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# Cultural Transformation on Decision-Making for Indonesia's 35,000 MW Electricity Mega Project: A Systems Thinking's Perspective

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**Abstract.** *The study aims to analyze the existing system situation of the project, to compare it with the ideal system situation, and to propose the intervention to close the gap between the two system situations. The analysis method used to map the situations is the causal loop diagram. The study combines primary data using interviews and secondary data analyses on literature, government regulations, reports, and related sources. The findings of the study suggest that an obstacle of the project completion which should be considered seriously is the legal uncertainty. Root causes of this problem are the ambiguity of decision makers' roles, bounded-awareness occurrence, and the influence of the hidden traps on decision-making. Therefore solutions are proposed to solve the situation and transform it into the ideal system situation: decision makers roles are clarified, every sector or stakeholder is able to see, seek, use, and share integrated information properly, and every efficient decision made is implemented appropriately into actions.*

**Keywords:** *decision-making, bounded awareness, hidden traps, integrated system, legal uncertainly, mega-project*

**Abstrak.** *Studi ini bertujuan untuk melakukan analisis situasi sistem proyek saat ini, membandingkannya dengan situasi sistem yang ideal, dan untuk mengusulkan intervensi untuk menutup kesenjangan antara dua situasi tersebut. Metode analisis yang digunakan untuk memetakan situasi adalah diagram sebab-akibat. Studi ini menggunakan kombinasi data primer mengunakan interview dan data sekunder dari literature, peraturan pemerintah, laporan dan sumber terkait. Hasil studi ini menyarankan mengenai suatu kendala penyelesaian proyek yang harus dipertimbangkan secara serious yaitu ketidakpastian hukum. Akar penyebabnya adalah ambiguitas peran pengambil keputusan, terjadinya keterbatasan kesadaran, dan pengaruh perangkap tersembunyi pada pengambilan keputusan. Oleh karena solusi-solusi diusulkan untuk mengatasi situasi dan mengubahnya menjadi situasi sistem yang ideal yaitu: peran pengambil keputusan yang diklarifikasi, setiap sektor atau pemangku kepentingan mampu melihat, mencari, menggunakan, dan berbagi informasi terintegrasi dengan benar, dan setiap keputusan yang efisien diimplementasikan dengan tepat ke dalam tindakan.*

**Kata kunci:** *pengambilan keputusan, keterbatasan kesadaran, perangkap tersembunyi, sistem terintegrasi, ketidakpastian hukum, mega - proyek.*

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## Introduction

The population of Indonesia reached over 250 million people as in 2015 and will be increased to 280 millions for the next 10 years. It is predicted that by 2024 around 80 million of the country's population will be in jeopardy for electricity accessibility. The increase of need for electricity can be stimulated by the economy growth. Realizing the economy growth of Indonesia has been constantly around 6% - 7%, most likely the buying power will follow, the home supply use will be increased, the factories will increase productions to meet demands, the captive power will decrease since more and more growing business now will demand for the state electricity company, PLN, for its service service.

The goverment is therefore encouraging an electricity project where PLN and independent power producers (IPPs) should reach as much people of the country as possible, such project originated from the understanding that electricity has already become a "right" to have for everyone especially the ones who live in rural or deepest areas of the country. This then will also stimulate the electricity demand. In short, the demand of electricity will increase as a whole. To anticipate such demand, the execution of the 35,000 MW power generation project is required since PLN is expected to supply over 74,000 MW electricity power by 2024 domestically. As noted, PLN itself can only take 10,000 MW of the project due to its financial limitation (the estimation cost for the 35,000 MW project is around 100 billion US dollars) so the remaining of 25,000 is expected to be supplied by IPPs.

The state-owned enterprise, as the main player of Indonesia's electricity has already made the project plans for the power plants, the transmissions, and the distributions. With reference to its 10-year Electricity Supply Business Plan (*RUPTL),* the powerplant plan covers the interconnection system, isolated small system, life extension and existing plant rehabilitation. To achieve the least cost development of the plan, PLN has calculated the optimalisation of the capital, resources, operations, maintenece, and energy-loss costs. The reserve margin (the reserve from the peak load in percentage) calculation is also predicted to optimize net present value of the business. For example, for the Java-Bali system, the loss of load probability (LOLP) is below 0.274 which is more than 25% of reserve margin. The other areas of *Sumatera* and eastern Indonesia is allocated around 40% of reserve margin considering the situation of lesser units with bigger peak load and faster growth compare to Java and Bali. In addition, the new renewable energy plant developments, especially geothermal and hydropower plants, is prepared according to the readyness of such projects.

According to the plan, there has been developments of the power plants (in combination of PLN and IPP) to cover the predicted needs; 6,600 MW is already under construction, 17,000 MW is commited, and 18,700 MW is ongoing process. On the transmission plan, the criteria in general applied are to balance plant's capacity and peak load. Additional capacity must cover such quality of the criteria to maintain the power supply. The allocation criteria will be determined when transmission load reaches 70-80%.

Based on the land limitation, transmission capacity, and the number of outgoing feeders can be accommodated*;* a substation unitmay have 3 or more transmission units as the anticipation.To maintain reliability, service quality (better customer service), and efficiency of the electricity distribution, the PLN plan is to increase the electricity supply to customers which includes the expansion of new system and rehabilitation of the old but still usable system.

*Complexities in implementation*

The government passes rules and regulations to support the project. Amongst them are the *UU 2/2012* (with reference to land acquisition for public use), Presidential Regulation

PERPRES 30/2015 (with reference to revision of PERPRES 71/2012 with reference to providing land acquisition for public use), Ministerial Regulation PERPRES ESDM 3/2015 (with reference to electricity purchasing procedures), also Minsterial Decree KEPMAN ESDM 74K/21/MEM/2015 (with reference to approval of electricity business plan provision 2015-2024). However even with the support of the government, understanding that all the predictions, calculations, formulations, and plans are based merely on assumptions, whether or not can a strategy be fully implemented has always been a challenge to answer. To be precise, due to the social, political, and geographical complications in Indonesia, many experts determined the implementation strategy of the 35,000 MW project by looking at several aspects; land acquisitions, pricing, procurements and licensing, project management, developer and contractor, and cross-section coordination.

First complication to look at is on the land acquisition. Land has always been a valuable asset to people due to its uniqueness and limitation. In a developing country such as Indonesia, conflicts over lands have been difficult to solve for decades because the regulations tend to be light. Whenever there's a dispute, in most cases it is unclear about who the land owner is. Any "influential" person can claim backed with certificates owned, which what everybody else also owns, and suddenly there would be more than one person holding certificates claiming on the same specific land.

When the case becomes an issue between the government and private control, again, such "influential" person (on the private side) may stall the land acquisition by the government and lead to the delay of the project. Another issue (amongst many others) on land acquisition in Indonesia would be cultural differences. In some "difficult" areas in the country, cultural background or motivation may also stall the acquisition process. Unless if Indonesia is a fully-nationalized country (such as China), any land acquisition by the government would be very simple and quick. However, there should be two basic reasons to hold when a government executing land acquisition: (a) for better efficiency in urban planning and (b) for greater equality or social justice. The government's new regulation has included a relaxed land acquition process for public use. To pick up the pace, the related ministries have also been coordinating with the law enforcement authority to help should there would be any complication especially to difficult areas.

This next complexity is pricing. Electricity prices fluctuate constantly because of many factors. Prices may vary between peak-load and off-peak as one example. Other factors are weather or seasonal change (during rainy season for hydro power plants tend to fill water storage in dams better), the unstable foreign exchange and energy prices (e.g. coal and gas), and government regulation (tariffs increase or decrease). For the most part, when the overall energy cost changes, pricing change should follow accordingly. This prices fluctuation issue is what makes contracts (between PLN and IPPs) be problematic especially on the long term. The government announced that it would set up a standard on high price to buy from IPPs to endorse power plant developers in projects. Contracts should be made simple, transparent, accurate, efficient, reasonable, timetable, and rapidly to keep the pace going as planned.

Another complexity that challenges the project is power plant's procurement and licensing. According to the energy and mineral resources ministry, the electricity procurement plans is accelerated and supported by the government. Many presidential regulations will be implemented by the third quarter of 2015, such as direct appointment of vendors (presidential regulation on procurement of generators, transmissions, and transformers), capital injection to PLN (presidential regulation on improving the financial health of state enterprise PLN), quicker loan process by the government (presidential regulation on direct lending), enforcement on domestic market obligations and the assurance of power

plant supplies of coal and gas (presidential regulation on primary energy), the Law No.2/2012 on land procurement and other regulations on licensing is also strengthen by the presidential regulation on legal certainty, and local administrations will play a bigger role in leading land procurement processes and licensing (presidential issue on the obligation for local administrations). On the other hand, licensing will finally have the "one-door process" service, which should make IPPs plant development become much simpler.

The quality of contractors and developers is also challenging to maintain. Contractors are any personnel working for a power plant who are not directly employed by the power plant management. When a personel is able to perform according to the identified standards, such personnel is competent. Most likely competency of any skill, knowledge, or attitude may be achieved through education, experience, or training. However, for the case of the 35,000 MW project, any contractors are required to meet the identified standards. Such standards are assessed intensively and when assesstment results achieve the formal statement of competence, mentioned personnel or contractor is qualified. The Permen ESDM 3/2015 refers to the qualification of "qualified" contractors and developers by the due diligent implementation. On the developers' side of either PLN or IPP, another important thing which is very crucial to look out besides being qualified is how bankable are they. IPP has a simpler case dealing with capital issue. As long as they are able to find investors to inject capital into the power plant projects, IPP is "healthy" enough to develop the projects accordingly.

However, PLN situation is more complicated when it comes to capital injection. The ministry of finance is one source, which others may come from the World Bank, IMF, banks, private investors, etc. One of the requirements for the loan by banks is the financial bankability of the developer. Of course to be financially bankable, a developer must be financially healthy. PLN has been relying on the government's subsidiary and tariff standards to maintain its financial health.

The more challenging complexity is the cross sectors coordination of the project. Under the President and vice president, the 35,000 MW project is supervised by the Streering Comittee which is chaired and co-chaired by the Coodination Ministry of Economic Affairs and Coordination Ministry of Maritime Affairs. The members of the committee are the related ministries which are: Coordinating Ministry of Economic Affairs, Coordinating Ministry of Maritime Affairs, Ministry of Environment and Forestry, Ministry of Transportation, Ministry of Workforces, State Ministry of National Development Planning, Ministry of Finance, Indonesia's Investment Coordinating Board (BKPM), Ministry of Energy and Mineral Resources, and National Land Authority. With many sectors involved, the committee must maintain the coordination to accelerate the project without any delay.

*The role of the Project Management Office (PMO)*

The Delivery Unit for Electricty Development Program (UP3KN) is acting as the project management office (PMO). This unit works directly under the steering committee of the 35,000 MW project. Under the executive director of the unit, it is responsible for the project management reporting, regulatory analysis, monitoring and de-bottlenecking, and finance and HR management. Its objective is to supervise PLN and IPPs 35,000 projects to be delivered as planned. Several responsibilities must be executed by the unit are: (a) monitoring and reporting the overall program status, issues, and risks; collecting data and managing the ongoing projects while in charge of the IT architecture; (b) analyzing the legal issues and reccomending solutions to de-bottleneck and expediting project completions; (c) ground verification of issues and root causes which hinder progress (especially cross-sector coordination); and (d) financial, funding, and HR management.

*Potential Decision-making Issues*

One major issue with any project involving a state-owned enterprise is the complexity of beauracracy and the role of top decision makers. It is complex to understand

who actually makes the decision for the business. Which stakeholder has the role of making the decision is unclear, especially when it is involving public policy. Decisions are the realisation of businesses and even in a very big and coordinated company may unable to make decision. The stall on decision, or commonly known as the decision bottleneck, usually happen when the the roles of decision makers are unclear. Because what most likely happens is, everyone can make various decisions that may contradict one to another on a single issue.

Another possible problem is caused from the multi-sectoral involvement for the project. How to coordinate each sector without any blinders? Most likely when top decision makers (the steering committee and others on this case) come from different background and perspective of seeing things trying to make decisions together, they fail. Such situation occurs because of the failure of seeing, seeking, using, and sharing information with the same perspective. This is what many experts define as a situation where there is occurrence of bounded awareness.

Other than ambiguity roles and bounded awareness, when a decision-making situation is taken place, another thing to be aware of is the presence of the hidden traps of making decision. Decisions must be made the right way, however, having uncalculated or so called as "bad" decisions is never a good thing. A bad decision may sabotage or worsen any situation which leads to a business destruction. Any kind of hidden trap of decision making is prone to be used by anyone especially on such a big project. Therefore, for every decision made must be efficient to correspond accordingly as needed.

At last, when a situation is clearly up to the point where the productivity of decision-making is low, it is when a culture has become indecisive. No decision means the execution is never taken place. On the other hand, when bad decision over bad decision is always made by decison makers in an organization, the culture has become inefficient.

Decision makers are not only needed to be productive in making decisions, they are also required making decisions efficiently. Such situation with no decision or bad decisions may create complications which will only make the 35,000 GW project an inexistant ambitious dream.

Based on the potential issues mentioned above, the objective of this research is to find the answers to the following question: (a) is there any gap between the current system situation and the ideal system situation of 35,000 MW electricity mega project's completion? (b) how would the gap is realistically closed should there be any?

*Conceptual Framework*

Public policy problems, are wicked problems (Australian Public Service Commission, 2007), which are structurally and socially complex due to a range of stakeholders who involve in the coordinated action. They are also often unstable due to situation changes or stakeholders' changes of preferences or behaviours. Sunitiyoso, Wicaksono, Utomo, and Mangkusubroto (2012) presented some effort to foster an alternative way to formulate and rehearse strategic initiatives to resolve the problems in a more systematic, structured and accountable way using systems approach, involving a triple helix model of interaction among policy makers, academics and industries.

Wicaksono, Sunitiyoso, Anggoro, and Mahardi (2016) highlighted that a large and complex issue such as energy could not be solved just by political and bureaucracy measures. A problem solving technique is required to review and decompose the system into its components and analyse how the component parts work and interact each other to accomplish their objective. System analysis involves various disciplines, from scientists, stakeholders to decision makers is expected to support policymakers and decision makers in resolving complex public goods problems, such as energy.

Lomas (2000) criticizes how traditional research approaches (e.g. Anson, Fellers, Kelly, & Bostrom, 1996; Varkevisser, Pathmanathan, & Brownlee, 2003) used by many decision makers to solve actual rational problem solving are unrelevant approaches due to their lack of consideration or alternatives (Matheson & Matheson, 1998) in the decision-making process. However, A simple approach steps were introduced by Booth, Colomb, and Williams (2003) such as problem understanding, research question development, problem research, conclusion, and implementation plan. Several steps are introduced as the conceptual framework of this research: (a) it starts by analyzing the problem in order to determine its root causes; (b) once root causes are verified, solutions are proposed and executed by the measured interventions; (c) to help conducting root causes analyses and identifying interventions, system thinking approach is implemented. Using causal loop diagram the interrelations between variables in the systems are mapped. Starting by mapping the existing system of the 35,000 MW and then followed by the ideal system. Decision making theories are also used to support the analysis as well as the interventions.

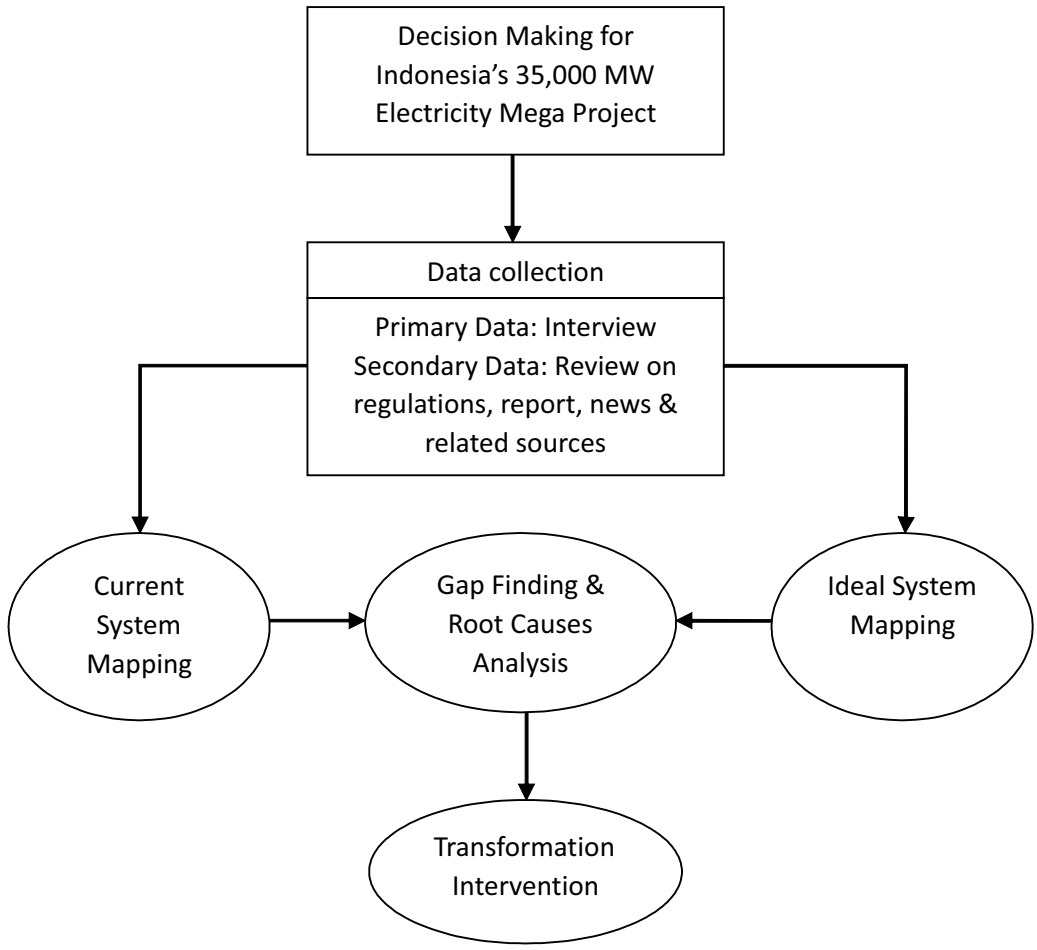


*Figure 1.* Research methodology

Finally the study compares existing and ideal systems, and proposes the transformation brigde to close the gap between these two system situations.

*System dynamics and causal loop diagram*

System dynamics is a methodology and mathematical modeling technique for framing, understanding, and discussing complex issues and problems. The use of the system for organizational purposes (Simon, 1997; Sterman, 2000), since the very earlier use of it (Forrester, 1973), has helped leaders or managers to increase their understanding of business or industrial processes (Radzicki & Taylor, 2008). Today, system dynamics is currently being used throughout the public and private sector for policy analysis and design as the main concern of many decision-making process is to gather information elicitly (Ford & Sterman, 1998). Sterman (2000) argues that in the system dynamics methodology, a problem or a system (e.g., ecosystem, political system or mechanical system) is first exemplified as a causal loop diagram. A causal loop diagram (CLD) is a simple map of a system with all its integrated components and their interactions. By apprehending interactions and consequently the feedback loops, a causal loop diagram reveals the structure of a system. By understanding the structure of a system, it becomes possible to determine a system's behavior over a certain time period. The characteristics of a CLD (Maani & Cavana, 2000; Richardson,1991; Sterman, 2000) are therefore fit best for this research.

*Decision-making, de-bottlenecking*

Decision-making contains certain rules, patterns, and processes of actions which should be treated as an institution (Brunsson, 2007). It involves organizations and people, which means the decision makers, in order to make decisions to perform actions. And the ability to make decisions is based on a decision maker's awareness of the alternatives in a situation (Beynon, 2006; Brunsson, 2007; Kardes, Kalyanaram, Chandrashekaren, & Dornoff, 1993; Posavac, Sanbonmatsu, & Fazio, 1997).

However, many business situations are resulted with either no decision made or bad decision made. Rogers and Blenko argues that when decision makers unable to make decisions, it is caused by the bottlenecks (2006). According to them, bottlenecks happen when the roles of decision makers are not clear. Making a decision is one issue, another vital issue is how to make a right decision. Many studies (e.g. Haswell & Homes, 1989; Mescon, 1987; Weitzel & Jonsson, 1989) extend the ideas that poor decision-making causes the failure for most businesses. Another finding is that the better or "smarter" decision to make depends on how well is the ability of the decision makers in seeing, seeking, using, and sharing infromation available properly (Bazerman & Chugh, 2007). When a decision made is inefficient, which causes a great deal of problem, a tendency of the presence of a hidden trap in the decision-making is high (Hammond, Kenney, & Howard, 2007).

*Organizational cultural transformation on decision-making*

Organizational culture, as the driver of organization and its actions (Chang & Lin, 2007) or mental programming (Hofstede & Hofstede, 2005), is the representation of the way an organization behave in terms of its activities (Lundy & Cowling, 1996). Hofstede and Hofstede argue the phenomenon of culture is always collective for the reason that it is shared intergratedly from a person with others living in the same social environment (2005). On decision-making, "leaders can create a culture of decisive behavior through attention to their own dialoque, the careful design of social operating mechanisms, and appropriate follow-through and feedback" (Charan, 2007). However, the performance of an organization will be below standard when the capability of the leaders who make the decisions is lacking, more likely indecisive. Such indecisive situtation, which creates indicisive culture of the organization, is rooted by the indecisive leaders (Charan, 2007).

## Research Methodology

Both primary and secondary data are used in this study. Primary data was collected using the interview method to collect data qualitatively. Key decision makers representing government, legal expert, financing agency, and IPP business player were interviewed. Secondary data was collected through review on government regulations, reports, news and related sources. In this study, Causal Loop Diagram (CLD) is used to help us represent dynamic interrelationships between variables of the system. It also provides a visual representation with which to communicate that understanding and make explicit one's understanding of a system structure (capturing the mental model), considering the complexity of interactions and coordinations between actors in the system. CLS can also help us understand feedback structures that change systems over time and understand results of our decisions.

*Research Findings*

Based on analyses of the obtained data, several findings are identified.

*Stakeholders and their complications*

Under the president and vice president, the 35,000 MW project is supervised by the Steering Comittee, which is chaired and co-chaired by the Coodinating Ministry of Economic Affairs and Coordinating Ministry of Maritime Affairs. The members of the committee are the related ministries. Table 1 provides the list of related ministries. Besides the president, vice-president, and the related ministries, there is UP3KN working under the steering committee (chaired and co-chaired by the coordination ministries of economic affairs and maritime affairs), which is acting as the supervisor of the project. The unit is the project management office working to accelerate the power plant projects of the developers (both PLN and IPP sides). The current situation of the project, despite all of the hypes about the necessity of the 35,000 MW electricity additional supplies within the next ten years, most decision makers make decisions in a very surprisingly low productivity. Even worse, some decision made tend to be bad decisions. For example, the Ministry of Mineral, Energy, and Resources (PERMEN No.3/2015) already regulated the standard pricing for electricity but has not been implemented by the PLN because they are still using the boards of directors' rules in accordance to pricing. The situation creates a stall in decision-making because everyone is afraid to make a decision that will put the decision maker in a "bad" spot later on. The "no-decision" situation is also created as the result of the previous "bad" decision of the uncertain situation of which rules or regulations should be used.

*Legal uncertainly*

What actually is the legal uncertainty situation of the 35,000 MW project? Is it because of the contradiction between rules or regulations in the system? Is it because the unclear meaning of any rule or regulation? Or is it simply because there is just no supporting rule or regulation supporting a decision? On the actual situation, the complication of legal uncertainty affects negatively to all aspects of the capital standing of the developers, the speed of the land acquisitions at needed areas, the simplicity of the licensing, the coordination between relating ministries, and the effectiveness of supporting rules and regulation implementations.

Legal uncertainty on the project occured when more than one rules or regulations are conflicting one another, or when the rules or regulations are unclear, or simply just because there is not a rule or regulation to take action. From the conflicting situation about the pricing standardization, the IPPs are still getting paid according to the older pricing. Hence the *PERMEN No.3/2015* of the Ministry of Energy, Mineral, and Resources has set up the "better" pricing. This issue may jeopardize the financial health of the developers. Another disadvantage taken by the IPPs due to the legal uncertainty is licensing, despite the one-door solution, still difficult task to achieve.

The bureaucracy is still very complicated. Sometimes it takes a long time to get thru all the steps. This issue may also jeopardize the financial health of the developers.

*Developers' financial bankability re-defined*

The term financial bankability is different between banks and PLN. According to PLN, a developer is considered financially bankable when its capital is tremendously very liquid. However, banks (the same with the non-bank organizations such as World Bank, IMF, etc.)require developers to be financial bankable when they have much liquid capital, the contract permits, and the guaranteed by the government. This is the things that makes situation becomes complex because on the current situation, the complication of legal uncertainly affects negatively their financial bankability due to the complex bureaucracy of the system.

## Results and Discussion

*Current System Situation*

On the current mapping situation, it is shown that the project's completion rate is determined by the frequency of successful power plant establishment (both by PLN and IPPs sides). Besides how qualified the contractors are, establishing power plant is involving many other aspects such as capital injection, land acquisition, cross-sectorial coordination, simplicity of bureaucracy (licensing), and the implementation of supporting rules and regulations. Those aspects mentioned will not be happening before decision makers' capability of making efficient decisions. Low productivity of efficient decision-making increases the complication of legal uncertainty.

Table 1.
*Related Ministries of 35 GW Project and Its Roles*

| **Related Ministry** | **Role** |
|---|---|
| Coordination Ministry of Economic Affairs | Chairman of Committee |
| Coordination Ministry of Maritime Affairs | Co-chairmen of Committee |
| Ministry of Environment, Forestry, and Climate | Permit of the use of forest area (*IPPKH)* |
| | Environmental impact analysis (*AMDAL)* |
| Ministry of Transportation | Jetty and railway (row) permit |
| Ministry of Human Affairs | Coordinating with the local government (*BUPATI,* Governor, etc) |
| | Business permits and reccomendations |
| | Support of *IPPKH* and land Acquisition |
| State Ministry of National development Planning (*BAPPENAS)* | Bluebook issuance |
| Ministry of Finance | Capital injection (PLN) |
| | Government's guarantee |
| | Multi-years approval |
| Indonesia's Investment Coordinating Board (*BKPM*) | Principal license |
| | Foreign investments |
| | One-stop service |
| Ministry of Energy, Mineral, and Resources | Sectoral policy and regulations |
| National Land Authority (BPN) | Land acquisition |

The more complex of legal uncertainly situation will lower all the variables of; developer's financial bankability, speed of capital injection, timeliness of land acquisition, licensing simplicity, cross-sectorial coordination adaptability, and effectiveness of supporting rules and regulations implementations. The other root causes for the decreased productivity of efficient decision-making are the increase of decision makers' role ambiguity, hidden traps influence, and bounded awareness occurrence. Figure 2 shows the illustration of the current system mapping of the 35,000 MW project.

Clearly the catalytic situation between the two variables of productivity of efficient decision-making and complication of legal uncertainly is the main problem can be defined as a cultural problem, which negatively affects the project achievement. Three aspects, which are, cause indecisive and inefficient culture on decision-making: (a) ambiguity of decision makers' roles; (b) blinders on decision-making, (c) hidden traps influence. Therefore, all the red variables on the figure above are the root causes. There are 3 main loops which affect the behaviour of the existing system. They are all are reinforcing loops. Loop 1, the Regulation-Coordination loop, shows the importance of having supporting rules and regulations to ensure smooth cross-sectoral coordination. Loop 2A and 2B, Decision Making-Legal Uncertainty loop, which shows in importance to reduce legal uncertainty in order to reduce decision makers' role ambiguity as well as increasing productivity of decision making. Loop 3, Hidden-Traps – Legal Uncertainty loop, shows hidden-traps influence complication of legal uncertainty and the other way around, legal uncertainty further induces hidden-traps influence.

Ideal System Situation

Many project management researches (e.g. Belassi & Tukel, 1996; Chua & Kog, 1999; Salleh, 2009) provide insights towards succession of projects. However, the fact that the succession rate of projects in general is still remained low (Ika, Diallo, & Thuillier, 2011) is rather disappointing.

To anticipate such result is to know what is defined as the success of such mega project, the completion of 35,000 MW electricity supply for Indonesia within 10 years. From the previous chapter, the current mapping situation shows that the issue of legal uncertainty is the main obstacle of the project. Therefore, what should be the ideal system situation? To illustrate the system mapping, the causal loop diagram of system dynamics is used. Figure 3 is the illustration of the ideal system for the 35,000 MW project.

From the interview findings and the root causes analysis, first to notice is how the completion rate will be at the end of the 10-year project and the rate will depend on several aspects: how effective the implementation of rules and regulations, how adaptive the cross-sectorial coordination, how simple the licensing issue, how quick the capital injection and land acquisition for the developers, how qualified the contractors to meet the identified standards. The liquidity of capital injection also depends on the developers' financial bankability, government's guarantee of contracts, and the profitable pricing (which may vary due to the limited resources). Those mentioned aspects to accelerate the project's completion depend on the productivity of efficient decision-making. There will be no execution without decision making and it must be efficient.

In the ideal system, the remaining loop is the Loop 1, the Regulation-Coordination loop, which again shows the importance of having supporting rules and regulations to ensure smooth cross-sectoral coordination.

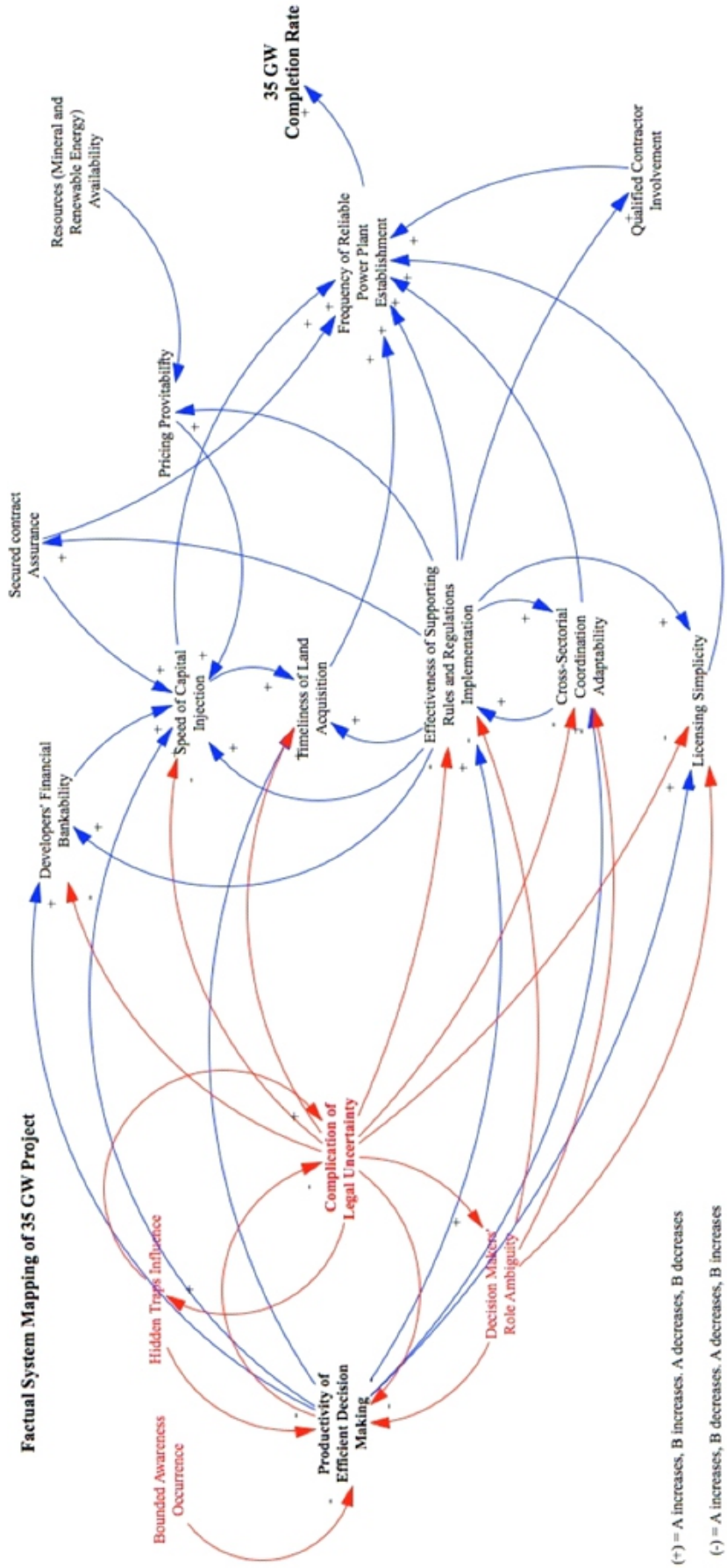


*Figure 2.* Current system mapping of 35,000 MW project

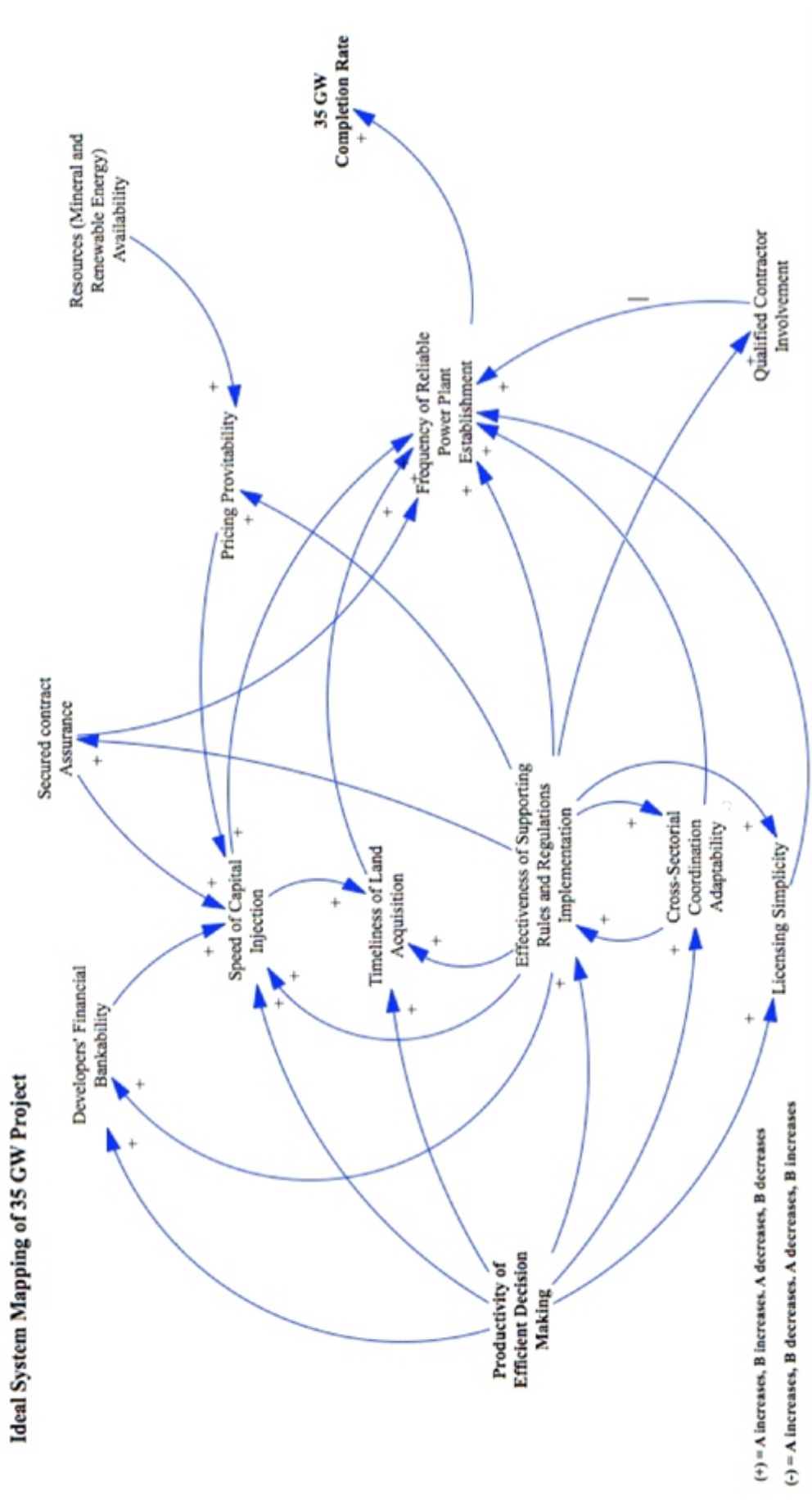


*Figure 3.* Ideal system mapping of 35,000 project.

One major issue is on transforming the current situation to the ideal situation. Transforming the culture of indecisive into an efficient decisive culture (Charan, 2007) is not a simple task, particularly when legal uncertainty is involved. All may agree and understand that the issue must be reduced at all cost. It is the common problem of different sector or stakeholder of the project. For example Ministry of Environment and Forestry has the forest moratorium about the use of certain forests areas and it is being questioned because the Ministry of Transportation on that particular areas need to build jetty or railway. Before determining how to change the culture of decision-making on the current system situation, what to be changed should come in the first priority.

Referring to the root causes, several aspects of the decision-making obstacles need to be solved properly. First is to clear-up the ambiguity of the decision makers' roles using the *RAPID* theory (Rogers & Blenko, 2006) and its framework solution (trademarked by Bain and Co). This step is required to break the feedback symptom of the low production of effective decision making. The second step is to establish an integrated system between all the stakeholders of the project. This step will enable everyone, especially a decision maker, in the system to see, seek, use, and share valuable information beforehand in making decisions (Bazerman & Chugh, 2007). The third step is by avoiding the hidden traps at all cost in making decisions (Hammond et al., 2007).

This step is devious because there have already been previous decisions made shadowed by hidden traps in the system resulted in the complex system of bureaucracy in licensing, land acquisition, and rules and regulations implementation. When all three steps are done, the last step is ready to be completed. It is to change the culture in the current system of the 35,000 MW project in decision-making.

*Reduce decision maker roles' ambiguity*

To transform the current system into the ideal system situation is by focusing on increasing the productivity of the efficient decision-making. This can be achieved by reducing the ambiguities of decision makers' roles. As stated by Rogers and Blenko (2006), to de-bottleneck situation the solution is by first understanding what can clear the ambiguity. A decision must be stated explicitly. Leaders or managers between sectors should understand each role and capability on every level. For example on a coordination meeting, a decision maker state the clear purpose of the meeting, this step enables everyone to know what to discuss and what to decide. By framing the "what" of an issue, the problem will be determined clearly.

After understanding the issue, mapping the roles of each meeting member is the next step. Using the *RAPID* framework may clear up the roles of everyone (Rogers & Blenko, 2006). Who has the role of recommendation by collecting and evaluating relevant facts which then proposing the actions to take for the decision-making? Who has the role of agreeing to a recommendation before moving ahead with legal or regulatory responsibilities? Who has the role of providing inputs of data, which is relevant for making efficient decision, or offering conclusion of the evaluation? Who has the role of deciding, more likely, the one who is actually in charge on the decision-making? And lastly, who has the role of performing or making decision to become action? By determining all of the RAPID roles in decision-making, the ambiguity of decision maker's roles will be solved. Bain and Company frameworked the ambiguity of roles of decision-making in steps by clearing the "what," the "who," the "how," and the "when" practices (Blenko, Mankins, & Rogers, 2010).

For the purpose of practical use of the solution on roles ambiguity, a *"best-practice"* table using the *RAPID* (Rogers & Blenko, 2006) framework is illustrated in Table 2.

Table 2.
*Practical RAPID Framework Example (adopted from Blenko et al., 2010)*

| | **President and vice-president** | **Chair and co-chair steering committee** | **Indonesia Investment Coordinating Board (BKPM)** | **UP3KN** | **Local Governments** |
|---|---|---|---|---|---|
| What rules or regulations materials will be benefitting to power plant developers, while also appropriate with the building development policy? | | | | | |
| Who issues the permits? | R, D | A | I, P | R, I, | I |
| How would the approaches be taken? | D | A | A | I, A | I, R |
| When the actions should be taken? | D | A | P | R, | I |

*Increase awareness*
Another aspect to solve to increase the productivity of the efficient decision-making is by increasing the awareness towards information available, to make decision without blinders (Bazerman & Chugh, 2007). On the coordination meeting of the project, all meeting members must be able to know which information they are looking for. For example when there's a legal conflict between rules or regulations, everyone must be able to see what information is available to know exactly what causes it.

After seeing the information to the problem, by challenging the information they see, the meeting members must seek which other available information can be acquired as alternatives to the problem. Rather than under-searching information, decision makers must think about potential error of implications of decisions by over-searching information. After seeing and seeking the information available around, the members of the coordinating meeting must unpack the issue. They should not overemphasizing on one issue and ignoring other relevant information. Members must use the information properly.

For the purpose of practical use of the solution on bounded awareness in between relating ministries of the 35,000 electricity project, a table of integrated information system is proposed as an example in Table 3.

*Avoid Hidden Traps*
Another root cause of the decision-making on the project is the hidden traps influence. This issue causes the project to accelerate at slow pace. This issue must be solved to increase the productivity of efficient decision-making by avoiding all the traps (*anchors, status quo, sunk-cost, conforming-evidence, framing, and estimating and forecasting)* (Hammond et al., 2007).

For the purpose of practical use of the solution on hidden traps, a table of hidden trap solution is proposed as an example in Table 4.

Table 3.
*Example of Integrated Information System Table*

| Issues | Traps | Results caused by traps | Solutions |
|---|---|---|---|
| Does PLN need greater legal protection than just *KEPMEN* No. 74K/21/MEM/2015 and *PERMEN* No.3/2015 of the MoEMR to be easier on the plant procurement and purchase of electricity tariffs? | Status quo trap, sunk-cost, confirming evidence, and recallability | - PLN still refers on the old pricing standar, hence *PERMEN No.3/2015* while waiting and seeing the situation to be "safe"<br>- PLN thinks the former of minister of SOC legal issue will also endanger the next decision-making | - challenge the ideas of legal uncertainty; find the alternatives of rules or regulations backing up the decision and focus on them<br>- list any supporting *UU, KEPPRES, PERPRES* or any other supporting rules and regulations before thinking of proposing a new one<br>- be aware of other relating departments' or including the law enforcements departments for potential biases on their point of views<br>- investigate carefully for a decision-making to be sure the decision is honest, uninfluenced by any political reason for example |
| Should PLN issue a contract to a developer by looking at developers' financial bankability? | Anchoring, sunk-cost, confirming evidence, framing, over-confidence, and prudence | The withdrawal of PT. Indika Energy for the Cirebon power plant project due to financial difficulty | - prices fluctuates uncertainty, keep in mind to always estimate costs at highest unfavourably condition. |
| Ineffective implementation of *UU No.2 2012* in reference of land acquisition for public use | Anchoring, Sunk-cost, conforming evidence, framing, and over-confidence | A dispute of land acquisition faced by PT.Adaro Energy in Balangan and Tabalong, South Borneo | - Government, PLN, IPP, and land owner must assest the problem in transparancy. PLN should be more selective in appointing plant developers. Just because a developer is "well-known" by the name it doesnt mean such developer has the proper ability of negotiation for certain land acquisition |

Table 4.
*Practical Hidden Trap Solution*

| Issues | Traps | Results caused by traps | Solutions |
|---|---|---|---|
| Does PLN need greater legal protection than just *KEPMEN* No. 74K/21/MEM/2015 and *PERMEN* No.3/2015 of the MoEMR to be easier on the plant procurement and purchase of electricity tariffs? | Status quo trap, sunk-cost, confirming evidence, and recallability | - PLN still refers on the old pricing standar, hence *PERMEN No.3/2015* while waiting and seeing the situation to be "safe"<br>- PLN thinks the former of minister of SOC legal issue will also endanger the next decision-making | - challenge the ideas of legal uncertainty; find the alternatives of rules or regulations backing up the decision and focus on them<br>- list any supporting *UU, KEPPRES, PERPRES* or any other supporting rules and regulations before thinking of proposing a new one<br>- be aware of other relating departments' or including the law enforcements departments for potential biases on their point of views<br>- investigate carefully for a decision-making to be sure the decision is honest, uninfluenced by any political reason for example |
| Should PLN issue a contract to a developer by looking at developers' financial bankability? | Anchoring, sunk-cost, confirming evidence, framing, over-confidence, and prudence | The withdrawal of PT. Indika Energy for the Cirebon power plant project due to financial difficulty | - prices fluctuates uncertainty, keep in mind to always estimate costs at highest unfavourably condition. |
| Ineffective implementation of *UU No.2 2012* in reference of land acquisition for public use | Anchoring, Sunk-cost, conforming evidence, framing, and over-confidence | A dispute of land acquisition faced by PT.Adaro Energy in Balangan and Tabalong, South Borneo | - Government, PLN, IPP, and land owner must assest the problem in transparancy. PLN should be more selective in appointing plant developers. Just because a developer is "well-known" by the name it doesnt mean such developer has the proper ability of negotiation for certain land acquisition |

After the first phase, the monitoring progress phase is next. The implementation will require the solution to be monitored intensively. Every step of the mega-project, achieved or not achieved must be monitored and given feedback accordingly. As the progress is monitored, should the results are as expected (completion of a power plant at certain area), decision makers may review other options and alternatives. Whether or not the targets are achieved, it is important to consider the discovery of different experiences in acquiring the alternatives, to figure out is there other approach to improve the completion rate.Table 6 below illustrates the phase to monitor progress for the implementation:

In sum, the balance between solution implementation and monitoring progress for the system transformation of the mega project of the indonesia's 35,000 MW electricity supply in 10 years will be achieved by applying feedback for every procedure to every stakeholder.

Table 6.
*Monitoring Progress*

| **Solutions Implementation** | **Enter Progress Information** | **Analyze the results** | **Procedure Reports** |
|---|---|---|---|
| Using *RAPID* framework for each stakeholder's role and on every level of the system | Collecting data of each role of each decision maker of the project | Compare the current situation of the roles of decision makers to the ideal situation of the roles of decision makers | Use reports to display data in various ways. Sharing roles comparison will enable the whole team, especially from different sector to understand the situation better |
| Establishing integrated information system | Recording the progress online | Look at differences between the actual progress of the project and the ideal progress of the project | Producing reports in numbers of formats to make the whole team able to obtain important information needed to be used. |
| Using tables, diagrams, illustration, frameworks, or any other decision-making tools to map each problem carefully | Examining the data shown as the reference to next step | Using the data, determine how much time each step of the project progression take and what whould be done to progress as planned | Tracking project progression can be easily done from accurate reports.<br>Set up framework of reports to ensure the progression data is presented consistently with the actual progression of the project. |

However, progressing such moves is not without challenges. Managing demanding goals from coordination meetings will prove difficult for decision makers. They will find it a challenge to maintain a sense of steadiness on progressing the mega project according to the plan when they are not being clear on decision-making while encouraging everyone to follow the rules of the game. In reasoning upon the planning for the next 10 years to the completion target, this research's conclusion and implementation plan allow for a degree of flexibility to meet identified standards and completion rate of the mega project. It may enhance the decision makers' opportunity in transforming the system for the ideal. In addition, there should be a thinner scope to embed realistic bridging between the current system and the ideal system situation which every stakeholder of the project will implement on the 'better' decision-making for the national mega project.

## Conclusion

There is a gap between the current system situation and the ideal system situation, therefore a cultural transformation on decision-making is needed. The fact that culture is actually learned and not genetically natural, "*There is no single best way to 'engineer' culture"* (Zhu, 2000). In an organization, leaders are the ones who should create a heathly culture including the productivity and efficiency of decision-making. When a current culture is no longer adaptable for the future achievement, which no decision making is produced and effecient, top leaders must agree to a critical issue: a change is needed. As the response of the current system situation of the 35,000 MW electricity project, at the very start before anything begins, president and vice-president are the leaders whose should act as one.

It is because they are the main keys of the change. Too many organizations, departments or units on the case, struggle with critical decisions when no body agrees. Some very few are able to agree on the less "inefficient" decisions while most agree on "bad" decisions which are followed by the worst possible outcomes. Moreover in the end, no one can implement the decisions made (should there be any) into proper actions.

When leaders fail in decision-making, organizations crumble to the bottom. However, the ones who create should be the ones who understand best to 're-create' for the better. Complex unproductive and inefficient decision-making situation can only be broken by leaders. Subordinates may be able to "contribute" some to change the situation, however their role limitations unable them to make decisions – making the change. A change must be done in the way things are going currently in the system not just partially, but a whole transformation on every level of the system, the true change (Klein, 2004) of organizational of decision-making, nation-wide. It shall start from the president and vice-president level. This leads to several questions to be solved: what needs to be transformed? Can the president and vice-president and their top subordinates improve the system to become the ideal system? Can they be the change riders (Kissler, 1991)? how would they do and manage it effectively? When is the right time to change should be determined and implemented?

First to notice about cultural transformation in decision-making is to know what exactly should be transformed. The nation-wide mega project current system situation does not demonstrate the probability to be sucessfully achieved. The difficulties of involving qualified contractors, limitation of developers' capital, the disputes on land acquisitions, the discoordination between sectors, the complexcity of licensing, and the problematic implementation of supporting rules and regulations are all so devious until the project completion rate is put in jeopardy. President and vice-president, relating ministries on the steering committee, UP3KN and developer executives are the main players of the mega project. They will be the first to implement the change and pull the system into the improvement.

How will they pull the change? Klein (2004) argues that true change has three basic concepts; change occurs only from within, news ideas implemented tend to be strongly resisted, and the more inside people who agree of the new ideas, the easier the change will be implemented. Probing from those basic concepts of true change, it is so much easier to be done from top to bottom. For example, the minister of coordination of economic affairs may set up a coodination meeting with project relating ministers to find out which *KEPMEN or PERMEN* should be use or revised. Each relating minister then will set up an internal meeting to assest the issue within the department. And so on. Those leaders are the changers from the inside who are thinking as outsiders. They will influence more and more insiders to think as outsiders, the more the merrier (Klein, 2004).

Lastly, when will be the right time to change? To be more productive and efficient on decision-making? To transfrom the current system into the ideal system? The right time is sooner than now.

To conclude, in order to transform the current system situation of the 35,000 MW project successfully become the ideal system situation, top executives of the project must overlook several keys as initiators of the transformation; solving the problem of decision makers role ambiguity, the problem of bounded awareness occurrance, and the problem of hedden traps influence. All three solutions will then solve the problem of lack of productivity and efficient decision-making which reduces the legal uncertainty complication. As the conclusion arguments, the transformation of the system depend on three requirements: (a) decision makers' roles are clarified; (b) every sector or even stakeholder is able to see, seek, use, and share information integratedly and properly; and (c) every efficient decision made is implemented appropriately into action.

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The study was completed in 2015 when UP3KN was still active. Despite its dissolvement this year, the findings of the research are still relevant and beneficial for decision makers and decision scientists.

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