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EQUIPMENT STANDARDIZATION IN ORDER TO IMPLEMENT OCCUPATIONAL HEALTH AND SAFETY STANDARDS IN CONSTRUCTION WORK REVIEWED FROM LAW NUMBER 2 OF 2017 CONCERNING CONSTRUCTION SERVICES, LAW NUMBER 13 OF 2003 CONCERNING EMPLOYMENT AND FIDIC

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Abstract

The implementation of equipment standardization and occupational health and safety (OHS) in construction projects in Indonesia is regulated through several laws and regulations and refers to international guidelines such as ILO Convention No. 155 of 1981 concerning Occupational Health and Safety and FIDIC. Although these regulations require compliance with technical, safety, and occupational health standards, their implementation still experiences various obstacles. This can be seen from the continued use of obsolete and uncertified equipment, as well as the high number of work accidents. To improve the effectiveness of standardization, the supervision and law enforcement system in Indonesia can be compared with other countries such as the Philippines. Therefore, reform efforts are needed in supervision, enforcement of sanctions, and increased education to increase awareness and compliance with OHS standards, so as to protect workers and create a safe and sustainable work environment.

Keywords: ***Standardization, Equipment, K3, Implementation, Application.***

INTRODUCTION

The construction industry is one of the important pillars in the development of a country, including Indonesia. This sector plays a crucial role in providing adequate infrastructure to support economic growth, improve the quality of life of the community, and strengthen connectivity between regions. The construction of roads, bridges, buildings, ports, airports, and other infrastructure cannot be separated from the role of the construction industry. Through the development of quality infrastructure, the government can increase public access to public services, encourage investment, and create new jobs.1

The impact of the construction industry on Indonesia's progress is very broad. In addition to making a significant contribution to economic growth, the construction sector also plays a role in encouraging planned urbanization, increasing regional competitiveness, and supporting the development of other sectors such as tourism and the manufacturing industry. However, behind its positive contribution, the construction industry also has its own challenges, such as tight competition, fluctuations in demand, and social and environmental issues. Therefore, continuous efforts are needed to improve the competitiveness of the construction industry, as well as ensure that infrastructure development is carried out sustainably and takes environmental aspects into account.2

Based on data collected by the Social Security Administration for Employment (BPJS Ketenagakerjaan), the construction sector is the main contributor to work accident cases in Indonesia. BPJS Ketenagakerjaan data shows a significant increase in the number of work accidents from year to year, from 234,370 cases in the previous year to 298,137 cases in 2022, and almost reaching a similar figure in September 2023 with 289 thousand cases. The construction sector itself contributes 32% of the total work accident cases each year. According to K3 expert, Khrisna Suryanto, the high number of accidents is due to the weak implementation of K3L and minimal supervision in the field, which results in workers' negligence in using PPE.[5]

LITERATURE REVIEW

Concept of Employment Law

The definition of labor according to the Big Indonesian Dictionary (KBBI) is a person who works or does something, a worker, an employee who can work and is able to work. According to Yamin, the definition of labor is the total population of a country that produces or does not produce goods and services, if there is a demand for their labor and if they are willing to participate in the activity.51 Article 1 Paragraph 2 of Law No. 13 of 2003 concerning Manpower (Law on Manpower), labor is defined as:52

"Everyone who is able to do work to produce goods and/or services, either to meet their own needs or for the community."

The labor rights regulated in the Employment Law are as follows: 54

1. Right to protection from discrimination (Articles 5 and 6)
2. Right to rest and leave (Article 79)
3. Right to occupational safety and health (K3) (Article 86)
4. Right to a decent wage (Article 88)
5. Right to social security (Article 99)
6. The right to associate and negotiate (Article 104)

Meanwhile, labor obligations are as follows:

1. Comply with working hours (Article 77)
2. Comply with company regulations
3. Maintaining company secrets

The work agreement must contain several important elements, such as the identity of the parties, type of work, place of work, amount of wages, and term of the agreement (for certain-term work agreements). Apart from that, work agreements must also comply with labor law provisions, such as limits on working hours, leave rights and work safety guarantees. An employment agreement will not be valid if it does not meet the requirements of the law. The employment relationship can also end in accordance with the provisions agreed in the employment agreement, such as the end of the contract period, retirement, or termination of employment (PHK) carried out in accordance with legal procedures. 58

Occupational Safety, Health and Safety Standards for Workers in the Construction Sector in and Law Number 13 of 2003 concerning Manpower and Law Number 2 of 2017 concerning Construction Services

The Employment Law emphasizes that occupational health and safety (K3) is an important aspect to protect workers and ensure the continuity of work productivity in the workplace. Key points related to the K3 concept in the Employment Law are as follows:67

1. Article 86 paragraph (1).
   Every worker/laborer has the right to obtain protection for work safety and health, morals, decency, as well as treatment in accordance with human dignity and religious values.
2. Article 86 paragraph (2).
   To protect worker safety in realizing optimal work productivity, occupational safety and health efforts are carried out.
3. Article 87 paragraph (1).
   Every company is required to implement an occupational health and safety management system that is integrated with the company management system.
4. Article 87 paragraph (2).
   This management system aims to prevent work accidents, work-related diseases, and ensure safety and health in the work environment.

The rights of construction workers in terms of obtaining K3 guarantees in order to protect their physical, mental and long-term health safety while working are as follows:

1. Right to Occupational Safety and Health Protection.69
   Every worker, including construction workers, has the right to receive occupational health and safety protection in accordance with Article 86 of the Manpower Law. Construction workers work in high-risk environments such as falling from a height, being hit by material, or being exposed to hazardous chemicals.

2. The Right to Provision of Personal Protective Equipment (PPE).70
   One of the rights clearly stated in the K3 regulation is the right of construction workers to receive adequate Personal Protective Equipment (PPE). This equipment includes helmets, protective shoes, masks, eye protection, and hearing protection, which are designed to protect workers from physical accidents or exposure to hazardous chemicals.
3. Right to K3.71 Training and Education
   The crucial rights of construction workers include getting training and education on K3. In order to ensure that workers understand the proper and safe way to carry out their work, employers are required to provide regular training. This training includes how to operate heavy equipment, handle hazardous materials, and emergency procedures that may occur.
4. Right to Health and Medical Care.72

Construction workers are entitled to medical care in the event of a work accident or occupational disease. This includes treatment for minor injuries, intensive care for serious accidents, and rehabilitation for workers who suffer long-term illnesses due to exposure to chemicals or harsh physical conditions at work.

5. Right to Compensation and Work Accident Insurance.73
   Construction workers are entitled to compensation or work accident insurance if they experience an accident that causes injury or disability. Law No. 24 of 2011 concerning the Social Security Administering Body (BPJS) for Employment provides social protection for workers, including in the event of a work accident.

Equipment Safety Standards in Construction Projects and Related Regulations

Construction equipment safety standards literally mean a set of guidelines, regulations, and technical specifications designed to ensure that equipment used in construction activities operates safely and efficiently. These standards cover the design, use, maintenance, and inspection of equipment to prevent accidents and ensure the safety of workers and the environment around the construction project. Safety standards for equipment in construction projects are very important to ensure the safety and health of workers. Construction equipment used must be in good condition, well-maintained, and in accordance with applicable safety standards. Occupational safety is the protection of workers from all types of hazards that may arise during the production or service process. These hazards can come from machines, equipment, chemicals, poor working conditions, or unsafe working methods. Both in heavy industries such as construction and in the service sector, occupational safety is a very important thing to pay attention to.83

Occupational Safety, Health and Safety Standards for Workers in the Construction Sector in Law Number 2 of 2017 concerning Construction Services and Law Number 13 of 2003 concerning Manpower

Government Regulation Number 50 of 2012 is the legal basis in Indonesia that regulates the implementation of the Occupational Safety and Health Management System (SMK3) in companies. The main objective of this regulation is to create a safe, healthy, efficient, and productive workplace for all workers. The following is an explanation of article 7 regarding the aspects of K3:91

1. Article 7.
   a. K3 Policy: Every company is required to have a written K3 policy, signed by the company's top management, and disseminated to all levels of workers. This policy is the company's commitment to creating a safe and healthy work environment.
   b. K3 Planning and Organizing: Companies must plan and organize K3 activities systematically.
   c. Implementation of K3
   d. K3 Evaluation: The company must periodically evaluate the implementation of SMK3. This evaluation aims to measure the effectiveness of the K3 program and identify areas that need improvement.

e. K3 Improvement: Evaluation results are used as a basis for continuous improvement of the K3 management system.

Competency Certification for Construction Workers in Indonesia

The Construction Work Competency Certificate (SKK) is proof of official recognition of a person's ability and skills in carrying out construction work. This certificate is very important for construction workers in Indonesia because it is the main requirement in carrying out construction projects, both small and large scale. Changes in regulations in Indonesia, especially with the Job Creation Law, have changed the certification system in the construction sector. Previously, there was a Certificate of Expertise (SKA) and a Certificate of Work Skills (SKTK). However, both have now been replaced by the more comprehensive Construction SKK.92 Regulation of the Minister of Public Works and Public Housing (PUPR) Number 8 of 2022 is an important regulation that regulates the procedures for implementing the fulfillment of construction service standard certificates. The main objective of this regulation is to improve the quality of construction workers in Indonesia and support the ease of business licensing for construction service business actors. This regulation requires certification for construction workers as proof that they have competencies that are in accordance with the established standards.93

FIDIC (Federation Internationale des Ingenieurs – Conseils/International Federation of Consulting Engineers

FIDIC (Federation Internationale des Ingenieurs – Conseils/International Federation of Consulting Engineers) is an international organization engaged in the field of engineering and construction consulting. FIDIC was founded in 1913 and has members of associations of consulting engineers from more than 100 countries in the world.
FIDIC issues various types of contracts to suit different types of construction projects as follows:98

1. Red Book.
   This contract is used for construction projects when the owner of the construction project is responsible for the design of the project. The contractor is responsible for the implementation of construction according to the design that has been prepared.
2. Yellow Book.
   This contract is used for project owners who are responsible for the design and construction of the project. The contractor is responsible for the implementation of the design and construction of the project as a whole.
3. Silver Book.
   This contract is used for Engineering, Procurement, and Construction (EPC) projects. The contractor is responsible for all stages of the project, from design, procurement, to construction.
4. Green Book.
   This contract is used for smaller and simpler construction projects.

MATERIALS AND METHODS

Practice of standardization implementation in the field

Indonesia is experiencing growth in terms of infrastructure development, including the construction of high-rise skyscrapers. This growth is driven by increasing property investment, urbanization, and the need for office space and vertical housing amidst limited land, especially in big cities. The Indonesian government also supports the construction of skyscrapers through spatial planning policies and investment incentives.

Based on data collected from the Council on Tall Buildings and Urban Habitat (CTBUH), it shows that Indonesia has 151 tall skyscrapers with a height of more than 150 meters, where most of these skyscrapers are located in Jakarta.100 The researcher has conducted an interview in a construction project, namely the construction of a multi-purpose building in the campus area of the Indonesian Education University (CWP-03 UPI Convention and Exhibition Center Construction Work) under the contractor or construction service company PT. Artindo. The researcher conducted the interview with a resource person who works as a civil engineering staff on the project. The following are the results of the interview that the researcher conducted with the resource person:

1. How to ensure that the construction equipment used in a project complies with applicable standards?

"Most of the equipment used in the project is in accordance with the standards, even if there is any that does not meet the standards, the equipment will be replaced immediately. To ensure that the construction equipment in this project is in accordance with the applicable standards, the first step is to conduct an inspection and verification of all equipment before use. We ensure that each equipment has a certificate of eligibility and has gone through an inspection process by authorized parties such as certification bodies or construction supervisory bodies. In addition, we also refer to the Indonesian National Standard (SNI) and regulations set by the Ministry of Public Works and Public Housing (PUPR) to ensure that the equipment meets the required safety, quality, and performance criteria. In addition, we carry out routine maintenance and periodic calibration to ensure that the equipment remains in optimal condition and in accordance with standards during use. Our team always follows training and updates information related to the latest construction equipment standards, so that we can identify and replace equipment that no longer meets standards. We also work with trusted and reputable suppliers and vendors in providing construction equipment that has met the standards."

2. How is the inspection and maintenance of construction equipment carried out in accordance with applicable regulations or laws?

*"The equipment used for this construction is inspected and maintained in accordance with regulations and standards in Indonesia, including the Indonesian National Standard or SNI, regulations issued by the Ministry of Public Works and Public Housing or PUPR and based on decisions based on the Manpower and Occupational Safety Law. The first step we take is to ensure that the machine works according to standards, including technical and safety requirements on the equipment that must be met when used and can be validated through documents such as certificates of eligibility, inspection reports and valid proof of calibration.*After that, we schedule regular routine inspections according to the recommendations of the equipment vendor and applicable regulations. These inspections include visual inspections, functional tests, and critical component checks to ensure that the equipment remains safe and ready to use. If any damage or wear is found, the equipment is immediately repaired or replaced according to established procedures. We also carry out preventive maintenance periodically such as lubrication, replacement of spare parts, and adjustment of components. All inspection and maintenance activities are recorded in detail in the equipment logbook, including the inspection date, inspection results, and actions taken.

3. What are the most common types of work accidents that occur due to the use of substandard construction equipment?

"In this project, it is certain that it rarely happens because the equipment is in accordance with the standards and its implementation is in accordance with the applicable SOP. If an accident occurs in a construction project caused by equipment that does not meet the standards, it is usually a worker who falls from a height due to unstable scaffolding or ladders, is hit by material due to a damaged crane or hoist, is electrocuted by electrical equipment, and is injured due to heavy equipment that fails to function. Accidents such as slipping or being trapped due to machines or tools that are not properly maintained."

4. If a work accident occurs due to construction equipment that does not meet standards, how is the investigation process carried out and what are the sanctions?

"If a work accident occurs, the first step is to secure the scene and provide assistance to the victim. Next, an internal investigation team is formed, usually consisting of an OHS expert, project manager, and contractor representatives. They collect evidence such as equipment conditions, inspection reports, and witness statements. If necessary, authorities such as the Manpower Office or BPJS Ketenagakerjaan are also involved. The results of the investigation determine the cause of the accident including negligence in meeting equipment standards. Sanctions given can be in the form of a warning, administrative fines, or temporary suspension of the project. The company is also required to cover the costs of victim treatment and compensation in accordance with the law. If negligence is considered serious, the responsible party can be subject to criminal sanctions under the law."

5. What are the challenges in implementing construction equipment standardization and licensing, especially related to supervision and law enforcement?

"In several projects, there is still a lack of awareness and understanding of the importance of equipment standardization among contractors and workers. Many projects still use obsolete or uncertified equipment for cost reasons. In addition, supervision from related agencies is often limited due to lack of human resources and facilities. Law enforcement is also sometimes not optimal, sometimes the sanctions given are not severe enough. Coordination between the government,

contractors, and equipment suppliers also needs to be improved to ensure compliance with standards. Another challenge is the difference in standards between large and small projects, where small projects often receive less attention in terms of supervision."

6. What types of certificates or licenses are required for construction workers to operate certain construction equipment?

"Construction workers who operate certain equipment are required to have a competency certificate or official license issued by an accredited institution, such as the Ministry of Manpower or the National Professional Certification Agency (BNSP). For example, crane operators must have a Certificate of Competency for Lifting and Transporting Equipment Operators (PKP3K), while heavy equipment operators such as excavators or bulldozers require a Certificate of Competency for Heavy Equipment Operators. For workers who handle electrical equipment, an Electrical K3 certification from the Ministry of Manpower is required. This certificate ensures that workers have passed a competency test in accordance with national standards, so that they are able to operate equipment safely and professionally."

7. What are the sanctions that will be imposed on construction companies if they employ equipment operators who do not have a valid certificate or license?

"Construction companies that employ operators without valid certificates or licenses may be subject to sanctions in accordance with laws and regulations. These sanctions include written warnings, administrative fines, or temporary suspension of project operations by the local Manpower Office. If a work accident occurs, the company may be subject to criminal sanctions under the Manpower Law, including larger fines or revocation of the business license. In addition, the company is required to bear the costs of compensation and treatment for the victim. These sanctions aim to ensure compliance with safety standards and competence in operating construction equipment."

8. What is the role of professional associations in developing competency standards for construction equipment operators?

"Field inspectors play a crucial role and their main task is to ensure that all equipment meets safety and operational fitness standards before use. This includes checking the fitness certificate, physical condition of the equipment, and routine maintenance documents. Inspectors are also responsible for ensuring that operators have valid competency certificates. During the project, inspectors conduct regular monitoring to ensure that the equipment used is in accordance with procedures and does not pose a risk of accidents. If any discrepancies or damage are found, the inspector is authorized to stop the use of the equipment until the problem is fixed. They also coordinate with project management and contractors to ensure compliance with occupational safety regulations."

9. What is the role of the field inspector in supervising the use of heavy equipment in construction projects?

"Field inspectors play a crucial role and their main task is to ensure that all equipment meets safety and operational fitness standards before use. This includes checking the fitness certificate, physical condition of the equipment, and routine maintenance documents. Inspectors are also responsible for ensuring that operators have valid competency certificates. During the project, inspectors conduct regular monitoring to ensure that the equipment used is in accordance with procedures and does not pose a risk of accidents. If any discrepancies or damage are found, the inspector is authorized to stop the use of the equipment until the problem is fixed. They also coordinate with project management and contractors to ensure compliance with occupational safety regulations."

10. How is the guarantee for obtaining K3 rights for construction workers on this project?

"In this project, the guarantee of OHS rights for workers is realized through the implementation of an OHS management system that complies with government regulations such as Permenaker No. 5 of 2018. Each worker receives OHS training before starting work, is equipped with adequate personal protective equipment (PPE), and has access to emergency health facilities. In addition, the company provides a special OHS team tasked with monitoring and evaluating working conditions periodically. Workers are also protected by accident insurance through BPJS Ketenagakerjaan. Incident reporting and handling procedures have been socialized, ensuring that workers can convey OHS complaints or problems without obstacles."

11. How is the safety management system implemented in this project?

"In this project, the safety system is implemented in accordance with the SMK3 standard in Indonesia where the Occupational Safety and Health Management System is regulated in Government Regulation No. 50 of 2012. The activity begins with evaluating risks and preparing an OHS plan according to the characteristics of the project. All workers

undergo safety induction before starting their duties and are equipped with the necessary PPE. Regular checks of work equipment and the environment are carried out to verify that both are in line with safety standards. In addition, we form an OHS team tasked with monitoring and evaluating the implementation of safety procedures. OHS training and socialization are also held periodically to increase worker awareness. All incidents or near-misses are recorded and analyzed to prevent similar incidents from occurring. With this system, we strive to create a safe and productive work environment."

Implementation of Construction Equipment Standardization

In construction work, the use of appropriate and standardized equipment is one of the key factors that determine the success of a project. Indonesia as a country that continues to develop in the infrastructure sector, the implementation of standardization of heavy equipment used in construction work is becoming increasingly crucial. This not only serves to increase work efficiency, but also ensures the safety and quality of construction results. In its implementation, the role of the field inspector is crucial in ensuring that all equipment used is in accordance with applicable standards.102
Following are the main roles of a field inspector in ensuring equipment standardization on a project or construction work:

1. Ensuring Compliance with Technical Specifications.

Field inspectors are tasked with ensuring that all equipment used meets the technical specifications set out in the contract documents or project technical guidelines. Their responsibilities and duties include checking the type, capacity, and condition of the equipment before use. This is very important so that the equipment can function optimally according to project needs and does not cause losses or accidents due to non-conformity to specifications.

2. Conducting Equipment Inspections and Suitability Tests.

Before the equipment is used, the field inspector conducts a technical inspection to evaluate the suitability of the equipment. This process includes checking the condition of the machine, testing its functions, and evaluating related documentation, such as a certificate of suitability, maintenance history, and user manual. The inspector also ensures that the equipment used meets applicable national and international standards, such as SNI (Indonesian National Standard) or other relevant standards.

3. Conduct Equipment Maintenance Supervision.

Poorly maintained construction equipment is at risk of causing operational problems, damage, and even work accidents. Field inspectors are tasked with monitoring the equipment maintenance schedule and process to ensure it remains in optimal condition. They also ensure that all maintenance procedures are carried out in accordance with the procedures specified by the manufacturer or applicable regulations.

4. Supervise Equipment Operation.

Field inspectors are also responsible for overseeing the operation of equipment. They verify that equipment operators have the proper certification and training to operate the machines safely and efficiently. Standardization in equipment operation not only increases productivity but also prevents the risk of damage or accidents in the workplace.

5. Documenting and Reporting Inspection Results.

The field inspector is responsible for documenting all inspection and evaluation results. This report is an indicator for project management when making decisions regarding the equipment used. Good documentation is also useful for tracking the history of equipment use, especially in terms of maintenance and repair.

6. Identifying and Addressing Potential Risks.

Field inspectors act as the frontline in identifying and analyzing potential risks related to equipment in the field. Early anticipation and prevention of risks can help prevent financial and operational losses. For example, if equipment is found to be substandard, the inspector must immediately instruct replacement or repair before the equipment is used.

7. Providing Education and Direction on the Importance of Standardization.

The role of the field inspector is not only limited to supervision, but also includes education for the field team. They provide understanding to workers and operators about the importance of equipment standardization for the overall success of the project. This education helps to create a more professional and safety-oriented work culture.

Implementation of Equipment Standardization related to Occupational Health and Safety in Construction Work

in the Philippines

The implementation of heavy equipment standardization for construction work in countries other than Indonesia that have the same legal system, namely civil law and have similar climate and geographical conditions, namely the Philippines. The Philippines is located in the Southeast Asia regional area, where the entire climate of the country is tropical, and the country still has the status of a developing country like Indonesia. The Philippines has regulations related to the standardization of equipment used in construction projects. The Philippine Building Code (Presidential Decree No. 1096) or the Philippine Building Code, enacted through Presidential Decree No. 1096, serves as a framework to ensure safe, efficient, and sustainable building practices in the Philippines. While the regulation itself does not specify provisions on the standardization of heavy equipment, the Code does include general guidelines on safety, standards, and contractor responsibilities related to construction equipment.104

DISCUSSION

the implementation of equipment standardization related to occupational health and safety in construction projects in Indonesia is linked to legislation, ILO Convention 155 and FIDIC

The implementation of equipment standardization, occupational health and safety (K3) in construction projects in Indonesia is regulated among others in the Construction Services Law and the Manpower Law. However, other regulations such as the ILO Convention Number 155 on Occupational Safety and Health in 1981 and FIDIC (Federation Internationale des Ingenieurs – Conseils/International Federation of Consulting Engineers) also serve as guidelines for occupational health and safety.

Standardization of equipment used in construction projects in Indonesia when linked to the Construction Services Law, although it does not include specific standards, the Construction Services Law requires service providers to provide and use equipment that meets the technical requirements and standards that have been set. Article 59 paragraph (1) states that in every implementation of construction services, service users and service providers are required to meet safety, security, health and sustainability standards, which means that it also regulates that the use of heavy equipment in a construction project must comply with safety standards.

Implementation of K3 in construction projects includes several steps, including:118

1. K3 training.
   Construction workers must receive K3 training before starting work. This training aims to increase workers' awareness of risks and how to avoid them.
2. Medical examination.
   Workers must undergo regular health checks to ensure their physical condition is adequate to perform heavy work.
3. Implementation of K3 Procedures.
   Every construction project must have clear K3 procedures, including the use of PPE, evacuation procedures, and accident handling.

Specific standards regarding equipment on construction projects that have been formulated by regulations in Indonesia related to protection of worker safety and health on construction projects.

The effectiveness of the implementation of equipment standardization in construction projects in order to prevent work accidents that must be in line with the provisions in the Construction Services Law and the Manpower Law. When viewed from several phenomena, facts, and cases that have occurred, the implementation of the provisions based on the two laws cannot be said to be perfectly effective. The Construction Services Law requires construction service providers or contractors to meet technical standards and safety standards as stipulated in Article 59 paragraph (1) that every construction provider must ensure that the equipment used meets occupational safety and health standards. In addition, it is also emphasized that construction service users are responsible for providing equipment that meets safety standards.

The Construction Services Law contains provisions governing labor standards in construction projects, especially in Article 70 which states that construction workers are required to have a work competency certificate issued by a professional certification institution. Regulation of the Minister of Public Works and Public Housing (PUPR) Number 8 of 2022 is an important regulation governing the procedures for implementing the fulfillment of construction service standard certificates. The main objective of this regulation is to improve the quality of construction workers in Indonesia

and support the ease of business licensing for construction service business actors. This regulation requires certification for construction workers as proof that they have competencies in accordance with the established standards.138

Based on the analysis related to the implementation of equipment standardization in construction projects in Indonesia, it has not been fully effective, even though it has been regulated in the Construction Services Law and regarding K3 for these workers in the Manpower Law. The main factors causing this weak implementation are the lack of supervision from related agencies, limited human resources and supervision facilities, and the low compliance of contractors, especially for small-scale ones. This is proven by the continued use of obsolete and uncertified equipment which contributes to the increasing number of accidents in the construction sector. Based on the theory of legal protection according to Satjipto Rahardjo, the law must function as a means of protection for the community, in this case especially vulnerable groups, namely workers in the construction sector. In practice, weak supervision and lack of firmness in sanctions show that the existing law has not been fully able to protect workers optimally.

CONCLUSIONS

The implementation of equipment and K3 standardization in construction projects in Indonesia, although regulated in the Construction Services Law and the Manpower Law, is still not optimal due to weak supervision, limited resources, and minimal awareness among some contractors. Challenges such as the use of obsolete equipment, uncertified operators, and high costs hinder compliance with safety standards. Although ILO Convention No. 155 and FIDIC offer a comprehensive framework, their implementation in Indonesia is still hampered by a flexible business culture and expensive international arbitration costs. To increase effectiveness, stricter supervision, education, financial incentives, and increased capacity of local contractors are needed so that occupational safety and health standards can be met.

SUGGESTION

To improve the effectiveness of the implementation of equipment and K3 standardization in construction projects in Indonesia, the government needs to strengthen the monitoring system by increasing the capacity of human resources and facilities, and implementing stricter and more consistent sanctions for violations. In addition, financial incentives and technical assistance need to be provided to small contractors so that they can meet safety standards without sacrificing business continuity. Education and training for workers and contractors on the importance of K3 should also be improved, while the adoption of best practices from international frameworks such as ILO Convention No. 155 and FIDIC can be integrated by considering the local context. With these steps, it is hoped that legal protection for construction workers can be realized in real terms and the number of work accidents can be reduced.

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