

DOI: <https://doi.org/10.38035/gijlss.v4i4.1070><https://creativecommons.org/licenses/by/4.0/>

Received: 23 June 2026 | Revised: 15 October 2026 | Accepted: 22 October 2026

Reconstruction of Agreement Arrangements for Subcontractors in the Implementation of Key Handovers (Turn Key Project) Based on Justice Values

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Abstract: This study aims to examine: First, How is the legal protection for subcontractors in the implementation of Turn Key contracts if the main contractor does not fulfill its obligations Second, How is the work risk between the main contractor and the subcontractor in the implementation of Turn Key contracts from the perspective of national agreement law if problems occur. Turnkey contracts are a payment method that is made at once after the project is completed. The turn key contract payment method basically places the risk on the contractor. What is meant by risk here is all forms of risk that may occur after the construction work contract is signed, namely; risks before the work is carried out (preparation period for work implementation), risks during the work implementation, and risks after the work is completed but has not been handed over to the work owner. Therefore, it is appropriate and proper for the contractor to receive adequate legal protection, especially in terms of his right to receive payment as it should be. This study uses a mixed method of normative juridical and socio-legal approaches with descriptive analytical research specifications, as well as qualitative normative data analysis methods. Based on the research results, the following conclusions can be drawn: First, legal protection for subcontractors in the implementation of Turn Key contracts if the main contractor does not fulfill its obligations is very important because subcontractors are often in a vulnerable position. Subcontractors not only depend on payments from the main contractor to cover their operational costs, but must also ensure that their work meets the standards set out in the contract. Second, to reduce the risk of legal disputes and ensure effective resolution, the main contractor and subcontractor must draft a contract that includes a clear dispute resolution clause. The existence of a structured dispute resolution mechanism, the parties can more easily resolve disputes and continue the project with minimal disruption.

Keywords: Justice, Reconstruction, Agreement, Turn Key Project, Contractor.

INTRODUCTION

After entering a period of political stability in 1965, the Indonesian government began to revamp its development program. Despite being hit by the Asian economic crisis in 1998 and

the global economic crisis in 2008, the construction sector makes a significant contribution to the Indonesian economy, accounting for an average of 10% of Indonesia's annual GDP. This situation can lead to poor project management, which can lead to reduced labor productivity, decreased work quality, and delayed implementation. Law Number 2 of 2017 in its explanation states that national development aims to realize a just and prosperous society based on Pancasila and the 1945 Constitution of the Republic of Indonesia. In addition to playing a role in supporting various development sectors, Construction Services also plays a role in supporting the growth and development of various goods and services industries needed in the implementation of Construction Services and broadly supporting the national economy.

Since the leadership of President Joko Widodo, through Presidential Regulation Number 3 of 2016 which has been amended several times until now to Presidential Regulation Number 109 of 2020 concerning the Acceleration of the Implementation of National Strategic Projects (PSN), it is stated that National Strategic Projects are projects and/or programs implemented by the Government, Regional Governments, and/or business entities that have a strategic nature to increase growth and equitable development in order to improve community welfare and regional development. Through this Presidential Regulation, there are ten strategic programs that are the targets of government development, including the toll road access development program, the smelter development program, and the infrastructure development program (*Landasan Hukum Pelaksanaan Turn Project di Indonesia*, n.d.).

The direction of legal development in Indonesia is regulated in the National Long-Term Development Plan (RPJPN) 2005-2025, the National Medium-Term Development Plan (RPJMN) 2020-2024, and the Government Work Plan (RKP) 2023. The awareness that humans must live in society is due to the fact that humans are social beings so that "humans will need other people in order to fulfill their needs (Ibnu Khaldun, dalam Sodik, 2015, hlm. 381). The mission of legal development in Indonesia is formulated as follows (Kantor Menteri Negara Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional, tanpa tahun, hlm. 23) : "The upholding of the supremacy of law is supported by a solid national legal system that reflects truth and justice, and obtains strong legitimacy from the wider community."

The state's objectives, as stated above, are in accordance with the European continental legal tradition (civil law), which requires the state to act based on the law. The concept of a state under the rule of law is, in fact, closely linked to the legal system adopted by that state (Bagir Manan, dalam Qamar, 2013, hlm. 32). A state based on material law is more flexible than a state based on formal law because it can act based on formal law and also on discretion, namely the principle of freedom to act on one's own initiative to regulate matters not regulated by law. A state based on formal law applies the principle of legality based on law, while a state based on material law applies the origin of legality based on law (*rechmatig*) (Sibuea, 2011, hlm. 43). The position of the government in a material legal state is dual (Qamar, 2013, hlm. 42), namely; (1) the government as the authority that makes laws and regulations, and (2) the government as a servant of the people.

Construction itself was previously better known as contracting which is regulated in the Civil Code (hereinafter referred to as KHUPer) which is stated in the provisions of Articles 1604 to 1617 of the Civil Code regarding the discussion of the law on contracting work. Since the enactment of Law Number 18 of 1999 concerning Construction Services which has been revoked and then replaced by Law Number 2 of 2017 concerning Construction Services (hereinafter referred to as the Construction Services Law), so that in this case the principle of *Lex Specialis derogat legi generali* applies, the rules in the Civil Code regarding contracting work no longer apply, so the term construction work applies in accordance with the Construction Services Law. Contracting work (*aaneming van werk*) is doing work by agreeing to complete all work while bearing the risks (profit and loss), so that the party contracting the work only has to pay the agreed price.

The development of the construction implementation process has undergone drastic changes, where the main contractor receives a contract (work) by breaking down the work and

dividing it (handing over) to subcontractors. Main contractors sometimes no longer do the work themselves, but hand it over to subcontractors, more than 80% of main contractors emphasized the need for cooperation with subcontractors and 2 material suppliers for one job (contract). The success of a project is inseparable from the cooperation between the parties involved, namely the owner, engineer, consultant, and contractor. The parties involved in the implementation of construction work as referred to in Article 39 of the UUK are the user and the service provider. The definition of a service user according to Article 1 number 5 of the UUK is the owner or provider of work that uses construction services, and the service provider according to Article 1 number 6 of the UUK is the building service provider. From these two definitions it is clear that in a construction contract there are two parties, namely the service user, namely the service provider often called the task giver, and the service provider called the construction service provider often called the contractor. A construction company (contractor) is a company that essentially produces services, but in its production process (in conversion activities) it is like a goods industry, whose products are presented in the form of materials (buildings). Contractors, like all service providers in general, carry out their work based on a work contract agreed and signed by the contractor with the party using their services, both end users and intermediary users, namely other contractors who are generally larger. The work contract in question is a construction work contract as explained in Article 1 number 8 of the UUK, namely; "the entire contract document that regulates the legal relationship between the service user and the service provider in the implementation of construction services."

A turnkey contract is a payment method that is made in one lump sum upon project completion. The turnkey contract payment method essentially places the risk on the contractor. By risk, we mean any risks that may arise after the construction contract is signed, including risks before the work begins (preparation period), risks during the work, and risks after the work is completed but not yet handed over to the owner. Turnkey contracts are commonly used in the construction industry, for example, where they refer to the bundling of materials and labor with subcontractors. Turnkey is similar to Design-Build, differing only in that payment is made in a lump sum upon completion. In Turnkey, a request may be made to the Service Provider for operation, either during a trial period or through a Build-Operate-Transfer (BOT) contract.

In reality, the legal position of subcontractors is often weak because their contractual relationship is not directly with the project owner, but rather through the main contractor. This often leads to unclear rights and obligations and the potential for unfairness in risk allocation, payment, and dispute resolution. This clearly undermines the contractor's sense of fairness, particularly regarding their right to receive proper payment.

The first case, in June 2021 the West Java Provincial Government in collaboration with the Pangandaran Regional Government announced PT. Echo Tera Persada as the winner of the Pangandaran West Coast Development Project Auction as a continuation of the 2020 project worth 9 billion with a payment system at the end of the project (turn key), including: Year of Occurrence: The dispute occurred and was resolved through deliberation to reach a consensus through an agreement in 2021 Parties Involved: Main Contractor: PT echo Tera Subcontractor: CV Teguh Karya. Main Work and Dispute: CV Teguh Karya was contracted to design, Arrangement of coastal land with heavy equipment for Park construction work and lighting electricity including park lamp posts The dispute arose from various interrelated problems. In July, PT. Echo Tera collaborated with CV. Teguh Karya as a subcontractor to carry out the work outlined in points 1 and 3 for a period of four months, or 120 working days. The work began in August and will continue through November, with the guarantee being paid by the guarantor bank no later than the end of December 2021. In November, CV. Teguh Karya, as the subcontractor, completed its obligations under points 1 and 3 and reported the work progress to PT. Echo Tera for the budget disbursement process, as entitles CV. Teguh Karya. In January,

a breach of contract was declared between PT. Echo Tera and CV. Teguh Karya, with the budget paid in full by the guarantor bank to PT. Echo Tera.

The second case, Multiplex Constructions and Cleveland Bridge UK (UK), is one of the most complex and expensive construction disputes in English legal history, arising during the construction of the new Wembley Stadium. Year of Origin: The dispute escalated and went to court between 2004 and 2006. Parties Involved: Main Contractor: Multiplex Constructions (UK) Ltd. Subcontractor: Cleveland Bridge UK Ltd (specialists in structural steelwork). Subject Matter of the Dispute: Cleveland Bridge was contracted to design, fabricate and install the stadium's iconic steel roof structure. The dispute arose from a number of interrelated issues.

Design Changes and Delays: Cleveland Bridge claimed that Multiplex consistently provided late design information and made numerous changes, causing the work to be disrupted and costs to skyrocket. Withholding of Payments: Multiplex withheld substantial payments from Cleveland Bridge's invoices, claiming that the subcontractor's work was defective and late. Termination of Contract: The dispute escalated when Cleveland Bridge stopped work in August 2004, claiming Multiplex had fundamentally breached its contract (repudiatory breach) by failing to pay. Multiplex responded by claiming that Cleveland Bridge had breached its contract by abandoning the project.

Resolution: The case went to the UK's Technology and Construction Tribunal (TCC). In its ruling, the tribunal criticized both parties. It found that Multiplex was entitled to withhold some payment due to defective work, but also found that many of Multiplex's counterclaims were excessive. Ultimately, this costly dispute became a case study in the importance of good design management, clear communication, and fair contract administration in preventing project failure.

METHOD

The research method used in this dissertation is normative-empirical legal research with a socio-legal research approach. The normative approach is used to analyze positive legal norms governing the implementation of Turn Key contracts. The empirical approach is used to examine how these legal provisions are implemented in practice, through observations of the reality of the fragmentation of advocate organizations and its implications for law enforcement. The combination of these two approaches allows for a comprehensive analysis of the disharmony between law on the books and law in action as a basis for formulating a reconstruction of the regulations for the implementation of Turn Key contracts.

RESULTS AND DISCUSSION

Law is a crucial pillar of social life. In this context, legal theories play a crucial role in understanding and effectively applying law. The three theories discussed in this dissertation are the theory of legal protection, the theory of legal certainty, and the theory of justice. These three theories are interrelated and provide different perspectives in assessing the effectiveness of the legal system in Indonesia. The theory of legal certainty clearly aligns with the legal tradition adopted in Indonesia, namely, the continental European legal tradition (civil law). "Written law is characteristic of continental Europe with its ground norms.

Violations or crimes can be punished if there is a written law or law first. The existence of the theory of legal certainty, especially in Indonesia, is represented in the form of the existence of positive law that encompasses all aspects of Indonesian society, in other words, the application of the theory of legal certainty in a country of law that applies the civil law tradition is essentially implementing the law using a legalistic (formal) approach.

"The mindset of Indonesian legal experts, especially law enforcers, is still oriented towards formal legalism, because the pattern of legal education is too oriented towards positive legal science (legal positivism)" (Widodo, 2011, pp. 133–134). In Indonesia, what hinders the

process of legal reform is the habit of legal experts accepting law as something static and routine, so that it is accepted as a legal dogma (Arief, 2011, p. 104).

According to the meaning of the word, certainty is "a matter (condition) of certainty; provisions; determination" (KBBI Daring, n.d.-a). Meanwhile, legal certainty according to the meaning of the word is "a legal instrument of a country that is able to guarantee the rights and obligations of every citizen" (KBBI Daring, n.d.-b). Legal certainty is in fact a question that can only be answered normatively, not using a sociological approach (Rato, 2014, p. 59). The theory of legal certainty arose from the development of the fundamental value of legal certainty. Legal certainty is "Scherkeit des Rechts selbst" (certainty about the law itself) (Ali, 2015, p. 292). Kepastian hukum sebagaimana biasa dipahami orang, bukanlah produk otomatis dari hukum. In a country that is governed by law, certainties do not immediately emerge in society (Ali, 2015, p. 290).

The need for a complete and clear interpretation actually emerged during the period when Roman Law was in effect, as seen in Ulpianus' statement as quoted by Peter Mahmud Marzuki, namely *Quamvis sit manifestissimum Edictum Praetoris, attamen non est negligenda interpretatio ejus* (Marzuki, 2017, p. 111), which means that no matter how clear the Praetorian (consul's) Decree/Order is, it is impossible to reject the interpretation due to deficiencies. The theory of legal certainty in Indonesia, as discussed in the previous section, is characterized by respect for positive law in Indonesia, which is established through a number of laws and regulations concerning various matters, both codified and uncoded. According to the theory of legal certainty, law can be seen as a series of rules that serve as constraints on society, burdening it with various obligations and prohibitions. The implementation of these rules by society is what ultimately leads to legal certainty (Marzuki, 2017, p. 158). Legal certainty is justifiable protection against arbitrary actions, which means that a person will be able to obtain what is expected in certain circumstances (Tjia, 2013, pp. 63–64). The law is tasked with creating legal certainty because the law aims at social order.

Another aim of law is to achieve order in society. It requires certainty in human interaction, which is very important not only for an orderly social life, but is an absolute requirement for a living organization that goes beyond current boundaries (Kusumaatmadja, 2021, pp. 3–4).

Law is a closed system, thus the goal of the theory of legal certainty is the existence of legal certainty itself, so that the law only produces general rules. In this case, the law is detached from justice and utility (Ali, 2017, pp. 82–83). which is actually expected to be facilitated by the existence of legal certainty. Legal certainty is basically an individual's trust in the (legal) protection he receives in relation to his hopes for the actions taken by the authorities and a sense of trust in the consistency of court decisions and administrative (government) decisions (Hijmans, as cited in Budiono, 2015, p. 208).

Legal certainty is an inherent characteristic of (written) law and cannot be separated. According to Apeldoorn, legal certainty must encompass two aspects: (a) the legal determination of a concrete matter, and (b) the existence of legal security. This means that individuals seeking justice can know in advance the applicable law before commencing a case or certain legal action. This is solely intended so that the individual can obtain legal protection and avoid arbitrary actions by judges (Hasan, [tahun], p. 12). The term legal protection theory comes from English, namely legal protection theory, while in Dutch, it is called *theorie van de wettelijke bescherming*, and in German it is called *theorie der rechtliche schutz*.

Turn Key Agreement Practices in Construction Services Agreements

The turn key system in a construction services agreement is a method where the contractor is fully responsible for all aspects of the project, from planning, design, procurement, to completion and final delivery of the project in a ready-to-use condition. In Indonesia, several

large projects have implemented this system with the aim of increasing efficiency and certainty in project completion. Two important examples that can be used as material for analysis are the Pangandaran West Coast structuring project and the public facilities rehabilitation project in Belu Regency. A Brief Description of Major Construction Projects in Indonesia Using the Turnkey System.

1. Pangandaran West Coast Development Project This project was implemented by PT Echo Tera Persada with CV Teguh Karya as a subcontractor. The project includes coastal land development, garden development, and electrical and lighting installation. The project began in 2020 and continued into 2021 with a contract value of 9 billion rupiah. The work was completed in four months, from August to November, with payment made at the end of the project (turnkey).
2. Public Facility Rehabilitation Project in Belu Regency. In this project, CV Bintang Jaya Perkasa acted as the contractor for the rehabilitation of public facilities. The local government requested the contractor to perform the work without a budget at the time, with the promise of payment once the budget was available in the regional budget (APBD). Although the work was completed according to the specified specifications, the local government failed to fulfill its payment obligations, resulting in the case being brought to court.

Success in turnkey projects can be measured by several aspects, including timely completion, quality results that meet standards, and project owner satisfaction with the final product. In the Pangandaran West Coast development project, subcontractor CV Teguh Karya successfully completed the project on time and with quality that met specifications. This demonstrates effective project management and coordination between the main contractor and subcontractors.

However, there are also risks and challenges in implementing a turnkey system, as seen in both cases. The main failures that occurred were related to payment issues. In the Pangandaran case, PT Echo Tera Persada failed to make payments to CV Teguh Karya even though funds had been disbursed from the guarantor bank. This indicates the risk of the main contractor's inability or negligence to meet its financial obligations, which could result in losses for the subcontractors. Similarly, in a public facility rehabilitation project in Belu Regency, the local government failed to pay the contractor's costs. This failure was caused by the lack of a budget when work began, demonstrating a lack of planning and budget certainty on the part of the project owner. This case ultimately resulted in a breach of contract lawsuit, highlighting the importance of complying with contract provisions and thorough budget planning before the project begins.

The success of turnkey projects depends heavily on comprehensive planning, contract compliance, and effective risk management. The main contractor must ensure they have sufficient financial and operational capacity to complete the project according to the contract's terms. Conversely, the project owner must ensure that the necessary budget and resources are available before the project begins to avoid the risk of default that could be detrimental to all parties involved. Thus, the practice of turnkey contracts in construction services in Indonesia demonstrates that while this system can provide efficiency and certainty in project completion, it also carries risks that must be properly managed. Experience from existing projects demonstrates that adherence to planning, risk management, and contractual provisions is key to achieving success in implementing a turnkey system.

Problems of Turn Key Agreements in Construction Services.

One of the main problems with turnkey construction contracts is the risk of late payments from the project owner. The turnkey system requires payment after the entire project is

completed and delivered in a ready-to-use condition. However, in practice, late payments from the project owner often occur. These delays can be caused by various factors, such as liquidity issues, administrative constraints, or changes in the project owner's management. These late payments can cause significant financial pressure on the main contractor, who has already invested significant funds to complete the project (Cheung, 2006).

Another common issue is the inability of the main contractor to meet its financial obligations. This can occur for a variety of reasons, including cost miscalculations, changes in material prices, or problems with the contractor's internal financial management. This inability can result in the main contractor failing to pay subcontractors and suppliers on time. This situation not only disrupts the cash flow of subcontractors and suppliers but can also delay the overall project completion (Zou et al., [tahun], pp. 601–614).

The impact of late payments from the project owner or the financial insolvency of the main contractor is devastating for subcontractors and suppliers. Subcontractors who rely on payments from the main contractor to cover their operating costs can experience serious financial difficulties. They may be unable to pay their workers on time, purchase necessary materials, or even continue work on other projects. Suppliers who do not receive timely payments also face the risk of financial losses, which can disrupt the supply chain and increase overall project costs (Mills, 2017).

Late payment cases can also lead to conflict and legal disputes between the main contractor, subcontractors, and suppliers. Resolving these disputes often takes time and considerable expense, ultimately exacerbating existing financial problems. To mitigate this risk, it is crucial for all parties involved in a turnkey agreement to ensure robust and transparent financial mechanisms are in place, as well as clear contractual provisions regarding payment schedules and penalties for late payments. To mitigate these financial and payment risks, several steps can be taken, including: One of the main problems with turnkey construction contracts is the lack of thorough budget planning. Inadequate budget planning can lead to significant uncertainty and financial risk. When budgets are poorly planned, construction projects can experience funding shortages midway through implementation, which in turn can hinder progress and cause delays. Lack of thorough budget planning is often caused by inaccurate cost estimates, unrealistic assumptions, or insufficient attention to project operational details.

Cost changes during project implementation are another common problem encountered in turnkey systems. Construction costs can fluctuate due to fluctuating material prices, labor wage increases, or changes in the project's design and specifications. For example, increases in the price of raw materials like steel and cement can significantly increase the overall cost of a project. Furthermore, changes requested by the project owner during the construction phase can also increase costs. The inability to manage and control these cost changes can lead to budget overruns and impact the project's financial viability (Chen et al., 2012).

Difficulties in procuring materials and resources are a common challenge in turnkey projects. Dependence on specific suppliers and limited material supply can lead to delivery delays and increased costs. Furthermore, logistical issues, such as transportation and storage of materials, can impact the availability and quality of materials required for the project. These difficulties not only impact the project schedule but can also reduce the quality of the final product (Doloi et al., 2012, pp. 479–489). To address the problem of budget and resource uncertainty, several steps that can be taken include:

1. **More detailed and realistic budget planning:** Make accurate cost estimates by considering all factors that can affect the budget, including fluctuations in material prices and labor wages.
2. **Effective change management:** Implementing strict change control procedures to minimize the impact of changes on project costs and schedules.

3. **Supplier diversification: Developing** relationships with multiple suppliers to reduce the risk of delivery delays and ensure the availability of necessary materials.
4. **Use of technology:** Adopting project management and procurement technologies, such as project management information systems (PMIS) and e-procurement, to improve efficiency and transparency in the procurement of materials and resources (Hartmann et al., 2009, pp. 1103–1113).

By implementing these steps, budget and resource uncertainty can be better managed, thereby increasing the chances of success for turnkey construction projects. One of the main challenges in turnkey construction contracts is communication issues between the project owner, main contractor, and subcontractors. Poor communication can occur for a variety of reasons, including language differences, cultural differences, and differences in expectations. When communication is poor, important information regarding design changes, schedule changes, or technical specifications can be missed or misinterpreted. This can lead to confusion and uncertainty among all parties involved (Loosemore, 1999, pp. 699–709).

Communication problems are often exacerbated by a lack of adequate documentation. If verbal communication isn't supported by clear written documentation, the risk of misunderstanding increases. Therefore, it's crucial for all parties to ensure that every important communication is properly documented and distributed to all relevant parties. Lack of coordination between the project owner, main contractor, and subcontractors can lead to various problems in the implementation of a turnkey project. Poor coordination can occur when there's no clear management structure or when responsibilities aren't well-defined. For example, if the main contractor doesn't properly coordinate work with subcontractors, this can lead to overlapping work, inefficient resource utilization, and delays (Dainty et al., 2006). Lack of coordination can also lead to conflict between the various parties involved. For example, if subcontractors aren't clearly informed about schedule or design changes, they may struggle to complete their work on time. This can lead to tension and dissatisfaction, which can ultimately negatively impact the overall project (Ofori, 2000, pp. 501–511). Miscommunication has a significant impact on project quality and completion time. When information is not communicated clearly or in a timely manner, the quality of the work can be affected. For example, if subcontractors do not receive updated technical specifications, they may proceed with work based on outdated information, which can result in a final product that does not meet expected standards (Thomas et al., 1998, pp. 58–66).

Furthermore, miscommunication can also cause significant delays in project completion. When information about changes to the schedule or work sequence is not communicated properly, it can result in misalignments in the execution of work on the ground. These delays not only disrupt the project schedule but can also increase costs due to the need for rework or repairs (Love et al., 2005, pp. 247–259). To address communication and coordination problems, several steps that can be taken include:

1. Adopt effective communication technologies, such as web-based project management systems that allow all parties to access project information in real-time.
2. Hold regular coordination meetings to ensure that all parties receive the latest information and understand their respective roles and responsibilities.
3. Document all important communications in writing to avoid misunderstandings and ensure that all parties have a clear reference.
4. Develop a clear project management structure, with precise definitions of the roles and responsibilities of each party.

By improving communication and coordination, the risk of misunderstandings can be reduced, and the quality and efficiency of the project can be improved, thus ensuring that the

turnkey project can be completed according to the expected time and standards. Violations of construction regulations and standards are a common problem in turnkey projects. Construction standards are established to ensure that all technical aspects of a project meet expected quality, safety, and performance requirements. When contractors or subcontractors fail to comply with these standards, the result can be unsafe structures, poor workmanship, or even structural failure. These violations can be caused by a variety of factors, including a lack of knowledge of applicable regulations, negligence, or pressure to complete the job quickly and cheaply (Mitropoulos & Howell, 2001, pp. 223–231).

Compliance with environmental and occupational safety regulations is also a significant challenge in turnkey projects. Construction projects often have significant environmental impacts, such as air pollution, noise pollution, and land degradation. Therefore, various regulations governing environmentally friendly practices must be followed by contractors. Failure to comply with environmental regulations can lead to serious environmental damage and severe legal penalties. For example, the use of hazardous chemicals without proper management can result in water and soil pollution, which can harm the surrounding ecosystem (Tam et al., 2007, pp. 1471–1477).

On the other hand, occupational safety is a critical aspect that must be considered in any construction project. Workplace accidents can occur due to unsafe working conditions, lack of safety training, or disregard for safety procedures. Occupational safety regulations are designed to protect workers from work-related injuries and illnesses. Failure to comply with occupational safety standards not only risks worker health and safety but can also result in project delays and additional costs due to incident management and lawsuits (Choudhry et al., 2007, pp. 993–1012). The legal consequences of non-compliance with construction regulations and standards can be serious. When violations are detected, regulatory authorities can impose a variety of sanctions, ranging from financial fines, temporary or permanent project suspension, to more severe legal action such as criminal prosecution of the individuals responsible. Furthermore, non-compliance can also damage a contractor's reputation, which in turn can affect their ability to secure future projects (Hinze, 1997). Cases of significant violations are often publicized, which can negatively impact a company's image. For example, serious violations of environmental regulations can result in lawsuits from affected communities or environmental organizations. Similarly, workplace accidents caused by negligence in complying with safety standards can result in lawsuits from workers or their families. To avoid these legal consequences, it is crucial for all parties involved in a turnkey project to have a thorough understanding of applicable regulations and standards. This includes ensuring all workers receive adequate training, conducting regular inspections to ensure compliance, and taking prompt action to address any detected violations (Hughes & Ferrett, 2020).

Thus, compliance with regulations and standards is not only a moral responsibility but also a legal obligation that contractors must fulfill in turnkey projects. Strict compliance ensures that projects can be completed safely, efficiently, and responsibly, while reducing the risk of adverse legal consequences. Critical to turnkey projects is the identification, analysis, and management of risks that could impact project success. Risk identification involves recognizing potential issues that could arise during the project life cycle, including technical, financial, legal, environmental, and operational risks. Each risk needs to be analyzed to determine its likelihood of occurrence and its impact on the project. Once risks are identified and analyzed, mitigation measures need to be designed and implemented to reduce or eliminate the impact of those risks (Zou et al., 2007, pp. 601–614). Although risk management is a critical aspect of turnkey projects, failures in risk management are still common. These failures are usually caused by insufficient attention to risk identification early in the project, inaccurate risk assessments, or ineffective implementation of mitigation measures. One example of a risk management failure is when a contractor fails to properly consider environmental risks,

resulting in a project being disrupted by extreme weather conditions, leading to delays and increased costs (Choudhry et al., 2007, pp. 993–1012).

Other failures can occur when financial risks are not properly managed, such as the lack of adequate insurance to protect the project from significant financial losses. The inability to respond to risks quickly and appropriately can also exacerbate the situation, causing a minor problem to escalate into a major crisis that threatens the project's sustainability (Choudhry et al., 2007). A contingency plan is a strategy designed to address unforeseen events that could impact a project. It is an integral part of effective risk management, ensuring that the project can adapt and continue despite unanticipated issues. A contingency plan includes alternative actions that can be taken when a particular risk occurs, as well as the allocation of resources necessary to implement those actions (Botter, 1982, p. 211).

The importance of a contingency plan lies in its ability to provide quick and effective solutions in emergency situations. For example, if a critical material delivery is delayed, the contingency plan might involve using alternative suppliers or changing the work schedule to mitigate the impact of the delay. By having a contingency plan, the project team can reduce uncertainty and increase the project's resilience to external disruptions (Vanhoucke, 2013). A contingency plan also helps maintain effective communication between all parties involved. When problems arise, a well-developed plan can provide clear guidance on what steps to take, who is responsible, and how information should be disseminated. This is crucial to ensuring that all parties remain coordinated and cooperate in the face of challenging situations. Therefore, proper risk identification and mitigation, along with a solid contingency plan, are key to ensuring the success of a turnkey project. Effective risk management involves not only preventing problems but also being prepared to address and resolve them quickly and efficiently.

Analysis of the position of subcontractors in turn key projects

In a turnkey project, the main contractor is fully responsible for the planning, implementation, and completion of the project until it is ready for use by the project owner. However, to complete various technical and specific aspects of the project, the main contractor often involves subcontractors. These subcontractors are responsible for specific parts of the project, such as electrical work, plumbing, or building structure. Their role is crucial because they provide the specialized expertise needed to complete the project to high standards. In a turnkey project, the project owner (employer) only deals with one entity, the main contractor. The main contractor is fully responsible for the design, procurement, and construction (EPC).

1. **Legal Status:** The Subcontractor is in a position of Privation of Contract only with the Main Contractor. Legally, there is no direct contractual relationship between the Employer and the Subcontractor.
2. **Vicarious Liability Doctrine:** The Main Contractor is fully responsible for any errors or failures made by the subcontractor before the project owner.

In turnkey projects, risk is a single-point responsibility.

Table 1. Subcontractor Roles and Legal Implications Matrix

Aspect	Subcontractor Position	Legal Impact
Design	Often involved in designing certain specializations.	If a design failure occurs, the subcontractor is liable to Maincon, but Maincon is sued by the Employer.
Default	Subcontractor delays are considered Maincon delays.	Liquidated Damages (fines) will be imposed on Maincon, which will then flow down to the subcontractors.
Warranty	Provide material/tool guarantee.	There is often a Collateral Warranty clause so that the Employer can sue the subcontractor directly if Maincon goes bankrupt.

Legal Theories Available (Analysis Tool)

To deepen the dissertation, the author uses the following theories:

1. Privileged Theory of Contract: Analyzing the limitations of subcontractor's responsibilities and rights towards third parties (Owners).
2. Agency Theory: Is the subcontractor acting as an agent of the main contractor or an independent entity in its own right?
3. Contractual Fairness Theory: Analyzes the bargaining power of subcontractors, which is typically weaker than that of the main contractor.
4. Economic Analysis of Law: How risk allocation to subcontractors can reduce overall project costs but increase the risk of systemic failure.

Direct Payment Agreement: A legal analysis of the possibility of the Owner paying directly to the Subcontractor if the Main Contractor experiences financial difficulties (to avoid project stalling). Retention Rights and Links: How subcontractors protect their collection rights for work that is already integrated with the Employer's land/building. Dispute Resolution: Multitier disputes where subcontractors are often forced to participate in arbitration conducted between Maincon and Employer.

Weaknesses in legal protection for subcontractors

Although subcontractors play a crucial role, they often lack full control over the overall project and rely heavily on the main contractor for the provision of materials, equipment, and timely payment. When the main contractor fails to fulfill its obligations, such as late payments or failure to provide necessary materials, subcontractors face various challenges that can hinder their performance and result in financial losses. Therefore, subcontractors require strong legal protection to ensure their rights are protected and they can complete their work without unforeseen obstacles. Legal protection for subcontractors is crucial to mitigating the risks they face in construction projects. This includes clear payment clauses in the contract, ensuring timely and agreed payments. The use of payment guarantees such as performance bonds or payment bonds can also help mitigate financial risks for subcontractors. Furthermore, effective dispute resolution procedures, such as mediation or arbitration, can help subcontractors resolve disputes without resorting to lengthy and costly litigation.

Furthermore, legal protection helps minimize the risk of conflict and disputes that could disrupt the smooth running of a project. In the context of complex turnkey projects, where multiple parties are involved and there are numerous technical aspects to manage, it is crucial to have a legal framework that ensures each party is aware of its rights and obligations. This protects subcontractors from harmful practices and ensures the project is completed successfully and efficiently. The main contractor's financial obligations to subcontractors are a crucial aspect of a turnkey agreement. The main contractor is responsible for ensuring that subcontractors are paid on time and in accordance with the terms agreed upon in the contract. These payments are typically based on progress achieved and agreed upon by both parties. Failure by the main contractor to make payments can cause the subcontractor to experience financial difficulties, impacting the project's continuity.

In addition to financial obligations, the main contractor is also responsible for providing the materials and technical support required by the subcontractor. The timely and high-quality provision of materials is crucial to ensuring that the subcontractor's work is completed on schedule and according to established specifications. Delays in the provision of materials or the provision of substandard materials can hamper the subcontractor's performance and reduce the quality of the work. Technical support from the main contractor also includes providing clear information and guidance on the technical aspects of the project. This includes technical specifications, designs, and work procedures that subcontractors must follow. Research shows

that adequate technical support from the main contractor helps subcontractors understand and meet project requirements, while reducing the risk of errors that can lead to additional costs and delays. Research shows that a good relationship between the main contractor and subcontractors can improve overall project performance. Strong technical support ensures that subcontractors have the resources and information necessary to complete their work to the expected standards. With clear technical guidance, subcontractors can avoid common mistakes and focus on completing tasks efficiently. Furthermore, strong collaboration and technical support from the main contractor can help create a more harmonious and productive work environment. This is especially important in large projects where coordination between various parties is crucial for project success.

The main contractor is responsible for ensuring that the work performed by the subcontractor meets the quality standards agreed upon in the contract. This responsibility includes regular supervision and inspection of the subcontractor's work. The main contractor must ensure that each stage of the subcontractor's work has been completed in accordance with the established technical specifications and quality standards before proceeding to the next stage. If defects or discrepancies are discovered in a subcontractor's work, the main contractor is obligated to request corrections or adjustments to ensure the final result meets expectations. The quality of the subcontractor's work is crucial because it directly impacts the overall quality and success of the turnkey project. Effective oversight and prompt response to quality issues are key to maintaining high standards in construction projects.

To ensure these obligations are met, it is crucial for the main contractor to have an effective project management system in place. This includes financial monitoring, material logistics, and regular quality inspections. This allows the main contractor to manage the project holistically and ensure that subcontractors work efficiently and produce high-quality work. To support the fulfillment of these obligations, the contract between the main contractor and subcontractor must be clearly and thoroughly drafted. The contract should include provisions regarding payment schedules, material specifications, quality standards, and dispute resolution procedures. This ensures that both parties have clear guidance regarding their rights and obligations, which can help reduce the risk of disputes and ensure smooth project implementation.

Evaluation of the application of justice values in existing agreements

Commutative equity demands equality between performance and counter-performance. In subcontractor contracts, the evaluation includes:

1. **Risk Allocation Imbalance:** Are subcontractors being burdened with risks beyond their control? For example, subcontractors might be asked to bear the risk of rising global material prices (inflation) without an escalation clause, while the main contractor has that protection from the project owner.
2. **Klausul Ganti Rugi (Indemnity):** Seringkali terdapat klausul "indemnity" yang sangat luas, di mana subkontraktor harus membebaskan kontraktor utama dari segala tuntutan, bahkan jika kesalahan tersebut berasal dari instruksi desain kontraktor utama.
3. **Distributive Justice (Fair Distribution of Burdens)** This justice looks at how benefits and burdens are distributed proportionally.
4. **"Back-to-Back" Payment Scheme:** Theoretically, this is fair for cash flow. However, morally and legally, it becomes unfair if a subcontractor completes the work perfectly but is not paid simply because the main contractor has a separate dispute with the project owner that is unrelated to the subcontractor's work.
5. **Retention:** An evaluation of the length of time a subcontractor retains money (usually 5-10%). Inequity arises if a subcontractor's retention is withheld until the entire project is

completed (which can take years), even though the subcontractor's specialist work was completed and handed over long before.

Procedural Justice (Fair Process Justice) is not just about the results, but how the agreement process is made and carried out. Standard Form Contracts: Many subcontractors are faced with a "take it or leave it" situation. Your dissertation evaluation may highlight this lack of negotiation as a violation of procedural fairness.

Dispute Resolution Mechanisms: Often subcontractors are forced to attend expensive and distant arbitration forums, which are financially impossible for them to reach, thus procedurally hindering their right to seek justice.

Table 2. Fairness Parameter Evaluation

Parameters of Justice	Ideal Conditions (According to Theory)	The Reality of Turnkey Projects
Bargaining Position	Negotiations are based on voluntary agreement (Consensualism).	Main contractors dominate small subcontractors.
Payment Certainty	Pay is based on performance (Quantum Meruit).	Reliance on third parties through Pay-if-Paid clauses.
Risk Allocation	Risk is managed by the party best able to control it.	Risks are "thrown" to the lowest contractual layer (subcontractors).
Termination	Termination of the contract must be based on legitimate and fair reasons.	Unilateral Termination for Convenience clauses by Maincon.

Reconstruction of justice-based regulation

The following is a proposed reconstruction of the legal arrangements for subcontractors in turnkey projects, which is systematically arranged:

1. Redefining the Principle of Freedom of Contract

In turnkey projects, unequal bargaining positions render freedom of contract a virtual reality. Reconstruction must begin by limiting this principle through a positive Good Faith Principle.

- State Intervention:** The government should establish Mandatory Standard Contracts for subcontracting that contain minimum protection clauses.
- Prohibition of Exoneration Clauses:** Prohibit clauses that transfer all uncontrollable risks (such as Maincon's design failure) to the subcontractor.

2. Prohibition of Conditional Payment Clauses (Pay-when-Paid)

This clause is a major source of injustice. The legal reconstruction should adopt the principles of the Singapore SOP Act or the UK Construction Act:

- Principle of Independence of Payment:** The subcontractor's right to be paid must be based solely on the performance of the agreed work, not on the financial relationship between Maincon and the Employer.
- Null and Void:** States in the regulation that any clause that makes subcontractor payments dependent on third party payments is null and void.

Establishment of a "Statutory Adjudication" Mechanism

To achieve rapid procedural justice, an institution outside the ordinary court/arbitration is needed:

- Mandatory Adjudication:** Payment disputes must be resolved through adjudication within a maximum of 30 days.

2. Immediate Decision: The adjudication decision must be legally binding and immediately executable to prevent the project from stalling and the subcontractor from going bankrupt during the lengthy legal process.

Table 3. Legal Arrangement Reconstruction Matrix

Legal Components	Current Arrangement (Status Quo)	Justice-Based Reconstruction
Relationship Patterns	<i>Absolute (isolated) Privation of Contract.</i>	Limited Direct Liability (Direct access to Employer in emergency).
Risk Allocation	Risk flows downward (Flow-down).	Principle of Proportionality: The risk is borne by the party best able to control it.
Payment Guarantee	Just rely on Maincon's promise to pay.	Security of Payment: The obligation to have a Payment Bond or Escrow Account for subcontractor wages.
Retention Rights	Held until project completion (100% Physical).	Partial Release: Retention is released proportionally when sub-jobs are completed

The Pangandaran West Beach development case is a concrete example of the challenges faced by subcontractors in turnkey projects. This project was implemented by PT Echo Tera Persada as the main contractor, with CV Teguh Karya as the subcontractor. The project included beach land development, gardening, and electrical and lighting installation. Although the work was completed on time by the subcontractor, PT Echo Tera Persada failed to make timely payments to CV Teguh Karya, even though funds had been disbursed from the guarantor bank. This late payment caused significant financial pressure for the subcontractor, as they were required to cover operational costs and workers' salaries on time (Pangandaran Case, 2021).

Another challenge faced by the subcontractor in this project was the lack of effective coordination and communication with the main contractor. Unclear instructions and technical specifications from the main contractor added to the complexity of the work and increased the risk of technical errors. Furthermore, the subcontractor faced material procurement challenges due to delays from the main contractor's recommended suppliers. All of these factors contributed to the uncertainty and additional risks faced by the subcontractor during the project's implementation.

To resolve the late payment issue, CV Teguh Karya undertook several negotiation steps with PT Echo Tera Persada. Initially, the subcontractor provided written notice of the late payment and its negative impact on the project's continuity. After several failed negotiation attempts, CV Teguh Karya decided to take the matter to court by filing a breach of contract lawsuit against PT Echo Tera Persada. This lawsuit was based on the contractual provisions governing payment obligations and penalties for late payment.

During the legal process, the subcontractor had to provide strong evidence regarding the work completed and the delay in payment by the main contractor. The court ultimately found PT Echo Tera Persada guilty of breach of contract and ordered the main contractor to immediately make payment to CV Teguh Karya and compensate the subcontractor for any losses incurred by the delay. This decision provided fairness and legal protection for the subcontractor, ensuring that they received proper payment for the work completed. Furthermore, the subcontractor also took internal steps to strengthen project management and communication with the main contractor. They implemented a more structured project management system and increased training for their project management team. With these steps, CV Teguh Karya successfully improved coordination and communication with the main contractor, thereby reducing the risk of technical errors and ensuring that the project could be completed according to established standards.

The Pangandaran case provides an important lesson on the importance of legal protection for subcontractors in turnkey projects. Subcontractors must ensure that contracts include clear

provisions regarding payment and dispute resolution. They also need good documentation and an effective project management system to manage risks and ensure smooth project implementation. With adequate legal protection, subcontractors can work with more confidence and focus on completing their work, while the main contractor and project owner can ensure that the project is running according to plan and according to established standards.

Occupational risk in the context of turnkey projects refers to the possibility of events or conditions that could disrupt the project or cause financial, operational, or legal losses to the parties involved. In turnkey projects, the main contractor is fully responsible for the planning, implementation, and completion of the project until it is ready for use by the project owner. Subcontractors, who are typically tasked with completing specific parts of the project, also face various risks associated with their duties. These risks can include late payments, late material deliveries, workmanship issues, and legal disputes. According to Zou, Zhang, & Wang (2007), effective risk identification and management are crucial to ensuring the success of turnkey projects.

This analysis of occupational risk in turnkey project implementation from the perspective of national contract law aims to provide a deeper understanding of how risks can be identified, evaluated, and managed in accordance with applicable Indonesian law. Law No. 2 of 2017 concerning Construction Services and the Civil Code (KUH Perdata) serve as the primary legal basis governing the contractual relationship between the main contractor and subcontractors. Through this analysis, it is hoped that main contractors and subcontractors can collaborate better, minimize risks, and ensure the success of turnkey projects. Understanding risks and how to manage them from a national contract law perspective will help all parties involved take necessary preventive measures and reduce potential conflicts and losses.

CONCLUSION

Legal regulation of subcontractor agreements for turnkey projects is essential because legal regulation is not intended to restrict freedom of contract, but rather to humanize working relationships in the construction supply chain. In high-risk turnkey projects, subcontractors are the most vulnerable. Without legal intervention that regulates ideal clauses (such as payment protection and direct guarantees), the construction industry will be trapped in the practice of "economic cannibalism" which ultimately harms the quality of national infrastructure. There are factors in the application of the principle of justice to subcontractor agreements for turnkey projects. The application of the principle of justice in turnkey projects is not merely a technical administrative issue, but an effort to balance the asymmetry of power between the Main Contractor and Subcontractors. The concept of reconstruction of subcontractor agreements for turnkey projects is that legal reconstruction in turnkey projects is not merely changing the wording of the contract, but rather repositioning the legal position of subcontractors from mere implementing objects to proportionally protected legal subjects. The conclusion of this reconstruction includes three main pillars.

Paradigm Transformation: From Formalistic to Substantive. This reconstruction shifts the rigid Privileged Contract paradigm towards Relational Justice. **The Nature of the Relationship:** Subcontractors are no longer viewed as isolated in their relationship with the Main Contractor alone, but are recognized as having a functional relationship with the Project Owner (Employer). **Regulatory Intervention:** The State must limit the asymmetrical principle of freedom of contract by establishing a Minimum Contract Standard that must be complied with in every turnkey project, in order to prevent the dominance of parties with a stronger bargaining position. **Normative Reconstruction: Elimination of Unconscionable Clauses** Normatively, this reconstruction demands the elimination of contract practices that exploit the financial vulnerability of subcontractors. **Prohibition of Pay-if-Paid:** Firmly stipulates in regulations that subcontractor payment rights are independent rights based on work performance, and may not

be dependent on third-party payment conditions. Proportional Risk Distribution: Risks are no longer automatically flowed down, but are allocated based on risk control capability. Subcontractors only bear the technical risks within their control, not the risk of Main Contractor management failure. Reconstruction of Protection and Enforcement Mechanisms. Justice can only be achieved if there are effective enforcement instruments: Cash Flow Certainty (Security of Payment): Adopt a Mandatory Adjudication system (such as Singapore's SOP Act) that provides a quick decision in payment disputes, so that subcontractor operations are not halted due to lengthy litigation processes. Third Party Protection Guarantee: Legalize the Step-in Rights and Direct Payment mechanism from the Project Owner to Subcontractors in emergency situations or bankruptcy of the Main Contractor as a form of asset and worker rights protection.

REFERENCES

- Achmad Ali, *Menguak Tabir Hukum (Suatu Kajian Filosofis dan Sosiologis)*, Edisi Kedua, Kencana, Jakarta, 2017
- Ahmad Ali, *Menguak Teori Hukum (Legal Theory) Dan Teori Peradilan (Judicialprudence), Termasuk Interpretasi Undang-Undang (Legisprudence)*, Vol 1 Pemahaman Awal, Kencana Prenada Media Group, Edisi Ke 1, Cetakan ke 6, Jakarta, 2015,
- Bagir Manan, dalam Nurul Qamar, *Hak Asasi Manusia dalam Negara Hukum Demokrasi*, Sinar Grafika, Jakarta Timur, 2013
- Barda Nawawi Arief, "Reformasi Sistem Peradilan (Sistem Penegakan Hukum) Di Indonesia" dalam Komisi Yudisial, *Bunga Rampai Potret Penegakan Hukum di Indonesia*, Komisi Yudisial, Jakarta 2011
- Botter, C. H., Project management: *A systems approach to planning, scheduling and controlling*. European Journal of Operational Research, 10(2), 1982, hlm. 211. [https://doi.org/10.1016/0377-2217\(82\)90164-3](https://doi.org/10.1016/0377-2217(82)90164-3)
- Chen, H. L., Zhang, Y., & Zhang, W., *Enhancing project management competency in turnkey projects: A case study*. International Journal of Project Management, 30(3), 2012
- Cheung, S. O., *Construction dispute research: Conceptualisation, avoidance and resolution*. Springer Science & Business Media, 2006.
- Choudhry, R. M., Fang, D., & Mohamed, S., *The nature of safety culture: A survey of the state-of-the-art*. Safety Science, 45(10), 2007
- Dainty, A., Moore, D., & Murray, M., *Communication in Construction: Theory and Practice*. Taylor & Francis, 2006
- Doloi, H., Sawhney, A., Iyer, K. C., & Rentala, S., *Analysing factors affecting delays in Indian construction projects*. International Journal of Project Management, 30(4), 2012
- Dominikus Rato, *Filsafat Hukum Mencari: Memahami dan Memahami Hukum*, Laksbang Pressindo, Yogyakarta, 2014
- Hartmann, A., Ling, F. Y. Y., & Tan, J. S., *Relative importance of subcontractor selection criteria: Evidence from Singapore*. Journal of Construction Engineering and Management, 135(11), 200
- Hotma P. Sibuea, *Asas Negara Hukum, Peraturan Kebijakan, dan Asas-asas Umum Pemerintahan yang Baik*, Erlangga, Jakarta, 2011
- Hughes MBE, P., & Ferrett, E., *Introduction to Health and Safety at Work: for the NEBOSH National General Certificate in Occupational Health and Safety (7th ed.)*. 2020, Routledge. <https://doi.org/10.4324/9781003039075>
- I.H. Hijmans, dalam *Het recht der werkelijkheid*, dalam Herlien Budiono, *Asas Keseimbangan bagi Hukum Perjanjian Indonesia-Hukum Perjanjian Berlandaskan Asas-Asas Wigati Indonesia*, Citra Aditya Bakti, Bandung 2015
- Ibnu Khaldun, Muqaddimah, dalam Amirus Sodiq, *Konsep Kesejahteraan Dalam Islam*, Jurnal Equilibrium, Vol. 3, No. 2, Desember 2015,

- J. Pajar Widodo, *Penalaran Hukum Dalam Proses Mengadili Perkara Pidana Dalam Kerangka Kebebasan Hakim*, Jurnal Pranata Hukum Volume 6 Nomor 2 Juli 2011, Kantor Menteri Negara Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional, *Visi Dan Arah Pembangunan Jangka Panjang (PJP) Tahun 2005-2025, Pembangunan Hukum Dan Penyelenggaraan Negara Landasan Hukum Pelaksanaan Turn Project Di Indonesia*, <https://www.pphbi.com/?p=2611>
- Loosemore, M., *Responsibility, power and construction conflict*. Construction Management and Economics, 17(6), 1999
- Love, P. E. D., Edwards, D. J., & Smith, J., *Contract documentation and the incidence of rework in projects*. Architectural Engineering and Design Management, 1(4), 2005, hlm. 247-259.
- Mitropoulos, P., & Howell, G. A., *Model for understanding, preventing, and resolving project disputes*. Journal of Construction Engineering and Management, 127(3), 2001
- Moctar Kusumaatmadja, *Konsep-Konsep Hukum Dalam Pembangunan Kumpulan Karya Tulis Prof. Dr. Mochtar Kusumaatmadja, S.H., M.H., Alumni*, Edisi Digital, Bandung, 2021,
- Ofori, G., *Challenges of construction industries in developing countries: Lessons from various countries*. Construction Management and Economics, 18(5), 2000
- Peter Mahmud Mardzuki, *Penelitian Hukum*, Edisi Revisi, Kencana Prenada Media Group, Jakarta, 2017
- Suwardi Sagama, *Analisis Konsep Keadilan, Kepastian Hukum Dan Kemanfaatan Dalam Pengelolaan Lingkungan Hidup*, Jurnal Mazahib Vol XV, No. 1, Juni 2016,
- Tam, V. W. Y., Shen, L. Y., & Tam, C. M., *Assessing the levels of material wastage affected by sub-contracting relationships and projects types with their correlations*. Building and Environment, 42(3),
- Thomas, S. R., Tucker, R. L., & Kelly, W. R., *Critical communications variables*. Journal of Construction Engineering and Management, 124(1), 1998
- Tjia Siau Jan, *Pengadilan Pajak: Upaya Kepastian Hukum dan Keadilan Bagi Wajib Pajak*, Alumni, Bandung, 2013
- Vanhoucke, M., *Project management with dynamic scheduling: Baseline scheduling, risk analysis and project control, second edition*. Project Management with Dynamic Scheduling: Baseline Scheduling, Risk Analysis and Project Control, Second Edition, 2013, hlm. 1–318. Springer Berlin Heidelberg. <https://doi.org/10.1007/978-3-642-40438-2>.
- Zou, P., Zhang, G., & Wang, J. (2007). Understanding the key risks in construction projects in China. *International Journal of Project Management, 25*(6), 601–614. <https://doi.org/10.1016/j.ijproman.2007.03.001>