

## Project Management Strategy to Get Project Expansion Using Value-Focused Thinking and Analytical Hierarchy Process (Case Study: PT PLN Nusantara Power Construction)

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**ABSTRACT:** PLN Nusantara Power Construction (PLN NPC) is a second-tier company of PT Perusahaan Listrik Negara (Persero) and is under the auspices of PT PLN Nusantara Power. Currently, PLN NPC has been trusted to participate in a global project, namely ECRL (East Coast Rail Link) in Malaysia, which is also the first global project for PLN NPC. ECRL (East Cost Rail Link) is an electrified double-track railroad project being built by the Malaysian government under the auspices of Malaysia Rail Link Sdn Bhd. The project has been under construction since 2019, and it runs from Malaysia's eastern tip (Kelantan, Terengganu, Pahang) to its western tip (Selangor, Putrajaya), with a railroad length of +665 kilometers.

The EPCC project, which is being carried out by PLN NPC at ECRL Malaysia, includes numerous areas such as the development of electricity power infrastructure, the procurement of labor engineers, procurement and construction. This project was implemented successfully. However, by the beginning of 2025, PLN NPC saw an opportunity to add and expand the Malaysia ECRL project. Given this possibility, PLN NPC must take strategic movement to capitalize on it and expand the project.

The author's analysis through interviews and brainstorming with experts and further analysis using Value Focused Thinking (VFT) shows that there are five alternative strategies that PLN NPC can implement to obtain project expansion in the ECRL project: (1) Enhance Company Assets in Technology, (2) Networking with Global Companies, (3) Increase Contracts with Subcontractors, (4) Engage & Communicate with Stakeholders, (5) Monitoring Stakeholder Movement. The next methodological approach to determine which alternative strategy is appropriate for PLN NPC is the use of the Analytic Hierarchy Process (AHP), which indicates that Networking with Global Companies is the appropriate alternative strategy for PLN NPC to achieve the objectives of the ECRL project, namely project expansion.

**KEYWORDS:** AHP, EPCC Services, Global Networking, Project Expansion, VFT.

### INTRODUCTION

A country's economic growth can be measured in a variety of ways, including consumption, currency value, export volume, and inflation. In this case, the context of a country's economic growth may be seen by examining the growth of GDP in each country. According to Mckinsey Company data, the GDP growth of Southeast Asian countries would be positive in the fourth quarter of 2024. Southeast Asia's GDP growth rate averaged 5.1%, with the Philippines, Vietnam, Indonesia, Singapore, Malaysia, and Thailand serving as the primary drivers of this expansion. A country takes numerous strategic efforts to improve its economic growth, one of which is the development of public facilities and infrastructure. This occurs as part of a country's strategic initiatives to drive its economy; one specific example of public facility and infrastructure development is the provision of public transportation for inhabitants in a country. One of a country's strategic economic development efforts, as Malaysia has done.

Malaysia is currently vigorously developing its ECRL (East Cost Rail Link) infrastructure. Malaysia established the ECRL initiative with the goal of increasing regional connections, from East to West and South to North, in order to accelerate regional growth, increase the national economy, and construct an efficient economic cycle.

ECRL (East Cost Rail Link) is an electrified double-track railroad project being built by the Malaysian government under the auspices of Malaysia Rail Link Sdn Bhd. The project has been under construction since 2019, and it runs from Malaysia's eastern tip (Kelantan, Terengganu, Pahang) to its western tip (Selangor, Putrajaya), with a railroad length of +665 kilometers. Malaysia's mega project involves a large number of stakeholders. Malaysia collaborates with a wide range of stakeholders in a variety of sectors, the most prominent of which is energy. According to some candidates, Malaysia values PT PLN Nusantara Power Construction as a supplier in the development of energy infrastructure and considers it a partner in the ECRL project.

## BUSINESS ISSUE

The EPCC project, which is being carried out by PLN NPC at ECRL Malaysia, includes numerous areas such as the development of electricity power infrastructure, the procurement of labor engineers, procurement and construction. This project was implemented successfully. However, by the beginning of 2025, PLN NPC saw an opportunity to add and expand the Malaysia ECRL project. Given this possibility, PLN NPC must take strategic movement to capitalize on it and expand the project.

Although the project was successful, PLN NPC management felt that there were several issues that needed to be addressed in the ECRL project. Management assessed that the company needed to evaluate its services and improve its capabilities. In this regard, management identified several aspects related to inefficiencies in project operations. Additionally, management believes the company needs to expand by exploring opportunities in the global market and collaborating with global players in the EPCC industry. This is necessary to enhance the company's capacity and capabilities in conducting business. Furthermore, management has noted the emergence of new competitors who are beginning to submit bids for this project. By evaluating and developing new strategies, PLN NPC can increase its chances of winning the ECRL project and expanding its scope.

## METHODOLOGY

In this research the author will use both qualitative and quantitative methods, with the aim of this research have been set: (1) To analyze the Internal and External business situation of PLN NPC; (2) To analyze current business strategy of PLN NPC used on ECRL project in Malaysia; (3) To create a solid business strategy to get project expansion of PLN NPC. Data will be collected using primary and secondary data to support analysis and identify alternative strategies for PLN NPC. Primary data will be collected using quantitative methods, namely by distributing questionnaires to top-level management at PLN NPC to explore management's perspectives and understanding in running and developing the business. Additionally, qualitative studies will be conducted through in-depth interviews with PLN NPC management to obtain comprehensive information about the company's current condition. Secondary data will be collected using secondary sources, including textbooks, journal articles, and observations.

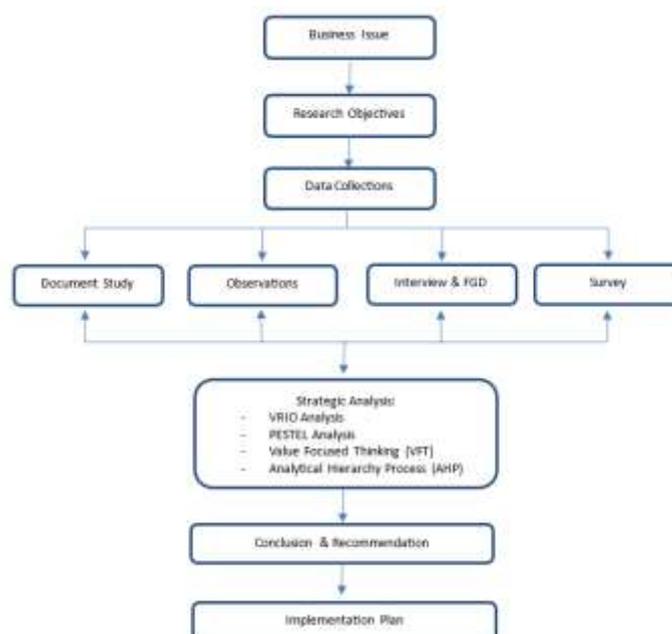


Figure 1. Research Framework

## RESULT AND DISCUSSION

### A. Value Focused Thinking (VFT) Analysis

Value Focused Thinking is designed to focus the attention of decision makers where emphasizing values that are considered important can reflect the goals of decision makers. Based on the results deep analysis, where the fundamental objective in this study



is to find the best strategy to get the project expansion on ECRL project, the resulting criteria for consideration in choosing the best alternative strategy can be seen in the hierarchical mean objective as follows :

1. *Company Competitiveness*: Several activities carried out by an institution either in the form of strategies, investments, or other activities to increase the value of the Company in order to remain competitive with competitors in an industry.
2. *Company Asset*: A collection of things in the form of goods, human resources, licenses, or other aspects that can provide value to the company, can support the company's operations, and can increase the marketability of a company.
3. *Business Services Evaluations*: An activity carried out by the Company in the form of a review, starting from upstream to downstream. This is done with the aim of reviewing the performance or performance of a product or even the Company.
4. *Stakeholder Management*: Strategic steps taken by an agency to stakeholders, with the aim of building a good relationship between the agency and the owners of capital.

After the problems are identified and the values (criteria) to be considered in the evaluation are determined, a value-based approach is typically employed to generate significant alternatives for achieving those values. Brainstorming is conducted through interviews and Focus Group Discussions (FGD) to delve deeper into information from Subject Matter Experts (SME) and internal stakeholders at PLN NPC. Cross-functional discussions are held to obtain comprehensive data and information to support the implementation of the ECRL Project development. In accordance with the Value Focused Thinking (VFT) process, PLN NPC has identified five alternative strategy to address the strategic movement to get project expansion on ECRL Project.

1. Enhance Company Asset in Technology

The addition of assets has various forms either in the form of investment or other forms. The results of the author's analysis, as an alternative strategy that can be carried out by PLN NPC with the aim of obtaining project expansion at ECRL, namely by increasing the Company's assets, especially in the aspect of technology. This is done as a form of expansion of the Company, especially in the aspect of optimizing services. In addition, the addition of these assets is a form of long-term investment that can be used by the Company in the development of services and other business aspects. Concrete example of adding assets is by subscribing to Building Information Modelling (BIM) software.

2. Networking with Global Company:

In running a business, a company cannot run its own business. The company definitely needs the involvement of other parties in running its business. Likewise, in this case PLN NPC, as one of the leading companies in Indonesia, has a strong network and business connections. However, the results of the author's interviews with sources, explained that for networking in a global scope, it needs to be recognized that PLN NPC is still not strong in this regard. The author considers that this really needs to be addressed by PLN NPC. One of the indicators of the Company's credibility can be seen from the projects that have been carried out and become the Company's portfolio. By opening connections with global players in the NPC industry, it can be one of the alternative solutions for PLN NPC in achieving the Company's objective, namely getting an expansion project on the Malaysian ECRL project.

3. Increase the contract scope with Sub-Contractor:

PLN NPC as a leading company has sub-contractors who act as third parties. In its implementation, this sub-contractor will play a role in the Company's business operations. Until now, PLN NPC has connected with several sub-contractors in several fields related to NPC services and binds the sub-contractor with a work contract. Sub-contractors will work based on projects that will be made by PLN NPC. The results of the author's analysis show that before carrying out project expansion, PLN NPC needs to extend the contract with a wider scope of work and involve several sub-contractors in other fields outside of the current field. This needs to be done as a form of expansion of the Company in improving the performance of services before being offered to stakeholders, in this case the ECRL project

4. Engage & Communication with Stakeholders:

Stakeholder Management plays a crucial role in the strategic structure of a company. By doing stakeholder management, the company can find out how the stakeholder conditions and can identify what stakeholder needs are. Engaging & Communicating with stakeholders is the most basic step in stakeholder management. This has been done by PLN NPC, and the author considers that this needs to be maintained by the Company and must be present in every strategic movement that will be carried out by PLN NPC, one of which is a strategic movement on the ECRL project.

5. Monitoring Stakeholder Movement

After building relationships with stakeholders through the engage and communication step, Monitoring Stakeholder Movement is the next step in the stakeholder management structure. This needs to be done by a company, with the aim of analyzing more deeply what business strategies will be carried out by stakeholders. The results of the author's analysis show that this needs to be done by PLN NPC in the Company's strategic movement before carrying out project expansion on the ECRL project.

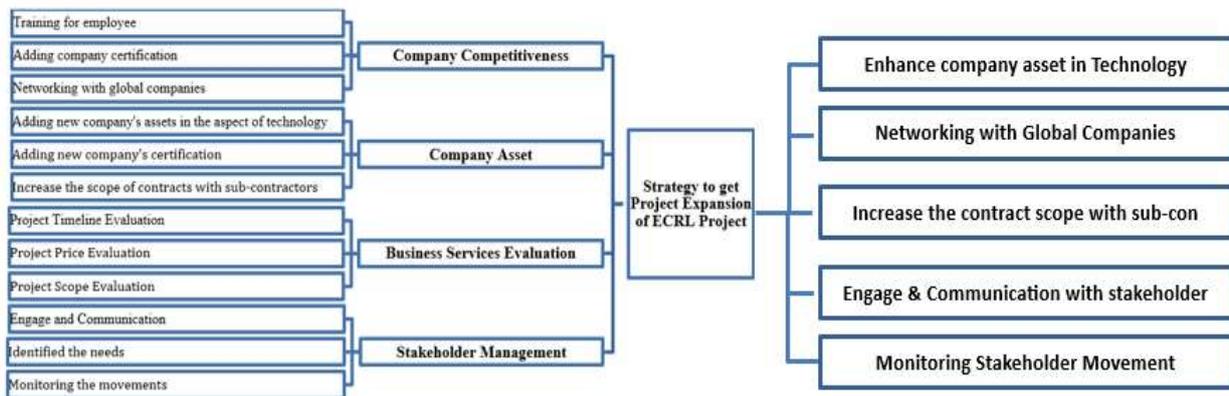


Figure 2. Value Focused Thinking Hierarchy

B. Analytical Hierarchy Process (AHP)

This research focuses on decision analysis in selecting the optimal strategy to get project expansion on ECRL Project for PLN NPC. In accordance with the previously outlined Value-Focused Thinking (VFT) analysis results, there are five alternative project schemes that can be utilized by PLN NPC. To select the optimal solution, four criteria have been established based on the opinions and expertise interviews.



Figure 3. Hierarchy Structure AHP Model

PAIRWISE COMPARISON AHP MODEL

The pairwise comparison between the criteria and the aforementioned alternatives is translated into a questionnaire to measure the relative importance of these elements. Assessments are provided based on the preferences of decision-makers (selected respondents). Based on the interview results with PLN NPC involving five experts engaged in the decision-making process for this project, pairwise comparison assessments between criteria and alternatives were obtained from each expert. The calculation results for pairwise comparisons of design criteria and pairwise comparisons of design alternatives are presented on this table.



**Table 1. Pairwise Comparison of Criteria**

No	Criteria	Respondent					Mean
		R1	R2	R3	R4	R5	
1	Company Competitiveness - Company Asset	9.00	1.0 0	0.3 3	0.14	7.0 0	<b>3.5</b>
2	Company Competitiveness - Business Services Evaluations	0.11	0.1 4	3.0 0	0.13	1.0 0	<b>0.9</b>
3	Company Competitiveness - Stakeholder Management	9.00	7.0 0	0.3 3	2.00	0.1 4	<b>3.7</b>
4	Company Asset - Business Services Evaluations	0.11	0.1 4	5.0 0	0.14	0.2 0	<b>1.1</b>
5	Company Asset - Stakeholder Management	7.00	1.0 0	0.2 5	4.00	0.1 4	<b>2.5</b>
6	Business Services Evaluations - Stakeholder Management	9.00	7.0 0	0.2 0	5.00	1.0 0	<b>4.4</b>

**Table 2. Pairwise Comparison of Alternative in each Criteria**

Criteria	Alternatives	Respondent					Mean
		R1	R2	R3	R4	R5	
<b>Company Competitiveness</b>	Enhance Company asset in Technology - Networking with Global Company	5.0	0.1	0.2	0.5	0.1	<b>1.20</b>
	Enhance Company asset in Technology - Increase the Contract scope with sub-con	5.0	0.1	0.2	0.3	0.1	<b>1.15</b>
	Enhance Company asset in Technology - Engage & Communication with Stakeholder	5.0	7.0	0.5	4.0	1.0	<b>3.50</b>
	Enhance Company asset in Technology - Monitoring Stakeholder Movements	5.0	7.0	3.0	0.3	1.0	<b>3.27</b>
	Networking with Global Company - Increase the contract with sub-con	5.0	7.0	1.0	6.0	1.0	<b>4.00</b>
<b>Company Asset</b>	Networking with Global Company - Engage & Communication with stakeholder	5.0	7.0	5.0	0.5	7.0	<b>4.90</b>
	Networking with Global Company - Monitoring Stakeholder Movements	5.0	7.0	7.0	0.3	7.0	<b>5.25</b>
	Increase the contract scope with sub-con - Engage & Communication with stakeholder	0.2	7.0	7.0	5.0	7.0	<b>5.24</b>
	Increase the contract scope with sub-con - Monitoring Stakeholder Movements	0.2	7.0	7.0	5.0	7.0	<b>5.24</b>
<b>Company Asset</b>	Engage & Communication with Stakeholder - Monitoring Stakeholder Movements	0.2	2.0	3.0	4.0	1.0	<b>2.04</b>
	Enhance Company asset in Technology - Networking with Global Company	5.0	7.0	0.2	4.0	0.1	<b>3.27</b>
	Enhance Company asset in Technology - Increase the Contract scope with sub-con	5.0	0.1	0.1	0.3	0.1	<b>1.14</b>
	Enhance Company asset in Technology - Engage & Communication with Stakeholder	5.0	2.0	0.3	5.0	1.0	<b>2.67</b>



<b>Stakeholder Management</b>	Enhance Company asset in Technology - Monitoring Stakeholder Movements	5.0	2.0	3.0	3.0	1.0	<b>2.80</b>
	Networking with Global Company - Increase the contract with sub-con	5.0	7.0	5.0	0.3	1.0	<b>3.67</b>
	Networking with Global Company - Engage & Communication with stakeholder	5.0	7.0	5.0	0.3	7.0	<b>4.85</b>
	Networking with Global Company - Monitoring Stakeholder Movements	5.0	7.0	5.0	3.0	7.0	<b>5.40</b>
	Increase the contract scope with sub-con - Engage & Communication with stakeholder	0.2	7.0	7.0	4.0	7.0	<b>5.04</b>
	Increase the contract scope with sub-con - Monitoring Stakeholder Movements	0.2	7.0	7.0	4.0	7.0	<b>5.04</b>
	Engage & Communication with Stakeholder - Monitoring Stakeholder Movements	0.2	2.0	7.0	0.1	1.0	<b>2.07</b>

**SYTHESIZE RESULT TO DETERMINE ALTERNATIVE SOLUTIONS**

From the results of pairwise comparisons for criterion pairs and alternative pairs, the next step is to conduct synthesis calculations to obtain eigen values. In this phase, paired comparison matrices are constructed at both the criteria level and the alternative level, as shown in this Tables.

**Table 3. Pairwise Comparison Matrix and Eigen Vector of Criteria**

Criteria	Company Competitiveness	Company Asset	Business Services Evaluation	Stakeholder Management	Eigen Vector
Company Competitiveness	1.0	3.5	0.9	3.7	<b>0.39</b>
Company Asset	0.3	1.0	1.1	2.5	<b>0.21</b>
Business Services Evaluation	1.1	0.9	1.0	4.4	<b>0.32</b>
Stakeholder Management	0.3	0.4	0.2	1.0	<b>0.08</b>

**Table 4. Pairwise Comparison Matrix and Eigen Vector of Criteria**

Company Competitiveness						
Alternative	Enhance Company asset in Technology	Networking with Global Company	Increase the contract scope with sub-con	Engage & Communication with Stakeholder	Monitoring stakeholder movements	
Enhance Company asset in Technology	1.00	1.20	1.15	3.50	3.27	
Networking with Global Company	0.84	1.00	4.00	4.90	5.25	
Increase the contract scope with sub-con	0.87	0.25	1.00	5.24	5.24	
Engage & Communication with Stakeholder	0.29	0.20	0.19	1.00	2.04	
Monitoring stakeholder movements	0.31	0.19	0.19	0.49	1.00	



**Company Asset**

Alternative	Enhance Company asset in Technology	Networking with Global Company	Increase the contract scope with sub-con	Engage & Communication with Stakeholder	Monitoring stakeholder movements
Enhance Company asset in Technology	1.00	3.27	1.14	2.67	2.80
Networking with Global Company	0.31	1.00	3.67	4.85	5.40
Increase the contract scope with sub-con	0.88	0.27	1.00	5.04	5.04
Engage & Communication with Stakeholder	0.38	0.21	0.20	1.00	2.07
Monitoring stakeholder movements	0.36	0.19	0.20	0.48	1.00

**Business Services Evaluations**

Alternative	Enhance Company asset in Technology	Networking with Global Company	Increase the contract scope with sub-con	Engage & Communication with Stakeholder	Monitoring stakeholder movements
Enhance Company asset in Technology	1.00	1.15	2.08	3.43	3.25
Networking with Global Company	0.87	1.00	4.42	4.83	4.63
Increase the contract scope with sub-con	0.48	0.23	1.00	4.14	2.08
Engage & Communication with Stakeholder	0.29	0.21	0.24	1.00	0.94
Monitoring stakeholder movements	0.31	0.22	0.48	1.06	1.00

**Stakeholder Management**

Alternative	Enhance Company asset in Technology	Networking with Global Company	Increase the contract scope with sub-con	Engage & Communication with Stakeholder	Monitoring stakeholder movements
Enhance Company asset in Technology	1.00	1.16	0.19	0.94	2.64
Networking with Global Company	0.86	1.00	1.72	4.04	5.20
Increase the contract scope with sub-con	5.34	0.58	1.00	5.60	5.60
Engage & Communication with Stakeholder	1.06	0.25	0.18	1.00	2.30
Monitoring stakeholder movements	0.38	0.19	0.18	0.43	1.00



Table 5. Priority Vector/ Eigen Vector of Alternative Solutions in Each Criteria

Alternative Solutions	Company Competitiveness	Company Asset	Business Services Evaluation	Stakeholder Management
Enhance Company asset in Technology	0.27	0.31	0.30	0.15
Networking with Global Company	0.37	0.32	0.38	0.32
Increase the contract scope with sub-con	0.23	0.24	0.17	0.38
Engage & Communication with Stakeholder	0.08	0.08	0.07	0.10
Monitoring stakeholder movements	0.06	0.06	0.08	0.05

**DEVELOPMENT OF PRIORITY RANKING**

The initial step in determining the priority ranking of criteria involves calculating the Priority Vectors for both criteria and alternative solutions. From these calculations, weights for each criterion and alternative solution are obtained. Based on the weights assigned to all criteria and alternative solutions, Company Asset achieved the highest weight in the criteria priority ranking (29.2%). Assessment of Company Asset criteria can directly affect business operations. The next criterion is Stakeholder management (26.1%). This criterion affects the sustainability of a project where stakeholder management can determine the sustainability of a project. Business Services Evaluation (23.4%), which affects the development of the organization and has an impact on the development of products and services. The last criterion is Company Competitiveness (21.3%), which can affect the present company in the eyes of stakeholders and competitors.

The next stage of the Analytic Hierarchy Process (AHP) involves calculating the rankings of alternative solutions by multiplying the alternative vector matrix with the criteria vector matrix. The detailed calculation of alternative rankings is as follows:

$$\text{Ranking of Alternative} = \begin{bmatrix} 0.27 & 0.31 & 0.30 & 0.15 \\ 0.37 & 0.32 & 0.38 & 0.32 \\ 0.23 & 0.24 & 0.17 & 0.38 \\ 0.08 & 0.08 & 0.07 & 0.10 \\ 0.06 & 0.06 & 0.08 & 0.05 \end{bmatrix} \times \begin{bmatrix} 0.39 \\ 0.21 \\ 0.32 \\ 0.08 \end{bmatrix} = \begin{bmatrix} 0.28 \\ 0.36 \\ 0.22 \\ 0.08 \\ 0.06 \end{bmatrix}$$

Table 6. Selection Strategy for PLN NPC to get Project Expansion

No	Design Criteria	Average	%	Ranking
1	Enhance Company asset in Technology	0.28	27.7%	2
2	<b>Networking with Global Company</b>	<b>0.36</b>	<b>35.9%</b>	<b>1</b>
3	Increase the Contract Scope with Sub-Contractor	0.22	22.4%	3
4	Engage & Communication with Stakeholders	0.08	7.6%	4
5	Monitoring Stakeholders Movements	0.06	6.3%	5

**CONSISTENCY RATIO**

The consistency ratio calculation is the final step of the Analytic Hierarchy Process (AHP) that measures the level of agreement between paired assessments at both the criteria and alternative levels. Based on the calculation, the consistency ratios at both the criteria and alternative levels show values below 0.1 (CR ≤ 0.1), as indicated on Tables. This indicates that the pairwise comparison assessments from the respondents are consistent and acceptable.



**Table 7. Consistency Ratio of Pairwise Comparison “Criteria”**

Criteria	Row	Weighted Sum	Average Value	$\lambda$ max	CI	CR
	Average	Step 1	Step 2	Step 3	Step 4	Step 5
Company Competitiveness	0.39	1.70	4.36	4.22	0.07	0.08
Company Asset	0.21	0.88	4.19			
Business Services Evaluation	0.32	1.31	4.14			
Stakeholder Management	0.08	0.34	4.22			

**Table 8. Consistency Ratio of Pairwise Comparison “Alternative Solutions”**

Criteria	Alternatives	Row	Weighted Sum	Average Value	Lambda Max	CI	CR
		Average	Step 1	Step 2	Step 3	Step 4	Step 5
<b>Company Competitiveness</b>	Enhance Company asset in Technology	0.27	1.42	5.36	5.38	0.09	0.08
	Networking with Global Company	0.37	2.19	5.89			
	Increase the contract scope with sub-con	0.23	1.24	5.35			
	Engage & Communication with Stakeholder	0.08	0.39	5.14			
	Monitoring stakeholder movements	0.06	0.29	5.15			
<b>Company Asset</b>	Enhance Company asset in Technology	0.31	1.98	6.40	5.78	0.19	0.07
	Networking with Global Company	0.32	1.98	6.28			
	Increase the contract scope with sub-con	0.24	1.29	5.44			
	Engage & Communication with Stakeholder	0.08	0.43	5.34			
	Monitoring stakeholder movements	0.06	0.31	5.43			
<b>Business Services Evaluations</b>	Enhance Company asset in Technology	0.30	5.24	5.24	5.20	0.05	0.05
	Networking with Global Company	0.38	5.44	5.44			
	Increase the contract scope with sub-con	0.17	5.16	5.16			
	Engage & Communication with Stakeholder	0.07	5.03	5.03			
	Monitoring stakeholder movements	0.08	5.15	5.15			
<b>Stakeholder Management</b>	Enhance Company asset in Technology	0.15	0.82	5.29	5.52	0.13	0.02
	Networking with Global Company	0.32	1.76	5.53			
	Increase the contract scope with sub-con	0.38	2.21	5.80			
	Engage & Communication with Stakeholder	0.10	0.52	5.50			
	Monitoring stakeholder movements	0.05	0.28	5.50			

**Table 9. Summary Result Consistency Ratio of Pairwise Comparison “Alternative Solutions”**

Pairwise Comparison	Consistency Ratio (CR)	Result	Remarks
Pairwise Comparison (Level 1)	0.08	$CR \leq 0.1$	Acceptable
Pairwise Comparison (Level 2)			
Company Competitiveness	0.08	$CR \leq 0.1$	Acceptable
Company Asset	0.07	$CR \leq 0.1$	Acceptable
Business Services Evaluations	0.05	$CR \leq 0.1$	Acceptable
Stakeholder Management	0.02	$CR \leq 0.1$	Acceptable



## CONCLUSION

To conclude, the purpose of this research is to see how the condition of PLN NPC as a business and what strategies PLN NPC needs to overcome the problems that is facing. The selection of the strategy for PLN NPC to get project expansion in ECRL Project, conducted using the Analytic Hierarchy Process (AHP), yields a final result in the form of a weighted hierarchical tree. It is known that the priority rankings of criteria, Based on the calculation results with the weights assigned to the criteria, the ranking of strategy for the project is obtained in the following order:

1. Company Competitiveness	= 39.1%	1. Enhance Company asset in Technology:	= 25.8%
2. Company Asset	= 21.0%	2. Networking with Global Company	= 34.7%
3. Business Services Evaluation:	= 31.8%	3. Increase the Contract Scope with Sub-Contractor:	= 25.4%
4. Stakeholder Management:	= 8.1%	4. Engage & Communication with Stakeholders:	= 8.0%
		5. Monitoring Stakeholders Movements:	= 6.1%

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