information gathered will be as information that is qualitative. On the other hand, secondary data for this study are gathered by reading through or quoting relevant works or earlier research.

5. Data Processing

In the data processing process, there are analyzing the financial feasibility test for the Special Economic Zone in Morowali.

- 1) Net Present Value
- 2) Internal Rate of Return
- 3) Payback Period
- 4) Sensitivity Analysis
- 5) Risk Analysis

6. Analyzing the Result and Making Recommendations

Analyzing the result and making a recommendation will be carried out based on the results of the data processing. The analysis will then be used to make a decision whether the proposed business can be run or must fail. The decision will consider the results of the feasibility analysis that has been carried out.

7. Conclusion and Suggestion

The goal of the research, which was established at the beginning of the study, is addressed in the conclusion. The recommendations are taken into account and taken into consideration for further research on the same issues.

CHAPTER IV

DATA COLLECTING AND PROCESSING

4.1. Data Collecting

4.1.1. Business Model.

The government has a policy for special economic zones that aims to build new centers of economic growth, encourage more equitable economic distribution, and increase employment opportunities. Therefore PT. XYZ has a business plan to build an industrial area or Special Economic Zone (SEZ). The Morowali Industrial Special Economic Zone (SEZ) has a vision to become an integrated area for downstreaming Nickel commodities. For this reason, PT. XYZ, as the proponent, will sell and lease land for the benefit of the construction of a Nickel Smelter and the needs of stainless steel and lithium processing.

In market analysis, in 2021 the global stainless-steel market reached a volume of almost 49,493 KMT, and in 2022-2027 the market is projected to grow further at a CAGR of 2.8% between 2022 and 2027 to reach a volume of 58,497.2 KMT in 2027. In the investment process, it will be carried out through cooperation between two or more companies to run a business together.

4.1.2. Required Initial Investment.

Required initial investment needed to start a business includes various components, ranging from the cost of purchasing assets to the working capital required for initial operations. The detailed explanation in this chapter aims to provide a complete picture of the amount of funds that must be prepared as the first step towards success.

The term investment in Special Economic Zones (SEZ) is an investment activity in the form of tangible fixed assets, including land used for main activities, both for new investment and expansion of existing businesses. Investment in the development of the Morowali Industrial SEZ is Rp. Rp1,281,403,994,090. The planned investment needs for the development of the Morowali Industrial SEZ by PT. XYZ consists of Land Cost, Construction Cost, Development Cost, and Working Capital with the following details:

Table 4. 1 Initial Investment

No.	Investment	Amount
1	Land cost	390.422.760.424
2	Construction cost	518.626.104.661
3	Development cost	349.855.129.005
4	Reclamation	15.000.000.000
5	Working capital	7.500.000.000
Total		1.281.403.994.090

Based on the details of the investment value in the table above, an investment of Rp1,281,403,994,090 is used to finance investment components with a land area of 1,079 Ha. Of the total land area, the saleable area of 272 Ha is in the form of industrial land (Smelter), Facility Commercial Land I, Facility Commercial Land II, and Utility Commercial Land. The total for Non-Saleable Area is 870.6 Ha in the form of V Industrial land, Public Open Space, Public Amenities, Utility Center, Office, and Road.

4.1.3. *Revenue Data.*

This chapter discusses the income generated from a business. It explains the sources of income, the estimated amount that can be earned, and how each source of income contributes to the total income. The goal is to give a better understanding of how income is generated and how to increase it in the future.

The income of the area manager PT. XYZ, as the Business Management and Development Entity (BUPP) of the Morowali Special Economic Zone, is an important element in the feasibility of the area's business. Income reflects all rupiah values obtained through various BUPP business activities. The business activities of PT. XYZ, are Land sales and rental business to tenants and services to serve tenants in the Morowali SEZ Area. Overall, the elements of BUPP income are as follows:

1. *Land Business.*

a. *Land Sale.*

Land area that has been owned by PT. XYZ and then carried out the land maturation process through cut and fill, will become land that is ready to be used by tenants in building factories. Tenants who enter the SEZ will buy land that is used both for the establishment of the main factory and as a yard for storing raw materials or storage containers for the ferronickel produced. Overall, the land planned to be submitted to become a Special Economic Zone is 1,088.89 Ha. The land from the total land area of 304.9 Ha is in the form of industrial land (Smelter), Facility Commercial Land I, Facility Commercial Land II, and Utility Commercial Land. Land that is sold commercially for industrial needs in the SEZ, the selling price set is IDR 134,883 / m². The land sales scheme in the Morowali KEK is assumed as follows:

1. The land area of 209 ha will be sold within 5 years with receipt of the term of payment.
2. Year 4 Land area of 62.7 ha was sold at a price of Rp. 147,390/m². with a composition of 60% of the land sold.
3. The average increase in regional land prices is around 3-4% per year.

b. Land Lease.

In addition to the land sales business, PT. XYZ plans to run a rental business activity. The area of land to be rented is 230.4 Ha. The rental scheme in the Morowali Special Economic Zone is assumed as follows:

1. The capacity of rented land in the first year is 50%, the second year is 60%, and the third year thereafter is 100%.
2. The average rate increase is 5% starting in the fourth year.

2. Service Charge

a. Environmental Management and Area Security

Environmental management is one of the responsibilities of PT. XYZ as BUPP KEK Morowali. Environmental management in the SEZ area is a service provided by BUPP to tenants. The goal is for domestic waste from tenants (but not factory-tailing waste) to be managed by BUPP. With this pattern, domestic waste from tenants can be controlled through integrated waste management facilities. Because of this service, tenants will be charged as an environmental management fee.

In addition, BUPP also has the responsibility to maintain security in the area. Provision of 24-hour security personnel is one of PT. XYZ's services as BUPP. For that, with this service, tenants also have financial obligations and become a source of financial income for PT. XYZ. The amount of this service is based on the coverage of land owned by each tenant, so the larger

the land owned by the tenant, the greater the value that must be paid to BUPP. This cost burden is Rp. 220 / m².

b. Reuse Pool

One of the units that generates income for PT. XYZ as BUPP is the provision of reuse pool facilities. Reuse pool is a clean water facility that can be used to provide clean water for ships moored at the port of PT. XYZ. Every ship needs water, especially for ABK personnel. The need for water for ships, which always increases every year along with the increase in industrial activity in the area, will be one of the opportunities for BUPP to earn income. Every ship that uses reuse pool services will be charged based on the amount of water cubic used. Thus, ships with large tonnage and requiring more water, which means they will pay more to PT. XYZ as BUPP.

Along with the increase in industrial capacity in the KEK, the port is also increasingly crowded in serving ships that dock. For this reason, it is assumed that the increase in ships docked is 10% per year, which will have an impact on the supply of water needed. While price adjustments follow inflation with a value of 5 percent per year. The rate charged for each cubic meter of water is IDR 25,000/m³.

c. Power Plan

The need for electricity is not only used by each tenant to support the production process, but is also needed by PT. XYZ as BUPP. For the operational needs of PT. XYZ and the area, BUPP built a mini power plant that is driven by water. Furthermore, the electricity used is distributed to support the regional office, and for lighting needs throughout the area. Because as part of the area service, the area electricity will be charged to the tenant in the form of an electricity bill collected every month, based on the area of land owned by the tenant. This is because the area of land will be directly proportional to the use of electricity for lighting that is distributed through the BUPP power plant. The electricity rate used is based on the amount of power

capacity available after being reduced by the use of electricity by the regional office (BUPP). The electricity rate charged to the tenant is Rp. 1,600 / kwh.

d. Water Reservoir

The need for water for the smelter industry is very large. Therefore, the availability of water to support the industry in the area is very important, in order to support the continuity of the production process in the long term. To meet these needs, the water reservoir is one of the facilities built by PT. XYZ. The water reservoir is built by damming the river, which is then channeled into the area to support the operationalization of the smelter process. The water needs of each tenant are a market for PT. XYZ to obtain revenue in the long term. For this reason, in years 1 to 3, which are estimated to build a smelter, PT. XYZ will start to obtain revenue. The price of water used for the smelter process is Rp 7,500/m².

e. Transport Services

Providing truck transportation for Wet Nickel Ore transportation is very important in supporting the continuity of nickel production process in the KEK area. In supporting the operational process of the area, PT. XYZ provides transportation services for the Wet Nickel Ore unloading process. For that reason, PT. XYZ's services will bring long-term benefits while operating the Morowali SEZ. The service charged is 6,630/ton.

Based on all the information above, Morowali SEZ's income in the next 30 years can be presented as followss:

Table 4. 2 Revenue Analysis

No	Revenue	Year					Total
		0-3	4-9	10-15	16-20	21-30	
1	Land Sale	Rp114,573,965,468	Rp222,611,282,776	Rp13,924,940,786			Rp351,110,189,031
2	Land Lease	Rp52,447,720,500	Rp392,792,782,707	Rp611,591,724,142	Rp573,782,157,179	Rp1,181,991,243,789	Rp2,812,605,628,317
3	Area Management	Rp875,253,519	Rp8,862,328,776	Rp15,789,839,544	Rp22,133,818,399	Rp93,056,160,454	Rp140,717,400,692
4	Reuse Pool	Rp330,416,667	Rp5,608,605,502	Rp9,935,986,773	Rp13,928,027,972	Rp58,556,945,864	Rp88,359,982,777
5	Water Reservoir	Rp1,545,264,000	Rp26,229,839,616	Rp46,467,760,900	Rp65,137,392,834	Rp273,854,044,065	Rp413,234,301,415
6	Power Plant	Rp66,760,484	Rp1,401,970,157	Rp1,602,251,608	Rp1,335,209,673	Rp2,670,419,346	Rp7,076,611,267
7	Barge Services	Rp4,162,805,407	Rp572,542,812,690	Rp1,042,772,794,685	Rp1,165,003,418,379	Rp3,512,607,008,217	Rp6,297,088,839,378
8	Truck Transportation Services	Rp8,134,785,076	Rp219,525,970,367	Rp389,289,098,271	Rp423,797,972,411	Rp1,231,207,778,512	Rp2,271,955,604,636
Total Revenue		Rp182,136,971,121	Rp1,449,575,592,591	Rp2,131,374,396,709	Rp2,265,117,996,845	Rp6,353,943,600,247	Rp12,382,148,557,513

Based on the table above, it can be seen that in the 30 years of SEZ operations, there appears to be a continuous positive sales. This means that even though the sale of SEZ Morowali land ended in payment in the 12th year, the sources of income are still able to support the company PT. XYZ as the BUPP SEZ Morowali.

4.1.4. *Cost Data.*

Data in cost analysis plays a key role as a foundation for producing accurate calculations and informed decisions. By systematically collecting, grouping, and analyzing data, organizations can identify spending patterns, understand cost components, and evaluate the efficiency of resource use. Costs here will be divided into production costs and operational costs.

4.1.4.1. *Production Cost.*

The costs incurred by a company to provide services to local tenants are known as production costs. The following figure shows the production costs incurred by the company.

1. *Regional Electricity.*

The electricity cost of the area is the cost incurred by the area manager used for the needs of the office of the manager of this special economic zone, referring to Regulation of the Minister of Industry Number 35/M-IND/Per/2010 concerning Technical Guidelines for Industrial Areas, where the electricity requirement is 0.15 – 0.2 MVA/Ha. Assuming the electricity requirement is 0.15 MVA/Ha and the land area is 23.7 Ha, and the cost is Rp 12,550 per Kwh.

2. Water Reuse Pool, Water Reservoir, and Power Plan.

PT. XYZ provides clean water supply advice for ships that will dock at the port. The costs incurred to produce water reuse pool production to fill the clean water needs of ships that will enter the port area. The amount of water reuse pool management costs is assumed to be 60% of water reuse pool revenue. The cost of managing a water reservoir is the cost required to produce water that is distributed to smelters in the area for ferronickel production needs. The amount of the cost is assumed to be 40% of water reservoir revenue. Power plant costs are the main costs in providing electricity. For tenants at PT. XYZ The amount of the main cost for the power plant is assumed to be 60% of power plant revenue.

3. Area Management Costs.

The company provides domestic waste management services for all tenants in the area. The production cost of domestic waste management is based on the area of land served and the amount of operating costs per 20 Ha of each area. The cost of domestic waste management based on Andal data shows that every 20 ha requires 1 TPS and 1 fleet, and each fleet and TPS is assumed to cost Rp. 80,000,000 per year with an average increase of 5% per year. The cost of maintaining the ERP system is assumed to be Rp. 20,000,000 per month. The cost of a fixed crane is assumed to be Rp. 175,000,000 per year taking into account inflation of 5% per year.

4. Rental of Goods Transport Vehicle.

PT. XYZ provides transportation services for Wet Nickel Ore transportation from the port to the tenant company's smelter. The costs incurred to operate this business activity cover rental costs of dump trucks with an average capacity of 20 tons, rental and fuel costs for each dump truck per month, Rp 70,000,000, and its fuel costs, Rp. 1,670,400,000 per month. Moreover, the costs include vehicle rental costs charged to PT. XYZ are in line with

rental costs and fuel costs. Based on the data above, the amount of the cost of goods sold must be incurred by PT. XYZ for 30 years can be described as follows:

Table 4. 3 Cost of Goods

No	Production Cost	Year					Total
		0-3	4-9	10-15	16- 20	21-30	
1	Electricity	Rp1,968,841,400	Rp4,917,615,803	Rp6,590,075,499	Rp7,174,258,532	Rp20,842,485,063	Rp41,493,276,297
2	Power Plant	Rp40,056,290	Rp841,182,094	Rp961,350,965	Rp801,125,804	Rp1,602,251,608	Rp4,245,966,760
3	Reuse Pool	Rp198,250,000	Rp3,533,421,467	Rp6,259,671,667	Rp8,774,657,622	Rp36,890,875,894	Rp55,656,876,650
4	Water Reservoir	Rp618,105,600	Rp11,016,532,639	Rp19,516,459,578	Rp27,357,704,990	Rp115,018,698,507	Rp173,527,501,314
5	Area Management	Rp815,000,000	Rp8,421,340,271	Rp11,628,733,888	Rp12,659,573,220	Rp33,022,725,276	Rp66,547,372,655
6	Barge Services	Rp15,417,797,804	Rp377,930,226,839	Rp585,337,591,526	Rp558,579,638,558	Rp1,274,260,836,377	Rp2,811,526,091,104
7	Vehicle Costs	Rp22,061,606,723	Rp174,694,509,926	Rp216,782,827,496	Rp205,293,598,259	Rp597,565,695,079	Rp1,216,398,237,483
Total Production Cost		Rp41,119,657,817	Rp581,354,829,038	Rp847,076,710,618	Rp820,640,556,985	Rp2,079,203,567,804	Rp4,369,395,322,262

4.1.4.2. Operational Cost.

The intended operational costs are the total management costs measured over a period of one year. The operational costs of the area consist of two, namely Variable Costs and Fixed Costs. Fixed costs are costs that will not change even if there is an increase in sales and production. These costs must be incurred without assessing the condition of the company. Variable costs are costs that change proportionally with business activities or the amount of marginal costs for all units produced. In this feasibility study analysis, fixed costs are seen from the operational costs of managing the area office, the variable costs are the costs of managing the area which are highly dependent on the scope of BUPP services to tenants based on the area managed by the tenant. For more details, it can be described as follows:

1. Labor Cost.

Labor costs of the Business Entity for Management and Development of the Morowali Special Economic Zone (BUPP) are fixed costs paid to pay all permanent employees in the organizational structure of the BUPP Morowali Special Economic Zone, as seen in the image below:

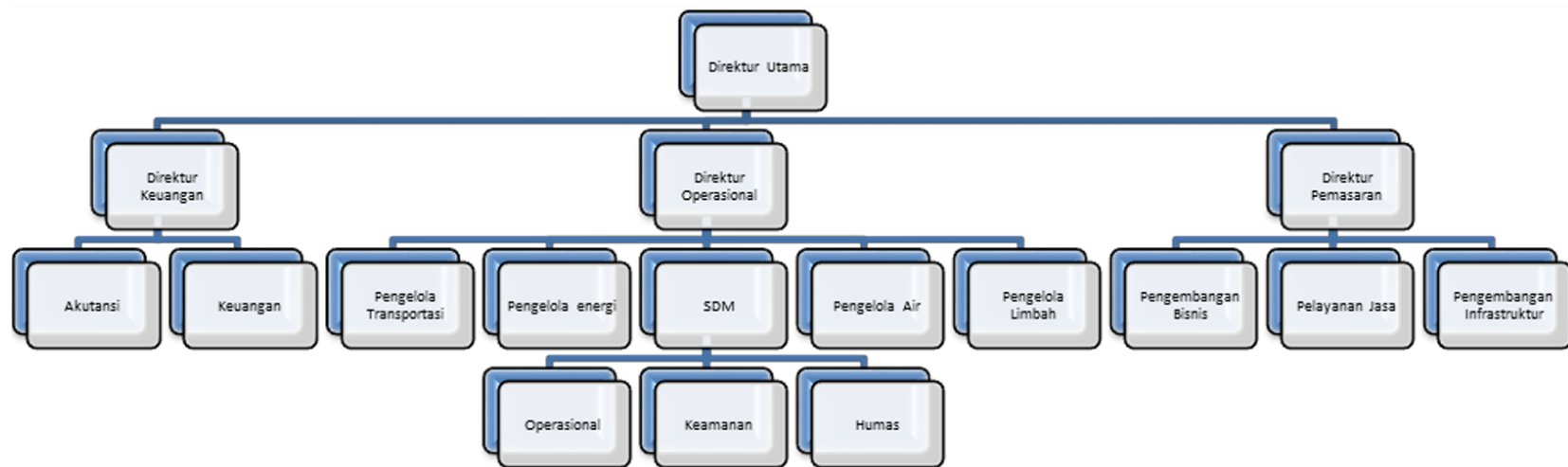


Figure 4. 1 Organization Structure

The number of workers in the Morowali Special Economic Zone Management and Development Agency is 60 people, consisting of 29 educated workers and 31 uneducated workers. The highest labor cost is for the main director, which is 62.5 million rupiah per month for the

Director level, as many as 3 people each at 43.75 million rupiah per month. Manager level workers get a salary of 15 million per month, and staff around 7.5 million per month. For uneducated workers, as many as 31 people are given a salary of 5.625 million per month.

Per month, the company spends labor costs of Rp. 421,875,000 or Rp. 8,017,500,000 per year. The following is a breakdown of the salary costs of the area management employees in one year. More details can be seen in the following table.

Table 4. 4 Salary of Management Employee

No	Position	Number of Employees	Per Employee	Total Cost/Year
Professional Staff				
1	President Director	1	Rp62,500,000	Rp750,000,000
2	Secretary	1	Rp12,500,000	Rp150,000,000
3	Front Line Officer	1	Rp7,500,000	Rp90,000,000
4	Director of Marketing	1	Rp43,750,000	Rp525,000,000
5	Business Development Manager	1	Rp15,000,000	Rp180,000,000
6	Service Manager	1	Rp15,000,000	Rp180,000,000
7	Infrastructure Development Manager	1	Rp15,000,000	Rp180,000,000
8	Director of Finance and Accounting	1	Rp43,750,000	Rp525,000,000
9	Accounting Manager	1	Rp15,000,000	Rp180,000,000
10	Financial Manager	1	Rp15,000,000	Rp180,000,000
11	Director of Operations	1	Rp50,000,000	Rp600,000,000
12	Transportation Management Manager	1	Rp15,000,000	Rp180,000,000
13	Energy Management Manager	1	Rp15,000,000	Rp180,000,000
14	Water Management Manager	1	Rp15,000,000	Rp180,000,000
15	Human Resource Manager	1	Rp15,000,000	Rp180,000,000
16	Waste Management Manager	1	Rp15,000,000	Rp180,000,000
17	Safety	1	Rp13,750,000	Rp165,000,000
18	Public Relations	1	Rp13,750,000	Rp165,000,000
19	Operational	1	Rp13,750,000	Rp165,000,000
20	Marketing Staff	3	Rp7,500,000	Rp270,000,000
21	Financial Staff	2	Rp13,750,000	Rp330,000,000
22	Operational Staff	5	Rp7,500,000	Rp450,000,000
Total		29	Rp405,000,000	Rp5,985,000,000
Support Staff				
1	Security Guard	21	Rp5,625,000	Rp1,417,500,000
2	Office Boy	2	Rp5,625,000	Rp135,000,000
3	Landscaping and Cleaning Department	8	Rp5,000,000	Rp480,000,000
Total		31	Rp16,250,000	Rp2,032,500,000
Total Salary Cost		60	Rp421,250,000	Rp8,017,500,000

2. *Office Administration Fees.*

The administrative costs of the management office are all costs incurred by the company to finance all operational activities of the regional office. The aspects of financing the administration of the BUPP Morowali Special Economic Zone office are as follows:

a. Office Stationery

Consumables or the use of costs for purchasing office stationery is estimated at Rp. 10,000,000 per month. This assumption is based on historical data and interviews on the estimated use of consumables in regional offices.

b. Asset Maintenance Costs

The company's asset maintenance costs are the costs incurred by the company in one year to maintain all assets in the company. Maintenance costs include the maintenance of all assets, including land, docks, buildings, and equipment, including cleaning. This cost is proportional to the asset value, estimated initially at 0.5% of the asset value and increasing by 2.5% in the 10th year.

c. Food and Beverage Cost

Food and beverage costs are costs incurred by the company to cover food and beverage needs for meetings and the provision of tea and coffee for daily routine activities. Assuming the provision of food and beverages for 60 employees for one working month or 20 days, with a cost of Rp. 15,000 per person, then per month it is Rp. 18,000,000. Meeting activities are estimated to be held 4 times a month, and the cost per meeting is Rp. 2,000,000, so the cost of meetings per month is Rp. 8,000,000. Calculations with these assumptions mean that the operational food and beverage costs for the regional office per month are Rp. 26,000,000 per month or Rp. 312,000,000 per year.

d. Car Rental Fee

The fee charged for renting a Triton car is IDR 60,000,000 per month, which is IDR 720,000,000 per year.

e. Fuel Oil

The provision of fuel oil for area management is set at Rp. 17,500,000.

f. Depreciation Expense

Depreciation costs are costs incurred to calculate the economic value of assets that are investment values outside of land or land. The use of the depreciation method uses a straight-line approach, namely dividing the investment value by the economic life of the asset, which is 10-30 years.

g. Communication

Communication costs are costs incurred to finance communication in the form of internet, amounting to IDR 17,500,000 per month.

h. Office Travel

Travel expenses are set at Rp. 60,000,000 per month, assuming that the company has a policy to provide rest space in the area of origin every 3 months. Based on the results of the estimated costs arising from the experience of managing the mining area, the company sets Rp. 60,000,000 per month for travel or Rp. 720,000,000 per year.

i. Insurance Cost

The company's insurance costs are the costs of life insurance and work accidents. The amount of insurance is based on the risk of moderate accidents, which is 0.89 percent of employee salaries or honorariums, in accordance with the BPJS employment

regulations. Based on labor cost data of Rp. 8,017,500,000, the cost of labor insurance for one year is Rp. 59,938,830. In addition to work accident insurance, the company also insures buildings in the area, with area asset insurance of 0.129% of the total assets to be guaranteed, with the value of assets to be guaranteed of Rp. 258,604,254,420, the amount of building insurance premiums is Rp. 334,892,509. The total insurance costs incurred as PT. XYZ's insurance costs each year are Rp. 394,831,339. Based on all the data above, the total operational costs of managing the area for 30 years can be seen as follows:

Table 4. 5 Operational Cost

No	Operation Cost	Year					Total
		0-3	4-9	10-15	16-20	21-30	
1	Worker Salary	Rp12,122,460,000	Rp57,261,052,773	Rp76,735,287,199	Rp83,537,554,151	Rp242,691,313,229	Rp472,347,667,352
2	Work Stationary	Rp216,000,000	Rp857,041,014	Rp1,148,516,927	Rp1,250,328,219	Rp3,632,423,771	Rp7,104,309,932
3	Asset Maintenance	Rp7,709,937,220	Rp25,806,873,196	Rp111,922,588,648	Rp107,617,873,700	Rp215,235,747,399	Rp468,293,020,163
4	Food and Drink	Rp561,600,000	Rp2,228,306,637	Rp2,986,144,011	Rp3,250,853,370	Rp9,444,301,806	Rp18,471,205,824
5	Car Rental	Rp1,296,000,000	Rp5,142,246,086	Rp6,891,101,563	Rp7,501,969,316	Rp21,794,542,629	Rp42,625,859,594
6	Fuel Oil	Rp378,000,000	Rp1,499,821,775	Rp2,009,904,623	Rp2,188,074,384	Rp6,356,741,600	Rp12,432,542,382
7	Communication Cost	Rp8,213,400,000	Rp31,202,364,375	Rp31,693,457,250	Rp26,411,214,375	Rp52,822,428,750	Rp150,342,864,750
8	Work Trip	Rp1,296,000,000	Rp4,923,450,000	Rp5,000,940,000	Rp4,167,450,000	Rp8,334,900,000	Rp23,722,740,000
9	Insurance	Rp421,493,667	Rp1,753,934,925	Rp2,350,440,547	Rp2,558,797,415	Rp7,433,757,322	Rp14,518,423,877
Total Operation Cost		Rp32,214,890,888	Rp130,675,090,782	Rp240,738,380,767	Rp238,484,114,929	Rp567,746,156,507	Rp1,209,858,633,873

4.1.5. Profit and Loss Data.

Profit and loss analysis describes the difference between revenue and operating costs during 1 accounting period (1 year). The profit/loss of PT. XYZ as a BUPP is influenced by the revenue component and the cost component. Based on the calculation of revenue and operating costs, the amount of Profit/Loss of PT. XYZ for 30 years can be presented as follows:

Table 4. 6 Profit and Loss

No	Category	Year					Total
A.	Revenue	0-3	4-9	10-15	16-20	21-30	
1	Land Sale	Rp114,573,965,468	Rp222,611,282,776	Rp13,924,940,786			Rp351,110,189,031
2	Land Lease	Rp52,447,720,500	Rp392,792,782,707	Rp611,591,724,142	Rp573,782,157,179	Rp1,181,991,243,789	Rp2,812,605,628,317
3	Area Management	Rp875,253,519	Rp8,862,328,776	Rp15,789,839,544	Rp22,133,818,399	Rp93,056,160,454	Rp140,717,400,692
4	Reuse Pool	Rp330,416,667	Rp5,608,605,502	Rp9,935,986,773	Rp13,928,027,972	Rp58,556,945,864	Rp88,359,982,777
5	Water Reservoir	Rp1,545,264,000	Rp26,229,839,616	Rp46,467,760,900	Rp65,137,392,834	Rp273,854,044,065	Rp413,234,301,415
6	Power Plant	Rp66,760,484	Rp1,401,970,157	Rp1,602,251,608	Rp1,335,209,673	Rp2,670,419,346	Rp7,076,611,267
7	Barge Services	Rp4,162,805,407	Rp572,542,812,690	Rp1,042,772,794,685	Rp1,165,003,418,379	Rp3,512,607,008,217	Rp6,297,088,839,378
8	Truck Transportation Services	Rp8,134,785,076	Rp219,525,970,367	Rp389,289,098,271	Rp423,797,972,411	Rp1,231,207,778,512	Rp2,271,955,604,636
	Total Revenue	Rp182,136,971,121	Rp1,449,575,592,591	Rp2,131,374,396,709	Rp2,265,117,996,845	Rp6,353,943,600,247	Rp12,382,148,557,513
B.	Production Cost						
1	Electricity	Rp1,968,841,400	Rp4,917,615,803	Rp6,590,075,499	Rp7,174,258,532	Rp20,842,485,063	Rp41,493,276,297
2	Power Plant	Rp40,056,290	Rp841,182,094	Rp961,350,965	Rp801,125,804	Rp1,602,251,608	Rp4,245,966,760
3	Reuse Pool	Rp198,250,000	Rp3,533,421,467	Rp6,259,671,667	Rp8,774,657,622	Rp36,890,875,894	Rp55,656,876,650
4	Water Reservoir	Rp618,105,600	Rp11,016,532,639	Rp19,516,459,578	Rp27,357,704,990	Rp115,018,698,507	Rp173,527,501,314
5	Area Management	Rp815,000,000	Rp8,421,340,271	Rp11,628,733,888	Rp12,659,573,220	Rp33,022,725,276	Rp66,547,372,655
6	Barge Services	Rp15,417,797,804	Rp377,930,226,839	Rp585,337,591,526	Rp558,579,638,558	Rp1,274,260,836,377	Rp2,811,526,091,104
7	Vehicle Cost	Rp22,061,606,723	Rp174,694,509,926	Rp216,782,827,496	Rp205,293,598,259	Rp597,565,695,079	Rp1,216,398,237,483
	Total Production Cost	Rp41,119,657,817	Rp581,354,829,038	Rp847,076,710,618	Rp820,640,556,985	Rp2,079,203,567,804	Rp4,369,395,322,262
	Gross Profit	Rp141,017,313,304	Rp868,220,763,553	Rp1,284,297,686,091	Rp1,444,477,439,860	Rp4,274,740,032,443	Rp8,012,753,235,250
C.	Operational Cost						
1	Worker Salary	Rp12,122,460,000	Rp57,261,052,773	Rp76,735,287,199	Rp83,537,554,151	Rp242,691,313,229	Rp472,347,667,352
2	Work Stationary	Rp216,000,000	Rp857,041,014	Rp1,148,516,927	Rp1,250,328,219	Rp3,632,423,771	Rp7,104,309,932
3	Asset Maintenance	Rp7,709,937,220	Rp25,806,873,196	Rp111,922,588,648	Rp107,617,873,700	Rp215,235,747,399	Rp468,293,020,163
4	Food and Drink	Rp561,600,000	Rp2,228,306,637	Rp2,986,144,011	Rp3,250,853,370	Rp9,444,301,806	Rp18,471,205,824
5	Car Rental	Rp1,296,000,000	Rp5,142,246,086	Rp6,891,101,563	Rp7,501,969,316	Rp21,794,542,629	Rp42,625,859,594
6	Fuel Oil	Rp378,000,000	Rp1,499,821,775	Rp2,009,904,623	Rp2,188,074,384	Rp6,356,741,600	Rp12,432,542,382
7	Communication Cost	Rp8,213,400,000	Rp31,202,364,375	Rp31,693,457,250	Rp26,411,214,375	Rp52,822,428,750	Rp150,342,864,750
8	Work Trip	Rp1,296,000,000	Rp4,923,450,000	Rp5,000,940,000	Rp4,167,450,000	Rp8,334,900,000	Rp23,722,740,000
9	Insurance	Rp421,493,667	Rp1,753,934,925	Rp2,350,440,547	Rp2,558,797,415	Rp7,433,757,322	Rp14,518,423,877
	Total Operation Cost	Rp32,214,890,888	Rp130,675,090,782	Rp240,738,380,767	Rp238,484,114,929	Rp567,746,156,507	Rp1,209,858,633,873
D.	Operating Profit	Rp108,802,422,416	Rp737,545,672,771	Rp1,043,559,305,324	Rp1,205,993,324,931	Rp3,706,993,875,936	Rp6,802,894,601,377
1	Interest Expense	Rp87,494,264,716	Rp111,277,122,847	Rp3,331,650,385			Rp202,103,037,948
2	Depreciation Expense	Rp95,385,264,251	Rp190,770,528,503	Rp189,300,011,792	Rp157,504,923,708	Rp21,359,590,616	Rp654,320,318,870
E.	Profit Before Tax	-Rp74,077,106,552	Rp435,498,021,421	Rp850,927,643,147	Rp1,048,488,401,223	Rp3,685,634,285,319	Rp5,946,471,244,559
22%	Tax			Rp159,433,858,183	Rp230,667,448,269	Rp810,839,542,770	Rp1,200,940,849,222
F.	Net Profit	-Rp74,077,106,552	Rp435,498,021,421	Rp691,493,784,964	Rp817,820,952,954	Rp2,874,794,742,549	Rp4,745,530,395,337

From the data above, it appears that for 30 years, PT. XYZ has shown positive profit achievement with the absorption of tax incentives given by the government to PT. XYZ (Tax holiday) for 10 years. From the profit and loss report above, it is clear that the amount of income received is still higher than the amount of operational cost development of SEZ.

4.1.6. Cashflow Data.

Cash flow describes the difference between cash outflow and cash inflow. All real expenditures describe the company's cash outflow. In this case, depreciation costs, which are reserved costs, are not cash outflows, although the amount of depreciation costs will reduce income. Therefore, the difference between cash inflow and cash outflow is proceeds, which is the same as net income plus depreciation costs. The cash flow prediction for 30 years is as follows:

Table 4. 7 Cashflow Data

Year	Net Cash Flow			Total
	Operational	Investment	Financing	
0		-Rp518,869,224,507	Rp448,491,397,931	-Rp70,377,826,576
1	Rp36,267,474,139	-Rp207,866,876,694	Rp233,095,929,218	Rp61,496,526,663
2	Rp36,267,474,139	-Rp207,866,876,694	Rp233,095,929,218	Rp61,496,526,663
3	Rp36,267,474,139	-Rp207,866,876,694	Rp233,095,929,218	Rp61,496,526,663
4	Rp105,085,913,297	-Rp33,898,121,417	-Rp55,668,460,850	Rp15,519,331,030
5	Rp105,085,913,297	-Rp33,898,121,417	-Rp55,668,460,850	Rp15,519,331,030
6	Rp105,085,913,297	-Rp33,898,121,417	-Rp55,668,460,850	Rp15,519,331,030
7	Rp140,762,660,960	-Rp9,913,258,417	-Rp68,559,385,030	Rp62,290,017,512
8	Rp140,762,660,960	-Rp9,913,258,417	-Rp68,559,385,030	Rp62,290,017,512
9	Rp140,762,660,960	-Rp9,913,258,417	-Rp68,559,385,030	Rp62,290,017,512
10	Rp173,926,550,887		-Rp13,369,315,005	Rp160,557,235,882
11	Rp173,926,550,887		-Rp13,369,315,005	Rp160,557,235,882
12	Rp173,926,550,887		-Rp13,369,315,005	Rp160,557,235,882
13	Rp173,926,550,887		-Rp13,369,315,005	Rp160,557,235,882
14	Rp173,926,550,887		-Rp13,369,315,005	Rp160,557,235,882
15	Rp173,926,550,887		-Rp13,369,315,005	Rp160,557,235,882
16	Rp241,198,664,986			Rp241,198,664,986
17	Rp241,198,664,986			Rp241,198,664,986
18	Rp241,198,664,986			Rp241,198,664,986
19	Rp241,198,664,986			Rp241,198,664,986
20	Rp241,198,664,986			Rp241,198,664,986
21	Rp319,193,162,033			Rp319,193,162,033
22	Rp319,193,162,033			Rp319,193,162,033
23	Rp319,193,162,033			Rp319,193,162,033
24	Rp319,193,162,033			Rp319,193,162,033
25	Rp319,193,162,033			Rp319,193,162,033
26	Rp422,205,613,154			Rp422,205,613,154
27	Rp422,205,613,154			Rp422,205,613,154
28	Rp422,205,613,154			Rp422,205,613,154
29	Rp422,205,613,154			Rp422,205,613,154
30	Rp422,205,613,154			Rp422,205,613,154

From the data above, it appears that the amount of annual proceeds shows changes. If in year 0 (the beginning of the year when investing) it shows a very large negative value, which means that the company is still bearing very large costs, but is gradually moving in

a positive direction. This illustrates that during the operating period of the Morowali Special Economic Zone, PT. XYZ, as a BUPP, experienced positive profitability in the long term.

4.2. Data Processing

4.2.1. Financial Feasibility Analysis.

To analyze the feasibility of the Morowali Special Economic Zone, it can be analyzed using several approaches, namely Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP).

Table 4. 8 NPV, IRR, and PP Calculation

Year	Expected Net Cash Flow	Undiscounted Balance	Present Value of Cash Flow
0	-Rp836,662,596,159	-Rp836,662,596,159	-Rp836,662,596,159
1	Rp61,496,526,663	-Rp775,166,069,496	Rp55,774,103,631
2	Rp61,496,526,663	-Rp713,669,542,832	Rp50,584,167,995
3	Rp61,496,526,663	-Rp652,173,016,169	Rp45,877,170,320
4	Rp15,519,331,030	-Rp636,653,685,139	Rp10,500,283,968
5	Rp15,519,331,030	-Rp621,134,354,108	Rp9,523,203,309
6	Rp15,519,331,030	-Rp605,615,023,078	Rp8,637,042,725
7	Rp62,290,017,512	-Rp543,325,005,566	Rp31,440,723,840
8	Rp62,290,017,512	-Rp481,034,988,053	Rp28,515,076,945
9	Rp62,290,017,512	-Rp418,744,970,541	Rp25,861,669,640
10	Rp160,557,235,882	-Rp258,187,734,659	Rp60,457,474,504
11	Rp160,557,235,882	-Rp97,630,498,776	Rp54,831,738,168
12	Rp160,557,235,882	Rp62,926,737,106	Rp49,729,492,262
13	Rp160,557,235,882	Rp223,483,972,988	Rp45,102,024,544
14	Rp160,557,235,882	Rp384,041,208,871	Rp40,905,155,581
15	Rp160,557,235,882	Rp544,598,444,753	Rp37,098,816,961
16	Rp241,198,664,986	Rp785,797,109,739	Rp50,546,034,494
17	Rp241,198,664,986	Rp1,026,995,774,725	Rp45,842,585,247
18	Rp241,198,664,986	Rp1,268,194,439,712	Rp41,576,805,049
19	Rp241,198,664,986	Rp1,509,393,104,698	Rp37,707,967,576
20	Rp241,198,664,986	Rp1,750,591,769,684	Rp34,199,136,202
21	Rp319,193,162,033	Rp2,069,784,931,717	Rp41,046,471,354
22	Rp319,193,162,033	Rp2,388,978,093,750	Rp37,226,982,908
23	Rp319,193,162,033	Rp2,708,171,255,782	Rp33,762,908,496
24	Rp319,193,162,033	Rp3,027,364,417,815	Rp30,621,175,854
25	Rp319,193,162,033	Rp3,346,557,579,848	Rp27,771,790,181
26	Rp422,205,613,154	Rp3,768,763,193,002	Rp33,316,265,255
27	Rp422,205,613,154	Rp4,190,968,806,157	Rp30,216,094,010
28	Rp422,205,613,154	Rp4,613,174,419,311	Rp27,404,402,330
29	Rp422,205,613,154	Rp5,035,380,032,466	Rp24,854,346,391
30	Rp422,205,613,154	Rp5,457,585,645,620	Rp22,541,580,256

The table above presents the financial analysis used to assess the feasibility of the project based on three main indicators: Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). The first column represents the project year, starting from year 0 (initial investment) and continuing until year 30, which is the estimated project life cycle.

The second column shows the Expected Net Cash Flow, which consists of projected annual net cash inflows generated by the project. In year 0, the value is negative, indicating the initial investment required to start the project. From year 1 onwards, the values are positive, reflecting the expected cash inflows each year.

The third column, Undiscounted Balance, is the cumulative total of the net cash flows without considering the time value of money. This column is primarily used to calculate the Payback Period, which indicates how long it takes for the initial investment to be recovered. The payback period is identified at the point where the cumulative balance shifts from negative to positive.

The fourth column, Present Value of Cash Flow, shows the discounted value of each year's net cash flow using a discount rate of 10.26%, which reflects the project's Weighted Average Cost of Capital (WACC). This adjustment accounts for the time value of money, recognizing that cash flows received in the future are worth less than those received today. The NPV is calculated by summing all the discounted cash flows, including the initial investment. A positive NPV indicates that the project is financially viable. Meanwhile, the IRR is determined as the discount rate that makes the NPV equal to zero.

Together, these three indicators, NPV, IRR, and PP, provide a comprehensive evaluation of the project's financial feasibility and are essential components in the decision-making process regarding investment implementation.

Table 4. 9 Financial Feasibility Analysis

Financial Feasibility Analysis	
WACC	10,26%
Net Present Value (NPV)	Rp 236.810.093.836
Internal Rate of Return (IRR)	12.61 %
Payback Period (PP)	11.61 year
Conclusion	Feasible

1. Net Present Value

Based on the calculation results, the Net Present Value (NPV) value is obtained at Rp 236.810.093.836. This positive and very large NPV value indicates that the investment project being analyzed is expected to generate significant added value after taking into account all cash inflows and outflows discounted to the current value. Thus, the investment can be categorized as feasible and profitable to run, because it is not only able to cover the initial investment costs, but also provides a large surplus, which can ultimately increase the value of the company or the wealth of investors.

2. Internal Rate of Return

Based on the analysis results, the Internal Rate of Return (IRR) value is 12.61%, while the interest rate used as a reference is 10.26%. Because the IRR value is greater than the set interest rate, it can be concluded that this investment project is feasible to run. The positive difference between the IRR and the interest rate indicates that the investment is able to provide a higher rate of return than the cost of capital incurred, so that it is considered financially profitable.

3. Payback Period

Based on the calculation results, the payback period is 11.61 years. This means that it takes about 11 years and 7 months to be able to return the entire initial investment through the cash flow generated by the project. This payback period provides an overview of how quickly the investment can cover its initial costs. The shorter the payback period, the more attractive an investment is generally, but in this case, the length of the payback period needs to be compared with the project age and the investment feasibility standards that have been set to determine whether the project is still feasible.

4.2.2. *Sensitivity Analysis.*

In this sensitivity analysis, a test is conducted on how sensitive the results of the project's financial feasibility are to changes in one of the main variables, namely revenue. The selection of the revenue variable as the focus of the analysis is based on the consideration that revenue projections have a fairly high level of uncertainty, especially because they depend on external factors such as market demand, commodity prices, and macroeconomic conditions.

Therefore, a simulation is conducted by adjusting the revenue value into two scenarios, namely the pessimistic scenario (revenue decrease) and the optimistic scenario (revenue increase), to determine its impact on financial feasibility indicators such as Net Present Value (NPV), Internal Rate of Return (IRR), and Payback Period (PP). The results of this analysis are expected to provide a more comprehensive picture of the project's resilience to changes in revenue assumptions used in the basic calculation.

1. Pessimist Case

Table 4. 10 Pessimist Case on Sensitivity Analysis

Year	Expected Net Cash Flow	Undiscounted Balance	Present Value of Cash Flow
0	-Rp836,662,596,159	-Rp836,662,596,159	-Rp836,662,596,159
1	Rp55,425,294,293	-Rp781,237,301,866	Rp50,267,816,337
2	Rp55,425,294,293	-Rp725,812,007,574	Rp45,590,256,064
3	Rp55,425,294,293	-Rp670,386,713,281	Rp41,347,955,799
4	-Rp5,044,724,594	-Rp675,431,437,875	-Rp3,413,229,647
5	-Rp5,044,724,594	-Rp680,476,162,468	-Rp3,095,619,125
6	-Rp5,044,724,594	-Rp685,520,887,062	-Rp2,807,563,146
7	Rp34,534,870,050	-Rp650,986,017,012	Rp17,431,385,564
8	Rp34,534,870,050	-Rp616,451,146,963	Rp15,809,346,603
9	Rp34,534,870,050	-Rp581,916,276,913	Rp14,338,242,883
10	Rp125,034,329,271	-Rp456,881,947,643	Rp47,081,402,046
11	Rp125,034,329,271	-Rp331,847,618,372	Rp42,700,346,496
12	Rp125,034,329,271	-Rp206,813,289,102	Rp38,726,960,362
13	Rp125,034,329,271	-Rp81,778,959,831	Rp35,123,308,872
14	Rp125,034,329,271	Rp43,255,369,439	Rp31,854,987,187
15	Rp125,034,329,271	Rp168,289,698,710	Rp28,890,791,934
16	Rp195,896,305,049	Rp364,186,003,759	Rp41,052,388,879
17	Rp195,896,305,049	Rp560,082,308,809	Rp37,232,349,791
18	Rp195,896,305,049	Rp755,978,613,858	Rp33,767,775,976
19	Rp195,896,305,049	Rp951,874,918,907	Rp30,625,590,401
20	Rp195,896,305,049	Rp1,147,771,223,957	Rp27,775,793,942
21	Rp262,816,929,396	Rp1,410,588,153,352	Rp33,796,800,330
22	Rp262,816,929,396	Rp1,673,405,082,748	Rp30,651,913,958
23	Rp262,816,929,396	Rp1,936,222,012,143	Rp27,799,668,019
24	Rp262,816,929,396	Rp2,199,038,941,539	Rp25,212,831,506
25	Rp262,816,929,396	Rp2,461,855,870,934	Rp22,866,707,334
26	Rp351,502,973,787	Rp2,813,358,844,721	Rp27,737,116,579
27	Rp351,502,973,787	Rp3,164,861,818,508	Rp25,156,100,653
28	Rp351,502,973,787	Rp3,516,364,792,294	Rp22,815,255,444
29	Rp351,502,973,787	Rp3,867,867,766,081	Rp20,692,232,400
30	Rp351,502,973,787	Rp4,219,370,739,868	Rp18,766,762,561

Table 4. 11 Financial Feasibility Result of Pessimist Sensitivity Analysis

Financial Feasibility Analysis	
WACC	10,26%
Net Present Value (NPV)	-Rp10,866,920,157
Internal Rate of Return (IRR)	10.12 %
Payback Period (PP)	13.65 year
Conclusion	Not Feasible

When revenue is reduced (pessimistic scenario), the NPV value becomes negative (-Rp10.8 billion) and the IRR drops to 10.17%, which almost touches the WACC (10.26%). This indicates that the project becomes financially unviable under conditions of declining revenue. The payback period also increases to 13.65 years, indicating that the project takes longer to recoup its investment.

2. Optimist Case

Table 4. 12 Optimist Case on Sensitivity Analysis

Year	Expected Net Cash Flow	Undiscounted Balance	Present Value of Cash Flow
0	-Rp836,662,596,159	-Rp836,662,596,159	-Rp836,662,596,159
1	Rp67,567,759,035	-Rp769,094,837,124	Rp61,280,390,926
2	Rp67,567,759,036	-Rp701,527,078,088	Rp55,578,079,926
3	Rp67,567,759,037	-Rp633,959,319,051	Rp50,406,384,842
4	Rp36,083,386,658	-Rp597,875,932,393	Rp24,413,797,587
5	Rp36,083,386,659	-Rp561,792,545,733	Rp22,142,025,746
6	Rp36,083,386,660	-Rp525,709,159,073	Rp20,081,648,600
7	Rp90,045,131,648	-Rp435,664,027,425	Rp45,450,045,294
8	Rp90,045,131,649	-Rp345,618,895,776	Rp41,220,792,032
9	Rp90,045,131,650	-Rp255,573,764,126	Rp37,385,082,561
10	Rp196,080,142,504	-Rp59,493,621,622	Rp73,833,546,965
11	Rp196,080,142,505	Rp136,586,520,883	Rp66,963,129,844
12	Rp196,080,142,506	Rp332,666,663,390	Rp60,732,024,165
13	Rp196,080,142,507	Rp528,746,805,897	Rp55,080,740,219
14	Rp196,080,142,508	Rp724,826,948,405	Rp49,955,323,979
15	Rp196,080,142,509	Rp920,907,090,914	Rp45,306,841,991
16	Rp286,501,024,939	Rp1,207,408,115,853	Rp60,039,680,111
17	Rp286,501,024,940	Rp1,493,909,140,793	Rp54,452,820,707
18	Rp286,501,024,941	Rp1,780,410,165,734	Rp49,385,834,126
19	Rp286,501,024,942	Rp2,066,911,190,676	Rp44,790,344,754
20	Rp286,501,024,943	Rp2,353,412,215,620	Rp40,622,478,464
21	Rp375,569,394,691	Rp2,728,981,610,311	Rp48,296,142,381
22	Rp375,569,394,692	Rp3,104,551,005,003	Rp43,802,051,861
23	Rp375,569,394,693	Rp3,480,120,399,696	Rp39,726,148,976
24	Rp375,569,394,694	Rp3,855,689,794,390	Rp36,029,520,203
25	Rp375,569,394,695	Rp4,231,259,189,085	Rp32,676,873,030
26	Rp492,908,252,548	Rp4,724,167,441,633	Rp38,895,413,932
27	Rp492,908,252,549	Rp5,217,075,694,182	Rp35,276,087,368
28	Rp492,908,252,550	Rp5,709,983,946,732	Rp31,993,549,219
29	Rp492,908,252,551	Rp6,202,892,199,283	Rp29,016,460,383
30	Rp492,908,252,552	Rp6,695,800,451,835	Rp26,316,397,953

Table 4. 13 Financial Feasibility Result of Optimist Sensitivity Analysis

Financial Feasibility Analysis	
WACC	10,26%
Net Present Value (NPV)	Rp484,487,061,987
Internal Rate of Return (IRR)	14.17 %
Payback Period (PP)	10.30 year
Conclusion	Feasible

In the optimistic sensitivity analysis scenario, a simulation was conducted on an increase in revenue value of 10% from the initial projection. The results of the analysis show that the increase in revenue has a positive impact on the financial feasibility of the project. The Net Present Value (NPV) value increased significantly to Rp 484,487,061,987, which reflects that the project can generate high economic value compared to its investment costs. The Internal Rate of Return (IRR) also increased to 14.97%, which is far above the WACC value of 10.26%, indicating that the project has the potential for decent returns and is attractive to investors. In addition, the Payback Period decreased to 10.30 years, indicating that the payback period is faster than the base scenario. Thus, a 10% increase in revenue has a very positive impact on all indicators of the project's financial feasibility.

4.2.3. Risk Analysis through Scenario Approach.

In this risk analysis, the approach used is to make changes to two main variables that significantly affect the financial feasibility of the project, namely revenue and cost. The selection of these two variables is based on the consideration that fluctuations in revenue and costs are the most common risks faced in project implementation, especially in large-scale projects such as the development of special economic zones. By simulating scenarios of changes to these two variables, this analysis aims to see to what extent the project's feasibility

will be affected if more favorable conditions (best case) or worsening conditions (worst case) occur compared to the basic assumptions (base case).

1. Worst Scenario

Table 4. 14 Worst Scenario on Risk Analysis

Year	Expected Net Cash Flow	Undiscounted Balance	Present Value of Cash Flow
0	-Rp836,662,596,159	-Rp836,662,596,159	-Rp836,662,596,159
1	Rp46,909,576,965	-Rp789,753,019,194	Rp42,544,510,217
2	Rp46,909,576,965	-Rp742,843,442,229	Rp38,585,625,083
3	Rp46,909,576,965	-Rp695,933,865,264	Rp34,995,125,234
4	-Rp35,664,244,512	-Rp731,598,109,775	-Rp24,130,208,587
5	-Rp35,664,244,512	-Rp767,262,354,287	-Rp21,884,825,492
6	-Rp35,664,244,512	-Rp802,926,598,799	-Rp19,848,381,545
7	-Rp6,899,127,113	-Rp809,825,725,911	-Rp3,482,316,412
8	-Rp6,899,127,113	-Rp816,724,853,024	-Rp3,158,277,174
9	-Rp6,899,127,113	-Rp823,623,980,137	-Rp2,864,390,689
10	Rp71,381,171,136	-Rp752,242,809,001	Rp26,878,423,201
11	Rp71,381,171,136	-Rp680,861,637,865	Rp24,377,311,084
12	Rp71,381,171,136	-Rp609,480,466,730	Rp22,108,934,413
13	Rp71,381,171,136	-Rp538,099,295,594	Rp20,051,636,507
14	Rp71,381,171,136	-Rp466,718,124,459	Rp18,185,775,900
15	Rp71,381,171,136	-Rp395,336,953,323	Rp16,493,538,817
16	Rp129,411,451,674	-Rp265,925,501,649	Rp27,119,701,100
17	Rp129,411,451,674	-Rp136,514,049,975	Rp24,596,137,403
18	Rp129,411,451,674	-Rp7,102,598,301	Rp22,307,398,334
19	Rp129,411,451,674	Rp122,308,853,373	Rp20,231,632,808
20	Rp129,411,451,674	Rp251,720,305,048	Rp18,349,023,043
21	Rp181,983,780,324	Rp433,704,085,372	Rp23,402,105,416
22	Rp181,983,780,324	Rp615,687,865,696	Rp21,224,474,348
23	Rp181,983,780,324	Rp797,671,646,021	Rp19,249,477,914
24	Rp181,983,780,324	Rp979,655,426,345	Rp17,458,260,397
25	Rp181,983,780,324	Rp1,161,639,206,670	Rp15,833,720,658
26	Rp252,318,256,367	Rp1,413,957,463,036	Rp19,910,445,754
27	Rp252,318,256,367	Rp1,666,275,719,403	Rp18,057,723,339
28	Rp252,318,256,367	Rp1,918,593,975,770	Rp16,377,401,904
29	Rp252,318,256,367	Rp2,170,912,232,136	Rp14,853,439,057
30	Rp252,318,256,367	Rp2,423,230,488,503	Rp13,471,285,196

Table 4. 15 Financial Feasibility Result of Worst Scenario Risk Analysis

Financial Feasibility Analysis	
WACC	10,26%
Net Present Value (NPV)	-Rp375,367,888,931
Internal Rate of Return (IRR)	6.57 %
Payback Period (PP)	18.05 year
Conclusion	Not Feasible

In the worst-case scenario in this risk analysis, a simulation is conducted by decreasing the revenue value and simultaneously increasing the cost to see how changes in these critical variables affect the financial feasibility of the project. This approach is taken to represent the worst possible conditions that may occur in project implementation, such as decreased revenue due to decreased demand or selling prices, and increased costs due to inflation, operational inefficiencies, or supply chain disruptions.

Based on the calculation results, this scenario produces a Net Present Value (NPV) value of -Rp375,367,888,931, which indicates that the project will experience financial losses if this condition occurs. The resulting Internal Rate of Return (IRR) is only 6.57%, much lower than the cost of capital or Weighted Average Cost of Capital (WACC) of 10.26%, which means that the project's rate of return is unable to cover its capital costs. In addition, the resulting Payback Period (PP) reaches 18.05 years, indicating that the project requires a very long time to reach breakeven, exceeding the investment time limit that is generally considered feasible.

With these conditions, it can be concluded that in the worst risk scenario, this project is not financially feasible. This shows that the project has a fairly high sensitivity to declining revenues and increasing costs. Therefore, risk management and mitigation strategies against external factors that can affect revenues and costs are very important to consider before investment decisions are made.

2. Best Scenario

Table 4. 16 Best Scenario of Risk Analysis

Year	Expected Net Cash Flow	Undiscounted Balance	Present Value of Cash Flow
0	-Rp836,662,596,159	-Rp836,662,596,159	-Rp836,662,596,159
1	Rp76,083,476,362	-Rp760,579,119,797	Rp69,003,697,045
2	Rp76,083,476,362	-Rp684,495,643,436	Rp62,582,710,906
3	Rp76,083,476,362	-Rp608,412,167,074	Rp56,759,215,405
4	Rp66,702,906,572	-Rp541,709,260,502	Rp45,130,776,524
5	Rp66,702,906,572	-Rp475,006,353,930	Rp40,931,232,110
6	Rp66,702,906,572	-Rp408,303,447,357	Rp37,122,466,996
7	Rp131,479,128,803	-Rp276,824,318,554	Rp66,363,747,267
8	Rp131,479,128,803	-Rp145,345,189,751	Rp60,188,415,805
9	Rp131,479,128,803	-Rp13,866,060,947	Rp54,587,716,130
10	Rp249,733,300,629	Rp235,867,239,682	Rp94,036,525,807
11	Rp249,733,300,629	Rp485,600,540,311	Rp85,286,165,252
12	Rp249,733,300,629	Rp735,333,840,940	Rp77,350,050,111
13	Rp249,733,300,629	Rp985,067,141,569	Rp70,152,412,580
14	Rp249,733,300,629	Rp1,234,800,442,198	Rp63,624,535,262
15	Rp249,733,300,629	Rp1,484,533,742,827	Rp57,704,095,104
16	Rp352,985,878,298	Rp1,837,519,621,125	Rp73,972,367,887
17	Rp352,985,878,298	Rp2,190,505,499,424	Rp67,089,033,092
18	Rp352,985,878,298	Rp2,543,491,377,722	Rp60,846,211,765
19	Rp352,985,878,298	Rp2,896,477,256,020	Rp55,184,302,344
20	Rp352,985,878,298	Rp3,249,463,134,318	Rp50,049,249,360
21	Rp456,402,543,741	Rp3,705,865,678,060	Rp58,690,837,292
22	Rp456,402,543,741	Rp4,162,268,221,801	Rp53,229,491,468
23	Rp456,402,543,741	Rp4,618,670,765,542	Rp48,276,339,078
24	Rp456,402,543,741	Rp5,075,073,309,283	Rp43,784,091,310
25	Rp456,402,543,741	Rp5,531,475,853,024	Rp39,709,859,704
26	Rp592,092,969,942	Rp6,123,568,822,966	Rp46,722,084,756
27	Rp592,092,969,942	Rp6,715,661,792,909	Rp42,374,464,680
28	Rp592,092,969,942	Rp7,307,754,762,851	Rp38,431,402,757
29	Rp592,092,969,942	Rp7,899,847,732,793	Rp34,855,253,725
30	Rp592,092,969,942	Rp8,491,940,702,735	Rp31,611,875,317

Table 4. 17 Financial Feasibility Result of Best Scenario Risk Analysis

Financial Feasibility Analysis	
WACC	10,26%
Net Present Value (NPV)	Rp848,988,030,678
Internal Rate of Return (IRR)	17.88 %
Payback Period (PP)	9.06 year
Conclusion	Feasible

In the best-case scenario in this risk analysis, a simulation was conducted by increasing the revenue value and simultaneously decreasing the cost, to represent the most optimistic conditions that can occur during project implementation. This scenario describes a situation where revenue increases significantly due to high demand or a better selling price than the initial projection, as well as efficient cost control, for example through operational efficiency, raw material price negotiations, or effective use of technology.

The results of the analysis show that this optimistic scenario provides a Net Present Value (NPV) of Rp 848,988,030,678, which means that the project is able to generate added value financially. The Internal Rate of Return (IRR) reaches 17.88%, far above the cost of capital (WACC) of 10.26%, so this project is considered very attractive financially. In addition, the investment return period or Payback Period (PP) is also much shorter, which is 9.06 years, which reflects the efficiency in the initial capital return process.

With these results, it can be concluded that in the best risk scenario, this project is financially feasible to run, even providing significantly profitable results. This analysis also confirms that increasing revenue and controlling costs are key factors in improving the overall viability and profitability of a project.

CHAPTER V

DISCUSSION

5.1. Overview of Financial Performance

The analysis of PT. XYZ's financial performance, as the developer and operator of the Morowali Special Economic Zone (SEZ), demonstrates that the project has strong financial fundamentals and long-term sustainability. Based on the detailed calculations presented in the previous chapter, the project is projected to generate positive cash flows over its economic life, with a steady increase in both revenue and profitability.

The company's projected financial structure consists of land sales, leasing activities, and the provision of essential services including electricity, water, waste management, and port operations. Each revenue stream has been carefully modeled to reflect realistic market conditions and growth trends in industrial estate development.

5.2. Revenue Structure Analysis

The main components of PT. XYZ's revenue consists of:

5.2.1. Land Sales and Leases.

These serve as the core revenue generators in the early phases of development. Land sales (for the salable portion) and land leases (for the leasable portion) have been priced strategically and are projected to grow in line with inflation and demand increases.

5.2.2. Service Charges.

PT. XYZ will generate recurring income from electricity sales, water provision, wastewater treatment, port fees, and other facilities. These services are modeled based on per-unit charges and usage assumptions aligned with the number of operational tenants.

This diversified revenue structure ensures resilience against market volatility and supports long-term profitability. The projection methodology is conservative, which strengthens the credibility of the results.

5.3. Cost and Operational Expenditure Analysis

The cost structure includes cost of goods sold. These primarily consist of direct utility provision costs, such as electricity and water sourcing, which vary according to usage. Operating expenses include employee salaries, maintenance, security, administrative costs, depreciation, and taxes. The operating cost projections are in line with industrial estate benchmarks and adjusted with an assumed annual inflation rate of 3%. In general, the company maintains a healthy margin between revenue and total cost, ensuring sustainable operating income.

5.4. Capital Expenditure and Investment Evaluation

The total initial investment of Rp 1,284,493,270,000 reflects the large scale and complexity of development required to build a Special Economic Zone (SEZ). The allocation of funds covers various important aspects, starting from land and infrastructure development of Rp 1.11 trillion, which includes earthworks, road construction, drainage systems, lighting, and plot preparation.

Furthermore, Rp 90 billion is allocated for service infrastructure such as electricity, clean water systems, waste management, and port support facilities. Environmental and other supporting facilities are allocated Rp 78 billion, including green open spaces, office buildings, and environmentally friendly infrastructure. Meanwhile, working capital of Rp 7.5 billion is prepared to ensure liquidity and operational readiness in the early stages of development. Overall, this investment plan emphasizes long-term asset productivity and infrastructure quality, in line with national standards for the SEZ area.

5.5. Sensitivity Analysis Discussion

Sensitivity analysis was conducted to assess how variations in revenue levels could impact the financial feasibility of the Morowali Special Economic Zone. In this analysis, revenue was adjusted by $\pm 10\%$ from the base case scenario to create pessimistic and optimistic cases. The purpose of this analysis is to test the robustness of the investment under minor changes in key variables.

In the Pessimistic Scenario, where revenue was reduced by 10%, the project experienced a significant decline in its financial indicators. The Net Present Value (NPV) dropped to -Rp10,866,920,157, indicating that the investment may result in a net loss under these conditions. The Internal Rate of Return (IRR) decreased to 10.12%, which is relatively close to the assumed discount rate, raising concerns about the investment's margin of safety. The Payback Period (PP) extended to 13.65 years, showing that it would take much longer for the project to recover its initial investment. This scenario shows that a 10% decrease in revenue would have a considerable negative impact on project viability, potentially rendering the project financially unfeasible.

In the Optimistic Scenario, where revenue was increased by 10%, the NPV rose to Rp484,487,061,987, suggesting a substantial gain from the investment. The IRR improved to 14.17%, offering a stronger return and further distance from the discount rate, thus strengthening the project's financial attractiveness. The Payback Period shortened to 10.30 years, allowing a quicker recovery of the initial investment.

This analysis shows that the project is sensitive to changes in revenue, particularly in negative deviations. While the optimistic scenario still yields feasible results, the pessimistic outcome underlines a risk that should be considered by stakeholders. This emphasizes the importance of accurate revenue forecasting and developing risk mitigation strategies.

5.6. Risk Analysis through Scenario Approach Discussion

In addition to sensitivity testing, a risk analysis was conducted to assess the financial feasibility of the Morowali Special Economic Zone (SEZ) under more extreme conditions. This analysis used a scenario approach that simulates changes in both revenue and cost to reflect potential risks from market fluctuations or operational challenges.

The first scenario is a worst-case scenario. In this scenario, revenue was decreased by 20%, and operational costs were increased by 10%. The results show a drastic decline in financial performance. The Net Present Value (NPV) fell to –Rp375,367,888,931, which indicates a significant potential loss. This negative value suggests that the project is not financially viable under these conditions. The Internal Rate of Return (IRR) declined sharply to 6.57%, well below the assumed discount rate, making the investment unattractive from a return perspective. The Payback Period (PP) extended to 18.05 years, reflecting a prolonged time required to recover the initial investment, well beyond acceptable investment horizons. This scenario illustrates the project's vulnerability to unfavorable conditions, and it reinforces the importance of considering downside risks in strategic planning and financial evaluation.

The second scenario is considered the best. In this more optimistic projection, revenue was increased by 20%, and costs were decreased by 10%. The financial performance indicators improved significantly. The NPV reached Rp848,988,030,678, reflecting a strong positive return and signaling a highly profitable investment. The IRR increased to 17.88%, indicating a robust return well above the discount rate and solidifying the project's financial feasibility. The Payback Period decreased to 9.06 years, demonstrating a faster return on investment. These results suggest that while the project has strong potential under favorable market and operational conditions, it also carries substantial risks if assumptions worsen. Therefore,

decision-makers must take a cautious approach and consider risk mitigation strategies to enhance the project's resilience.

5.7. Student's Calculation and Company's Report Comparison

In this study, the financial indicators (Net Present Value, Internal Rate of Return, and Payback Period) were calculated by the student using financial data provided by the company. The results show some differences compared to the official values stated in the company's feasibility report. The comparison is shown in the table below:

Indicator	Company's Result	Student's Calculation
NPV	Rp 406.580.709.667	Rp 236.810.093.836
IRR	12,3%	12,61%
PP	12,42 years	11,61 years

These differences may be caused by the following factors:

1. Data Aggregation Method

The student used simplified yearly data by dividing the cash flow values from grouped periods (such as "Year 1–3") into equal annual amounts. This approach may not fully reflect the exact yearly fluctuations used by the company in its detailed financial model.

2. Cash Flow Structure

The company might have included more detailed financial elements, such as inflation adjustment, contingency reserves, or financing structure, which were not entirely available in the student's version.

3. Initial Investment Assumption

The student calculated the initial investment as a one-time outflow at Year 0, while the company may have distributed or adjusted investment over multiple years or used a different treatment of capital expenditure.

4. Academic and Corporate Approach Differences

The student's calculation follows a consistent and educational structure that is appropriate for academic analysis. On the other hand, the company might have used internal corporate models with more complex financial assumptions.

Although the results may differ from the company's internal calculations, the student's financial analysis still demonstrates several important strengths. Firstly, the transparency of the process is evident, as each step in the calculation is clearly shown and easy to trace. This makes the overall results more understandable and accessible for academic readers, especially those who are learning the basics of financial feasibility studies. Secondly, the analysis shows a high level of consistency. The student applied a constant Weighted Average Cost of Capital (WACC) of 10.26% and a fixed project horizon of 30 years throughout the entire evaluation, which helps maintain the integrity and comparability of the results. Lastly, the simplified approach used by the student provides strong educational value. While it may not capture the full complexity of real-world corporate finance, it is highly effective for academic purposes, as it introduces key financial concepts in a structured, logical, and easy-to-understand manner.

CHAPTER VI

CONCLUSION AND RECOMMENDATION

6.1. Conclusion

Based on the comprehensive analysis of the revenue structure, cost components, capital expenditure, and financial projections for PT. XYZ, as the developer and operator of the Morowali Special Economic Zone (SEZ), several key conclusions can be drawn:

1. The Net Present Value (NPV) of Rp 236.810.093.836 -shows that the present value of the project's future cash flows is positive, which means that the project can provide financial benefits.
2. The Internal Rate of Return (IRR) of 12.61% is higher than the Weighted Average Cost of Capital (WACC) of 10.26%, which indicates that the rate of return on investment exceeds the cost of capital.
3. The Payback Period of 11.61 years shows that the time required to return the initial investment is relatively long but remains within acceptable limits depending on the life of the project.
4. Based on the results of the financial analysis, the Morowali Special Economic Zone is considered financially feasible, as shown by the positive NPV, IRR above the discount rate, and a reasonable payback period.

6.2. Recommendation

Based on the conclusions above, several strategic recommendations are proposed to ensure successful implementation and long-term sustainability of the project:

6.2.1. *Enhance Service Quality and Utility Integration.*

Continuous investment in high-quality service delivery, especially for power, water, and port logistics, is crucial to maintaining tenant satisfaction and operational efficiency. Consider the potential integration of renewable energy (solar panels) and smart utility management to optimize operational costs in the long term.

6.2.2. *Establish a Robust Risk Management Framework.*

Given the large scale of investment, PT. XYZ should implement a structured risk management approach that includes financial, operational, regulatory, and environmental dimensions. Insurance schemes, contingency reserves, and environmental compliance audits should be included in annual budgeting.

6.2.3. *Develop a Phased Development Strategy.*

To manage financial exposure and align infrastructure development with actual demand, a phased or modular development model should be implemented. Land development, utility installation, and tenant onboarding can be sequenced in tiers to match the market absorption rate.

6.2.4. Leverage Government and Strategic Partnership.

Actively pursue strategic partnerships with both government agencies (for incentives, permits, and support) and private investors (for service outsourcing and infrastructure joint ventures). Maximizing the benefits of SEZ regulation will enhance the project's competitiveness.

6.2.5. Establish Performance Monitoring and Adaptive Planning.

PT. XYZ should create a Key Performance Indicator (KPI) framework covering financial performance, tenant occupancy rates, service satisfaction, and environmental compliance. A data-driven approach to planning and adjustment will ensure responsive and evidence-based decision making.

REFERENCES

- Adnyana, I. M. (2020). Buku: Studi Kelayakan Bisnis.
- Chaerul, M., & Andana, R. F. (2020). Study Valuasi Smelter Pengolahan Nikel Melalui Pendekatan Analisa Biaya Manfaat (Studi Kasus: Perusahaan Tambang Nikel di Sulawesi Selatan) Valuation of Nickel Smelter Processing with Cost Benefit Analysis Approach (Case Study: Nickel Mining). *Jurnal Teknik Lingkungan*, 26(1).
- Damayanti, C., & Pratama, K. S. D. (2014). Urgensi Pembangunan Smelter Oleh Perusahaan Tambang Di Indonesia Sesuai Amanat Undang-Undang Nomor 4 Tahun 2009 Tentang Pertambangan Mineral Dan Batubara. *Privat Law Edisi*, 6.
- Dhaniswara, A., & Muthohar, I. (2023, March). Financial and Economic Feasibility Study of Tempel-Yogyakarta-Samas Urban Railway Line. In *International Conference on Railway and Transportation (ICORT 2022)* (pp. 39-47). Atlantis Press.
- Hasibuan, S. J., & Handriyani, R. (2023). Cash flow analysis as a planning and control tool in PT. Berma karya Bersama. *Jurnal Ekonomi*, 12(01), 1666-1671.
- Höskuldsdóttir, B. (2021). *Feasibility Analysis of Implementing Real-time Elemental Analysis in Aluminum Smelter Potroom* (Doctoral dissertation).
- Indonesia Investment Guidebook*. (2021). Jakarta, Indonesia: Ministry of Investment of Indonesia.
- Indonesia. *Peraturan Pemerintah Nomor 40 Tahun 2021 tentang Penyelenggaraan Kawasan Ekonomi Khusus*. Sekretariat Negara. Jakarta.
- Indonesia. *Undang-Undang Nomor 39 Tahun 2009 tentang Kawasan Ekonomi Khusus*. Sekretariat Negara. Jakarta.
- Irsan, I., & Permana, K. W. A. (2021, March). Pengaruh Aspek Pemasaran, Aspek Teknik, Dan Aspek Keuangan Studi Kelayakan Bisnis Terhadap Pendapatan Peternak Walet Di Kecamatan Lalan Kabupaten Musi Banyuasin Sumatera Selatan. In *FORBISWIRA FORUM BISNIS DAN KEWIRAUSAHAAN* (Vol. 10, No. 2, pp. 89-105).
- Jafari, H., Faraji, M., & Khaleghi Ardehali, P. (2020). A heuristic method to calculate the real internal rate of return (RIRR). *International Journal of Applied Operational Research-An Open Access Journal*, 10(1), 31-40.
- Malisa, M., & Fakhruddin, F. (2017). Analisis investasi langsung di Indonesia. *Jurnal Ilmiah Mahasiswa Ekonomi Pembangunan*, 2(1), 116-124.
- Maramis, F., & Prasetyo, A. D. (2022, July). Financial Feasibility Analysis of Borrow-to-Use Permit of Forest Area to Maximize Coal Reserve in PT. XYZ. In *ICSST 2021: Proceedings of the 1st International Conference on Social, Science, and Technology, ICSST 2021, 25 November 2021, Tangerang, Indonesia* (p. 83). European Alliance for Innovation.

- Nugroho, R. E., & Raharja, A. J. (2022). Financial Analysis and Fast Tracking of Sponge Ferro Alloy Smelter Construction Project at PT Sebuk Iron Lateritic Ores in Sebuk Island, South Kalimantan. *Saudi J Eng Technol*, 7(6), 335-342.
- Puspita, D., Ervina, N., & Matwar, H. (2022). Analisis Studi Kelayakan Bisnis terhadap Usaha Kerupuk Sari Rasa di Desa Deli Serdang Ditinjau Dari Aspek Produksi, Aspek Pemasaran dan Aspek Keuangan. *VISA: Journal of Vision and Ideas*, 2(1), 160-171.
- Putri, N. (2021, March). Preparation and Analysis of the Profit and Loss Statement of Kiosk Rice Raihan. In *Operations Research: International Conference Series* (Vol. 2, No. 1, pp. 22-27).
- Rofa, I. T., Meilani, A. R., an Hasibu, N. M., Nasution, A. K., & Suhairi, S. (2021). Analisis Aspek Pemasaran Dalam Studi Kelayakan Bisnis. *VISA: Journal of Vision and Ideas*, 1(2), 222-235.
- Saleh, S. (2020). Feasibility study for startup company. *Turku University of Applied sciences*.
- Sari, W. P., & Obadja, N. N. (2023). Analisis Studi Kelayakan Bisnis Pada Usaha Mikro Kecil dan Menengah (UMKM) Kue Bangkit Kenanga Ditinjau dari Aspek Pemasaran dan Manajemen. *EKONOMIKA45: Jurnal Ilmiah Manajemen, Ekonomi Bisnis, Kewirausahaan*, 11(1), 439-449.
- Singh, A. K., Bravo-Ureta, B., & Yang, X. (2022). Financial Feasibility study of GREENBOX technology for crop production in an urban setting. In *2022 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers.
- Shubina, S., Miroshnyk, O., Belyaninova, K., & Bieliaiev, A. (2022). ENSURING ACCOUNTING AND ANALYSIS OF REVENUE AND EXPENSES IN THE ENTERPRISE PROFIT MANAGEMENT SYSTEM. *Financial and credit systems: prospects for development*, 2(5), 26-35.
- Ulfa, Z. M., & Prasetyo, A. D. (2020). Financial Feasibility Study of the Construction of New High School Building (Case Study of XYZ Foundation). *European Journal of Business and Management Research*, 5(4).
- Vafadar, A., Tolouei-Rad, M., Hayward, K., & Abhary, K. (2016). Technical feasibility analysis of utilizing special purpose machine tools. *Journal of Manufacturing Systems*, 39, 53-62.
- Wibowo, A. (2022). Studi Kelayakan & Perencanaan Bisnis. Semarang. *Yayasan Prima Agus Teknik*.
- Yusmiana, G., & Alimin, F. (2021). Makalah Aspek Manajemen Pada Studi Kelayakan Bisnis.
- Yusriansyah, I., & Santoso, B. (2020). Studi Kelayakan Bisnis Pada Usaha Software X di PT. XYZ. *JUMINTEN*, 1(5), 97-108.

