



## Soft System Methodology: Project vs Local Community Interests in Project Social Conflict

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### ABSTRACT

Social conflict in projects is an uncompromising representation of differences in interests. Each project receives different claims from stakeholders based on their conditions. Project interest depends on the target level and goals to be achieved. Subsequently, the local community surrounding the project transforms their interests based on economic, social, cultural, and environmental expectations. This study aims to reveal factors of interests between project and local community on the occurrence of social conflict in projects. Soft System Methodology and Customers, Actors, Transformation process, Weltanschauung/world view, Owner, and Environmental constraints (CATWOE) were used to identify root cause and factors of interests in the social conflict. Through library research and previous relevant researches, it was revealed that there are eight factors of interests which cause social conflict in projects. It is recommended that future researches should use factors in formal system methodology (FSM) to model the prediction of social conflict in projects based on different interests between project and local community. The results are useful to compose the standard environment and social framework (ESF) as a "middle way interests" concept to reduce social conflict in projects. By using the correct ESF, interests and conflicts can be managed well so that the benefits can be enjoyed by the community and project itself. Finally, the results of this study can be used to formulate indices of social conflicts in construction projects.

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## 1. INTRODUCTION

Indonesia as one of the G20 members and one of the largest GDP countries group in the world has its own challenges to be able to maintain and even increase its GDP amid the increasingly tough world economic competition. In order to achieve great level of economic growth, based on the Global Infrastructure Hub (GI Hub) report, Indonesia still needs to develop its infrastructure sector to support the economic growth. According to Global Infrastructure Outlook, the projection of the needs of infrastructure development in Indonesia reaches 1.7 trillion US dollar by 2040, or nearly 1.9 times of Indonesia's current GDP. Meanwhile, according to the 2019 Global Competitiveness Report, the quality of road infrastructure in Indonesia obtains an index value of 4.2 out of 52.6 and is in the 50th position out of 141

countries. In 2021 State Budget (APBN), the Ministry of Public Works and Housing (PUPR) is entrusted with managing 150 trillion rupiah, 25% increase compared to 2020. However, World Bank through Infrastructure Sector Assessment Program, still places the quality of infrastructure in Indonesia on average below the BRICS (Brazil, Russia, India, China, and South Africa) and ASEAN. This certainly should get serious attention from construction actors in Indonesia in order to be able to catch up with other countries. Such crucial position for quality and quantity of infrastructure for economic growth should be of greater concern for all stakeholders in order to create various breakthroughs in increasing resource capacity and quality of work in the construction sector. Apart from that, social impacts caused at construction stage also needs to be considered significant. Nowadays, Indonesia is facing the fact that

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conflicts that occur in the infrastructure sector is rising. In 2018, there were 300 conflict cases in 16 provinces as reported by the Foundation of the Indonesian Legal Aid Institute (YLBHI). Moreover, 94 out of 208 agrarian conflicts were in the infrastructure sector.

Social conflict that occurs certainly disturbs the project performance in general. Setianto [1] suggested that in addition land conflict, conflict in projects may occur due to the interests in the economic and social aspect. The difference of interests and expectations eventually trigger the conflict in the implementation of the project. Chan and Oppong [2] in their study stated that each stakeholder has their own expectations, some of whom are supportive and some other potentially disrupt the project. The different interests of stakeholders must be managed properly. According to Project Management Body of Knowledge (PMBOK) [3], the first step is to identify the factors of interests in the project. The factors of project interest must be analyzed and revealed to determine appropriate compromising steps in order to minimize potential conflicts in the project.

Soft System Methodology is a method used to reveal and analyzed influencing factors of interests in social conflict in projects. Soft system methodology approach was used to develop the structured way of thinking from social conflicts. Referring to Eden and Ackermann [4], several methods have been collaborated in developing and revealing problem situations, such as Soft System Methodology (SSM), Strategic Choice Approach (SCA) and Strategic Options Development and Analysis (SODA). As Checkland [5] explained, Soft System Thinking examines how problematic situations should be understood and discussed so that the problems encountered in the research can be revealed more clearly, easily, and provide useful insights. This article explains the use of Soft System Methodology as a system thinking in revealing factors of interests that affect social conflict in projects. Rich pictures weret used in the analysis of

problems through the approach of root cause analysis and CATWOE.

In recent years, the construction sector in Indonesia has faced social conflict due to the increasing development. Meanwhile, regulations that govern social and environmental protection remains sectoral. Therefore, those regulations are difficult to be enforced and understood by project actors in order to develop the best strategy to mediate different interests using an appropriate framework.

This study aims to find factors affecting the conflict of interests between project actors and the surrounding community using Soft System Methodology. Furthermore, this study also aims to reveal the factors of interests needed to formulate a standard environmental and social protection framework in further research. The current model can be used as a standard framework to estimate the possibility of social conflict in projects in Indonesia based on the existing factors of interests surrounding the project. Therefore, project actors can accurately predict the possibility of conflict and set a minimum framework needed to minimize the impact of the conflict to the project.

## 2. LITERATURE REVIEW

Chan and Oppong [2] stated that conflict between the affected community and the project will occur if the project's expectations cannot be realized, in terms of both quantity and quality. This statement is confirmed by Omenge et al. [6] who stated that accumulated interests sometimes clash among the members of the project team itself. Therefore, in addition of conflict with external team, conflict can occur within the team as a result of interaction among interdependent people who perceive incompatible goals and interference from each other in achieving those goals. In general, Wu et al. [7] concluded that conflict will affect the project performance.

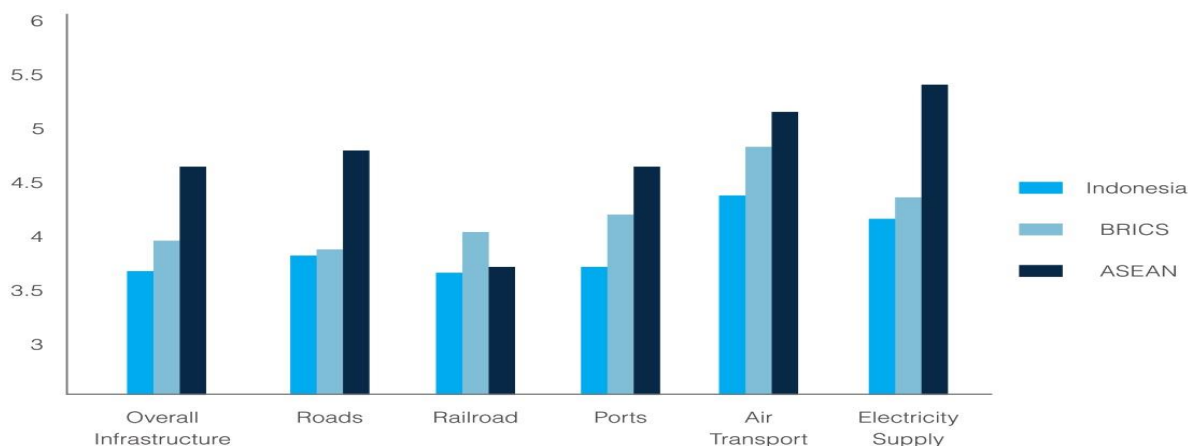


Figure 1. Indonesian infrastructure quality index

Moreover, Al-Sibaie et al. [8] found that social and internal conflicts mostly influenced the project performance. To reduce potential conflicts in the project, Vaux and Kirk [9] suggested to investigate the factors of conflict and discover the methods to mitigate the effect of the conflict.

Project stakeholders are categorized into two, namely internal and external, which are attributed according to their own interests to the project. The interests of both stakeholders interests are in relation to their position and perception on political, economic, and social system [3]. Wei et al. [10] mentioned that there are three aspects of sustainable development, namely (a) social, (b) environmental, and (c) economic. However, Chan [2], Luckmann and Färber [11] and Xiahou et al. [12] agreed that these three aspects are also factors that influence the interests or occurrence of conflicts, that is, stakeholder perceptions toward the project that affect the project performance, including the potential to create project social conflicts. The different conceptions of social, environmental, and economic conditions are factors that often occur in each country in the project implementation. However, apart from those factors, cultural differences are also important and influential factors in the project [11, 13, 14]

Internal stakeholders and business entity in the project also have their own interests. Target performance success as an objective of the project has a strong relationship with the conflicts that occur [7]. Likewise, Vaux and Kirk [9] and Min et al [15] found that project characteristics affect the conflict of the project. The higher complexity of the project, the higher the possibility of conflicts occurring in the project. Similarly, project as a business entity has the objective of corporate business. The project team must fulfill the company's organizational values, which include marketing, management, and business aspects [16, 17]. Another interest that exists in internal project is the interest of individual and team who have different objectives, goals, and motivations, which can trigger debates and conflicts in project implementation [8, 16, 18]. This is corroborated by Taghizadehalvandi and Ozturk [19] who suggested that personal satisfaction affects the project satisfaction as a whole. The interests of each stakeholder need to be managed properly through compromise and negotiation. Jang et al. [20] argued that for every difference of interest between the parties, there is always intersection that can be used as a negotiation opportunity, which is known as Zone of Possible Agreement (ZOPA) concept. According to World Bank [21], the area of negotiation opportunity in this study is referred to as compromise of interests in the concept of environmental and social framework.

Several previous researches on conflicts have been conducted, but are limited to the influence of factors of

interests on the conflict. Furthermore, particularly in Indonesia, researches on conflicts have not been widely conducted. Previous studies, as mentioned beforehand and demonstrated in the following Table 1, have provided significant information regarding factors and relationships of conflicts and projects. However, the integration between the influence of factors of interests and conflicts needs to be improved by measuring the capability of the existing framework of environmental and social protection. By acknowledging that capability, project actors can easily identify, mitigate, and plan the appropriate strategy to minimize conflicts. In the case of conflicts in Indonesia as the object of the current study, indices and statistical data were employed to measure the level of community interest within a region. The following is a table elaborating previous researches on conflict in projects.

### 3. METHODOLOGY

This study employed library research and comparative analysis from previous researches. Several previous researches found that influencing factors caused social conflict in projects during the construction implementation. Subsequently, problem analysis was carried out using CATWOE analysis and Soft System Methodology model approach to reveal the cause of social conflict in projects.

**TABLE 1.** Empirical study of project conflict

Authors	Subject Discussion
Hartono et al. [22], Park et al. [23], Riley and Ellegood [24], Wang and Xiang [25], Wu et al. [7],	Examined the relationship between factors of conflict and project performance
Caputo [26], Jang et al. [20], Omenge et al. [6]	The concept of conflict resolution, elaborating the influencing factors using several concepts such as ESIA and
Xiahou et al. [12]	Evaluation of factors influencing social performance in construction projects
Min et al. [15]	Established a framework for conflict analysis by moderating project characteristics and intervention from the government authority
Xue and Xiang [27]	The relationship of risk factors and risky events (mass action) which affect social instability in the project
Celik et al. [28], Chen et al. [29]	Minimalizing social impact and estimating social cost as a result of project activity

Soft System Methodology is a systemic (not systematic) methodology; the focus is on the whole, not the parts. As a system-based methodology for dealing with real world problems, Mehregana et al. [30] stated that Soft System Methodology enables analysts and participants to understand different perspectives on the situations and problems solved through learning rather than replacing current situations with escalating espoused ideals. Soft System Methodology method can be very helpful and facilitate the overall research of a system of social conflict in projects. The problem approach using Soft System Methodology is carried out, in general, using a search process consisting of seven stages as illustrated in Figure 2. Thus, it is necessary to identify the crucial characteristics of the decision situation, define the scope and boundaries of the analysis, identify the stakeholders

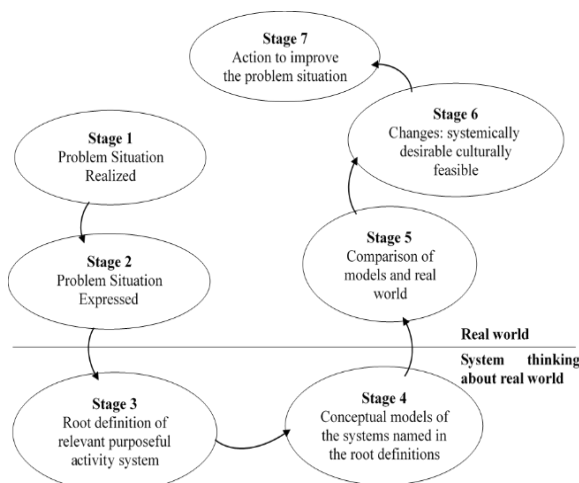


Figure 2. Soft system methodology stages

TABLE 2. CATWOE definition

	Definition
C	<i>Client</i> – the immediate beneficiaries or victims of the system results.
A	<i>Actors</i> – the participants in the transformation, i.e. those who carry out activities within the system.
T	<i>Transformation</i> – the core of the human activity system, in which some inputs are converted into outputs and given to the clients. Actors play a role in this transformation process.
W	<i>Weltanschauung (world view)</i> – the perspective or point of view that makes sense of the root definition being developed
O	<i>Owner</i> – the individual or group responsible for the proposed system. He/she has the power to modify or even stop the system, overlapping other system actors.
E	<i>Environmental constraints</i> – the human activity systems work under some constraints imposed by the external environment, as legal, physical, or ethical constraints.

involved as well as their main motivations and goals, and understand what actions can be taken [31].

The most common strategy to describe problem is using rich picture. Customers, Actors, Transformation process, Weltanschauung/world view, Owner, and Environmental constraints (CATWOE) was employed to analyze and identify problem areas, achievement, and goals of the proposed models.

#### 4. RESULTS

A project starts when the contract is signed by the owner and contractor as the project implementer. The contract results in an agreement on achievement targets that must be mutually agreed upon [3]. The contractor will subsequently appoint a team assigned to complete the project and carry out the company's vision and missions as a business entity. This will have impact on the enactment of SOPs and targets which in parallel will create interests in the project team itself. Meanwhile, there are local communities that are affected by project activities. These conditions will underlie the existence of community expectations for activities around them, including construction activities. These expectations are then transformed into public/community interests towards the project [2]. These interests, if not managed properly, will create social conflicts in project. These interests must be solved, which in the context of this research is referred to as the compromise of interests. With good compromise, it is expected that conflicts can be avoided so that it will benefit the community and the project [20, 32, 33]. Figure 3 is a rich picture that describes the interests and conflicts in project.

Problems of social conflict in a project can affect profit losses and occur for a long time period. As in Jatigede Dam Construction Project, West Java Province, Indonesia, Setianto [1] explained that escalation and de-escalation of conflict occurred since 1982, which accounts for three decades. Social conflict in projects will result in the increasing social cost that should be spent by the project [29] and can influence the social instability in the surrounding local community [28]. To avoid of social conflict in projects, it is important to identify of the area of problems, mitigate potential conflicts, and determine goals and expected changes. Based on the aforementioned factors, identification of root cause of social conflict in this research was employed using Soft System Methodology and CATWOE method as follows.

The above CATWOE analysis (Table 3) explains the root cause conditions faced in managing social conflict in projects. The structure of CATWOE assisted in developing the conceptual research model which is the basis for determining objectives of Formal System Model. Table 4 below describes the factors of interests that influence conflict in projects.

**TABLE 3.** CATWOE analysis in project social conflict

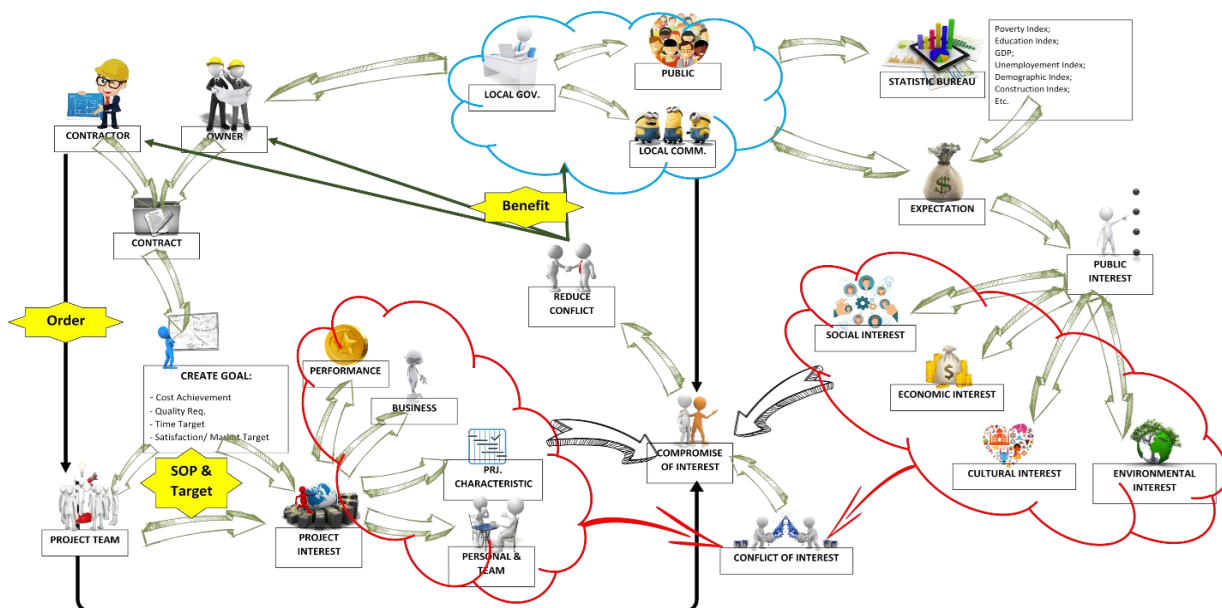
	Definition
C –Customers/ Clients	Owner (Ministry of Public Work and Housing)
A –Actors	Project Team and Local Community
T –Transformation	How to compromise interests between Project Team and Local Community and what standards of environment and social framework needed to reduce potential social conflict in infrastructure project
W - Weltanschauung/ World Wide	Project Team will achieve their goals in profit and performance properly. Local affected community reaches their benefit in terms of social, economic, environment, and culture aspects. Owner gets the project meet their expectation.
O –Owner	Ministry of Public Work and Housing
E –Environmental Constraints	Various Indonesian Decree Laws and regulations in environment and social safeguards and there is no integrated standard environment and social framework.

Root cause, problem areas, and mitigation of potential conflicts that have been described beforehand must be developed within the Soft System Methodology framework. Composing problems were intended to determine objectives and needs for appropriate social conflict management.

The Soft System Methodology model indicates that the final objective of this research is to reduce potential conflict by using predictive model of interest level in

**TABLE 4.** Interests factors related to project conflicts

Factors	Authors [Ref.]
Project performance	Al-Sibaie et al. [8]; Meng et al. [13]; Molwus et al. [34]; Nguyen and Watanabe [35]; Taheri et al. [36]; Turner and Leconte [17]; Vaux and Kirk [9]; Wang and Xiang [25]; Wei et al. [10]; Wu et al. [7]
Project characteristic	Min et al. [15]; Molwus et al. [34]; Omenge et al. [6]; Vaux and Kirk [9]; Wu et al. [7];
Corporate management and business	Nguyen and Watanabe [35]; Panahi et al. [16]; Turner and Leconte [17]; Wang and Xiang [25]
Personal and team interests	Al-Sibaie et al. [8]; Nguyen and Watanabe [35]; Panahi et al. [16]; Taghizadehalvandi and Ozturk [19]
Social condition	Al-Sibaie et al. [8]; Çelik [28]; Chan [2]; Magsi et al. [33]; Molwus et al. [34]; Nguyen and Watanabe [35]; Puck et al. [18]; Wang and Xiang [25]; Wei et al. [10]; Xiahou et al. [12]; Xue et al. [27]
Economic condition	Celik et al. [28]; Chen et al. [29]; Magsi et al. [33]; Wei et al. [10]; Xiahou et al. [12];
Environmental condition	Çelik [28]; Chan [2]; Magsi et al. [33]; Min et al. [15]; Wei et al. [10]; Xiahou et al. [12]
Culture condition	Lückmann [11]; Meng et al. [13]



**Figure 3.** Rich picture : How interest and conflicts arise in project

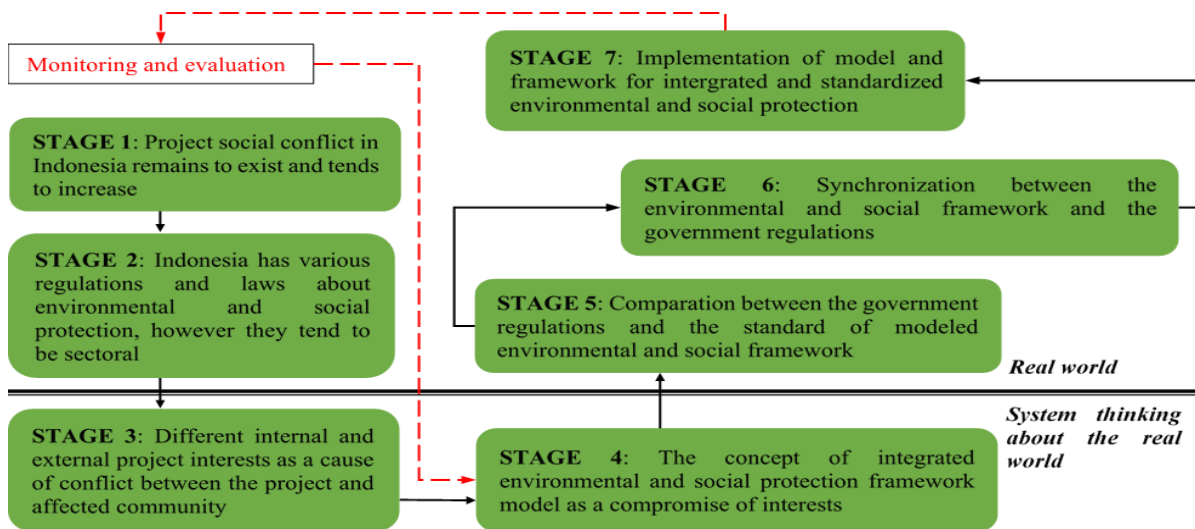


Figure 4. Soft System Methodology model of social conflict in projects

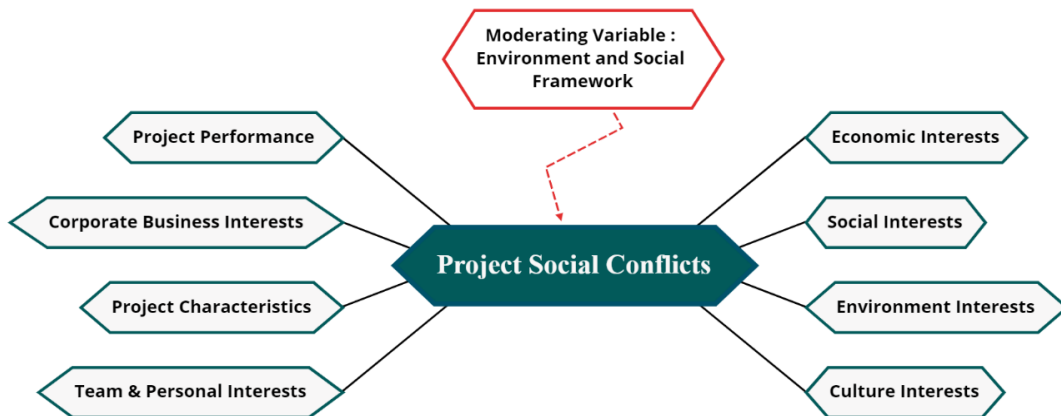


Figure 5. Factors of interests related to social conflict in projects

each project area. In addition, the model can also estimate the need for appropriate environmental and social framework standards according to interest conditions. Composing this standard framework is needed to facilitate the project in measuring and testing interests conditions around the project site.

Figure 4 above describes the stages in Soft System Methodology based on conditions and problems that have been identified and analyzed as follows:

**Stage 1.** Social conflict in projects still occurs with an increasing trend based on the data from YLBHI. Witrianto [31] states that in the last three decades, there has been a rapid change in public perceptions of the impacts they receive as a result of projects. These changes encouraged the community to protest and fight, which resulted in social conflict in the project.

**Stage 2.** There is no standard framework and model that can be used to predict potential conflicts due to the

influence of interests around the project. Regulations on environmental and social protection are still sectoral.

**Stage 3.** The differences of interests between the internal of the project and the affected local communities as the cause of the conflict need to be identified and analyzed appropriately. Based on previous researches, there are at least eight main factors of interest of each party that have the potential to conflict, namely project performance targets, project characteristics, company business interests, personal interests, and project teams. Meanwhile, the community has interests in economic, social, environmental, and cultural aspects.

**Stage 4.** To minimize the potential for social conflicts in the project due to differences of interests between the internal of the project and the affected communities, it is necessary to develop an integrated environmental and social framework. This integrated standard framework is a concept of compromise of interests to reduce the impact of social risks that cause conflict in the project.

**Stage 5.** An integrated environmental and social framework model as a concept of compromise of interests is the middle way of Indonesian regulations regarding environmental and social protection which are still sectoral.

**Stage 6.** The adoption of the World Bank's environmental and social framework using a parameter measurement approach from the prevailing regulations in Indonesia to create an appropriate standard framework.

**Stage 7.** Implementation of the model on the project to predict potential social conflicts using the factors of interest that affect the project. With accurate predictions, the project can develop the best strategy in managing project interests to minimize potential conflicts.

**Monitoring and evaluation:** i.e., changes in conditions of interest in the project need to be evaluated and monitored regularly. Changes in social, economic, and political conditions, for example, can encourage changes and shifts in expectations and interests in the local community that affected the project. Likewise, changes in economic, political, and monetary conditions have the opportunity to change the expectations of the contractor as a business entity which depends on the stability of national and local economic and political conditions. These changes will require adjustments to the standard framework that has been established. The results of this adjustment will be the basis for the implementation of the model to be implemented afterwards.

Figure 5 is the construction of model based on the factors of interests that influence social conflict in projects. Based on the identification and analysis conducted, the internal of the project's interests that affect the conflict consisted of factors of interest to project performance, company business interests, project characteristics, and the interests of the team and its members. Meanwhile, the interests of local communities were determined by their interests in economic, social, environmental, and cultural aspects. These eight factors are factors that influence the occurrence of conflict in the project. The greater the level of interests, the higher the possibility of conflict. The environmental and social framework was used as a moderator which was expected to reduce the power of interests in creating conflict. The measurement of public/local community interest employed indices and data published by the National Statistics Agency and Ministry/State Agency authorized in environmental and social protection. However, to measure the level of internal interests of the project, the level of the target assigned to the project was used.

## 5. CONCLUSION

One of the main factors that causes conflict is the difference of interests between the project and the

affected local communities. By developing a conflict prediction model through an environmental and social framework approach, the author hopes to be able to facilitate project actors in predicting potential social conflicts in projects and preparing appropriate prevention steps and strategies. The results of this study can be concluded as follows:

- The model built made it easier for project actors to manage the differences of interests between the interests of the internal of the project and the interests of the local community affected by the project.
- Efforts to minimize conflict and its impacts can be more easily planned by using an appropriate standard framework as the concept of "middle way interests".
- Composing standardized and integrated framework as "middle way interests" assisted the project in identifying potential conflicts and predicting appropriate framework according to the conditions of interests in the project area.
- Eight factors were identified and analyzed in the context of social conflict management of the project. Those factors can be used in further research with Formal System Model using the data obtained from infrastructure projects in Indonesia. Environment and social framework will be used as moderating variables in the developed Formal System Model.
- Measurement of economic, social, environmental, and cultural conditions employed the data and statistical indices from the Indonesian Central Bureau of Statistics (BPS) and authorized government agencies. The data and statistical indices are research novelties which makes it easier for the model to be implemented to measure the level of public/local community interests. Project performance, corporate business interests, project characteristics, and personal and team interests employed the data from each project as research samples.

The results of this study are expected to contribute to better conflict management in the project. In addition to the use of the Formal System Model, the results of this study can be used to formulate a social conflict index formula in construction projects in future research.

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### Persian Abstract

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#### چکیده

تعارض اجتماعی در پروژه‌ها نمایشی سازش ناپذیر از اختلاف در منافع است. هر پروژه بر اساس شرایط آنها از طرف ذینفعان ادعاهای مختلفی دریافت می‌کند. علاقه پروژه به سطح و اهداف مورد نظر بستگی دارد. متعاقباً، جامعه محلی پیرامون پروژه منافع آنها را بر اساس انتظارات اقتصادی، اجتماعی، فرهنگی و زیست محیطی تغییر می‌دهد. این مطالعه با هدف آشکار کردن عوامل منافع بین پروژه و جامعه محلی در مورد بروز تعارضات اجتماعی در پروژه‌ها انجام شده است. از روش سیستم نرم و CATWOE برای شناسایی علت اصلی و عوامل منافع در منازعات اجتماعی استفاده شد. از طریق تحقیقات کتابخانه‌ای و تحقیقات مرتبط قبلی، مشخص شد که هشت عامل منافع وجود دارد که باعث ایجاد تضاد اجتماعی در پروژه‌ها می‌شود. توصیه می‌شود که تحقیقات آینده باید از فاکتورهای روش رسمی سیستم (FSM) برای مدل سازی پیش بینی تعارض اجتماعی در پروژه‌ها بر اساس علایق مختلف بین پروژه و جامعه محلی استفاده کنند. نتایج برای ترکیب محیط استاندارد و چارچوب اجتماعی (ESF) به عنوان یک مفهوم "منافع راه میانه" برای کاهش تعارض اجتماعی در پروژه‌ها مفید است. با استفاده از ESF صحیح می‌توان منافع و تعارضات را به خوبی مدیریت کرد تا از مزایای آن برخوردار شده و جامعه و پروژه خود بهره مند شوند. سرانجام، می‌توان از نتایج این مطالعه برای تدوین شاخص‌های درگیری‌های اجتماعی در پروژه‌های ساختمانی استفاده کرد.

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