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The Comparison of ISO 14001 Implementation in Indonesia Construction Companies (Case Study: PT. Waskita Karya Tbk, PT. Wijaya Karya Tbk, PT. PP (Persero) Tbk)

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ABSTRACT

Growing the economy is a concern for President Joko Widodo's (Jokowi) government, which is why attention is so important to the construction companies. Some of the largest construction firms reported major rises throughout the value of federal contracts. Attempts to improve the infrastructure services of the organization can be made through a control system of factors affecting the performance of the company which ultimately determines the business success in achieving its goals. PT. Waskita Karya Tbk and PT. Wijaya Karya Tbk implement green construction, and green building for their environmental management quality standard, meanwhile PT PP (Persero) implement 3R (Reduce, Reuse, Recycle) theory. Regarding raw materials / products which come mainly from nature. Those three businesses have received no reports over the course of the year about the environmental business. The environmental management system then proves that improve the management standard will increase productivity and decrease the risk.

Keywords: ISO 14001, Environmental Quality, Management System, Construction Company

ABSTRAK

Menumbuhkan ekonomi menjadi perhatian bagi pemerintahan Presiden Joko Widodo (Jokowi), yang karenanya hal ini sangat penting bagi perusahaan konstruksi. Beberapa perusahaan konstruksi terbesar melaporkan kenaikan besar sepanjang nilai kontrak federal. Upaya untuk meningkatkan layanan infrastruktur organisasi dapat dilakukan melalui sistem kontrol faktor-faktor yang mempengaruhi kinerja perusahaan yang pada akhirnya menentukan keberhasilan bisnis dalam mencapai tujuannya. PT. Waskita Karya Tbk dan PT. Wijaya Karya Tbk menerapkan green building, dan green building untuk standar kualitas manajemen lingkungan mereka, sedangkan PT. PP (Persero) menerapkan teori 3R (Reduce, Reuse, Recycle). Berkenaan dengan bahan baku / produk yang sebagian besar berasal dari alam. Ketiga bisnis tersebut tidak menerima laporan selama tahun ini tentang bisnis lingkungan. Sistem manajemen lingkungan kemudian membuktikan bahwa meningkatkan standar manajemen akan meningkatkan produktivitas dan mengurangi risiko.

Kata kunci: *ISO 14001, Kualitas Lingkungan, Sistem Manajemen, Perusahaan Konstruksi.*

1. Introduction

Indonesia's insufficient infrastructure hinders domestic construction industry and restricts small business entities' opportunity to enter competitive markets (Sudjana, 2016). Long-term infrastructure planning is handled by the planning agency Bappenas and complemented from time to time by the President's direct involvement by agencies such as KPPIP, which help to establish and promote a priority infrastructure project plan (Duffield, Hui, and Wilson, 2019). Improving the economy is obviously a priority for the administration of President Joko Widodo (Jokowi), agreeing on the continuation of the fiscal reform agenda by moving budget allocations from energy subsidies to capital expenditure; And some of the biggest construction firms announced major increases in the value of government contracts (Ray and Ing, 2016). The growth of the economy and culture of a country has an intimate connection to the building industry. The population of the world is gradually

urbanizing, which is forecast to achieve 75% through 2050 (Yin, Laing, and Leon, 2018). In the 'Blue book' Bappenas describes the infrastructure forecasts. There was a projected requirement of certain USD 35 billion in the 2017 Blue Book over the four-year period, again far above the existing budget of about USD 9 billion over the same time (Duffield, Hui, and Wilson, 2019). This situation has definitely enhanced the atmosphere of ever fiercer competition in this sector (Fatima & Wibisono, 2017).

China can offer the illusion and inspiration of a partnership which in the past will bring benefits and glory, such as economic integration and trade, mainly taken out in ancient silk track countries. It is also difficult to say what the political effect of a silk road because it only deals with trade and investment benefits in the discourse formed by the Chinese leaders (Hara, Agung, & Trihartono, 2019). Though international recognition about the need for sustainable construction had appeared, market is still small or even at its earliest stages due to the lack of awareness (Yin, Laing, and Leon, 2018).

To face this global competition, it is necessary to take some anticipatory steps to perform various improvements to the construction company to improve the quality of the company's performance. Efforts to improve the company's construction services can be done through a system of control over the factors that affect the company's performance that ultimately determine the success of company in achieving its goals In Indonesia, the government is now more interested with incorporating environmental principles into the construction industries as the concern of climate change and global warming has become significant issues (Djalante, Oneyama, Muhamad,& Arsyad, 2019). Besides, Infrastructure construction and transport fields significantly contribute to environmental degradation as they use a huge number of materials and resources and create vast amounts of waste, generating risks such as deforestation, emissions, traffic and capital scarcity (Djalante, Oneyama, Muhamad,& Arsyad, 2019). Due to the large quantity of needed materials and due to the unique features of its activities, this particular industry has a substantial impact on the environment (Selih, Campos, Trierweiller, & Carvalho, 2016).The standard seeks to provide a structured way of managing an environmental management system (EMS) to enhance environmental efficiency for all groups across the country (Chiarini, 2019). A more proactive approach to environmental problems related to industrial activities brings many benefits to the company, but also to the entire community. Inside this scope, specific consideration should be given to unique, distinctive economic sectors, like the Building and Construction (B&C) market (Selih, Campos, Trierweiller, & Carvalho, 2016). However, Getting ISO14001 certification may not necessarily translate into environmental decision-making, which argues for the lack of complete great certainty about the specific environmental and social impacts (Dejkoyski, 2016). This paper aims to identify and define environmental indicators that determine the sustainable performance of construction companies in Indonesia, as an Environmental Management System (EMS) for construction industry.

2. Material and Method

The method were used in this journal is reviewing following literature:

1. **The clauses of ISO 14001:2015**
   The paper focuses on ISO 14001 upgrades, in which the latest 2015 update has passed the 2018 transition period. From online webinars, posts, and journals, the literature has gotten. This section was intended to help our client activation data literature identify.

2. **The ISO 14001 implementation as the company Environmental Management System**
   The way in which each organization fulfills its environmental duty obtained through its sustainability and/or sustainability report and also its official website will be built on the past, stakeholders and their access to it. It is often found by the businesses winning governmental awards. This environmental protection will be changed with introduction of ISO 14001 and its provisions. The analysis of each company's execution based on the part Do (operation) and Check (performance assessment) due to clarity of information.

3. Result and Discussion

The most widely used standard, used by entities wishing to adopt an EMS, is ISO 14001. An organization's criteria for setting the environmental management targets, established by the standard, require commitments to a consistent and efficient process of quality improvement (Selih,

Campos, Trierweiller, & Carvalho, 2016). ISO 14001 is an environmental management systems (EMS) international specification that guides the organization to identify, prioritize, and manage environmental risks as part of their business practice. In fact, the credential itself acts as evidence for a company to show that its goods or services are of world class standard (Mayasari, 2017). In general, the shape of the environment has a major effect on the ability of society to tackle climate and sustainability concerns through, for example, energy use, ability to tackle thermal comfort or pollution and the effects of building and renovation on waste, factors that are explored and resolved through sustainable design (Yin, Laing, Leon, & Mabon, 2018). The clauses in ISO 14001 have divided into four parts, which are Planning, Implementation and Operation, Checking and Corrective Action, The successful application of ISO 14001 EMS is affected by three factors: employee participation, management determination and environmental technical skills (Worker, Leadership, and Talents) (Chiarini, 2019). Management review as shown in detail on Figure. 1.

PLAN				DO	CHECK	ACT
4. Context of the organization	**5. Leadership**	**6. Planning**	**7. Support**	**8. Operation**	**9. Performance evaluation**	**10. Improvement**
4.1 Understanding the organization and its context	5.1 Leadership and commitment	6.1 Actions to address risk associated with threats and opportunities	7.1 Resources	8.1 Operational planning and control	9.1 Monitoring, measurement, analysis and evaluation	10.1 General
4.2 Understanding the needs and expectations of interested parties	5.2 Environmental policy	6.2 Environmental objectives and planning to achieve them	7.2 Competence	8.2 Emergency preparedness and response	9.2 Internal audit	10.2 Nonconformity and corrective action
4.3 Determining the scope of the EMS	5.3 Organizational roles, responsibilities and authorities		7.3 Awareness		9.3 Management review	10.3 Continual improvement
4.4 Environmental management system			7.4 Communication			
			7.5 Documented information			

Figure 1. ISO 14001 clauses (Tri, 2019)

3.1 Company Environmental Quality Management System

Construction projects are now being done very quickly and developers are operating in our country in a highly competitive market with low profit ratios and largely skilled workers cannot be available. The three Construction company's project by knowing The key challenges of implementing environmental management systems in infrastructure projects are: very quick and strict timelines for construction projects and an extremely competitive market with low profit margins for contractors and lower skilled workers relative to other manufacturing sectors in the construction sector (Al-Dalaeen, 2019).

3.1.1 PT. Waskita Karya, Tbk

Waskita is at the frontline of promoting the Government's efforts to enhance the construction of infrastructure to offer equal healthcare to the Indonesian people. This is achieved through the development of infrastructure which touches on various aspects of life, both in the road infrastructure, transport, dams and electricity sectors, in order to support the achievement of sustainable development goals (PT. Waskita Jaya, 2019). Waskita has also contributed to the construction of 18 toll roads in the dam sector, that were mostly located in Java and Sumatra with the goal of linking these locations with appropriate infrastructure so as to be able to push the economy quickly and integrative. Waskita has undertaken construction of railroad projects and infrastructure in the railroad sector, including those of the South Sumatra Light Rail Transit (LRT) and the Soekarno Hatta Airport Railway. Waskita is constructing a 500 kV Sumatra Electric Transmission in the power industry that stretches from New Aur Duri to Perawang 395 km away (PT. Waskita Jaya, 2019).

Waskita allocated budget for PKBL in 2018, Rp6.01 billion for Partnership, and Rp6.17 billion with a total partnership beneficiary of 42 Fostered Partners distributed through Indonesia is realized. Community Development Program allocation increased to Rp28.49 billion, and Rp16.00 billion was known, Waskita also supports Go Green Construction implementation which promotes the

involvement of environmentally sustainable construction. Waskita takes an influential role in the Indonesia Green Building Council (GBCI), which has a goal to turn into a green-oriented, sustainable society (PT. Waskita Jaya, 2019).

In Jakarta from 8 to 10 July 2019, PT Waskita Karya Tbk conducted an internal auditing training for ISO 45001: 2018 Occupational Health and Safety Management Program. This practice is also the final step towards routine and external internal audit activities annually ISO 45001: 2018, 9001 introduction of management systems by SGS in the third quarter of 2019: 2015 and 14001: 2015 (Tri, 2019).

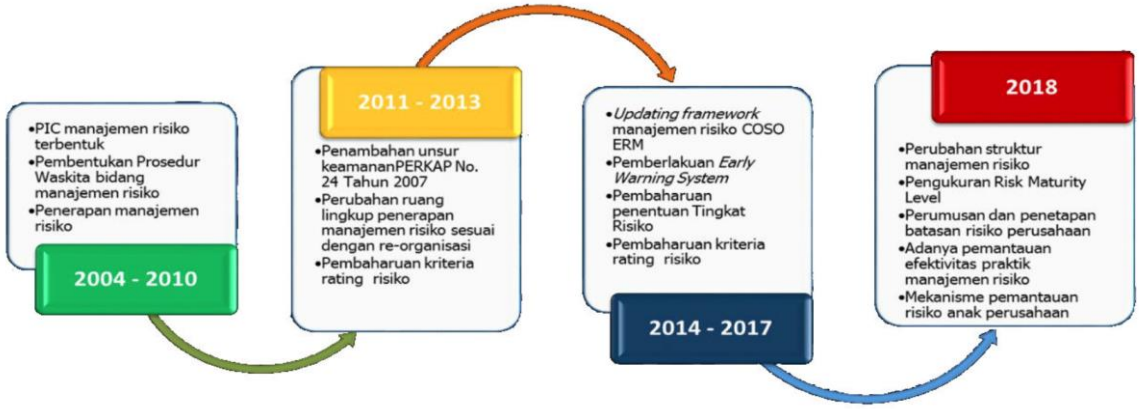

Figure 2. Management Risk Road Map (PT. Waskita Karya Tbk., 2014)

The Company's comparability of data is reinforced by the implementation of monitoring and measurement methods relevant to each of the fields reported and in line with applicable rules, including:

1. Assessment of environmental data according to Ministry of the Environment's regulations and reference to AMDAL documents
2. Measurement of health and safety efficiency applies to the regulations of the Ministry of Manpower, Ministry of Energy and Mineral Resources and OHSAS 18001 International Standards.

3.1.2 PT. Wijaya Karya, Tbk

Every year, WIKA sets financial performance-related targets for Key Performance Indicators (KPI) and is assessed at year end. During the year, WIKA will strive to fulfill commitments in the development of goods and services that fulfill customer needs, as well as the achievement of performance goals set (PT. Waskita Karya Tbk., 2020).

Even WIKA has introduced an environmental management framework based on ISO 14001:2015. The implementation went well, and in 2018 WIKA did not issue complaints, penalties for violations related to failure to comply with environmental laws and regulations (PT. Waskita Karya Tbk, 2020). SML WIKA 2008's aim and goals are to enforce selective garbage classification (organic & non-organic stuff and danger & hazardous stuff), decreasing ozone destroyer stuffs (air conditioner use CFC refrigerant, halon gas use), environmental regulation follow, at least 50 percent of the regulations accessible (WIKA, 2008).

WIKA has a policy which is that in every project construction it is obliged to implement CSR for the environment and the community around each project. CSR at the project level is managed by workers at the project site, then must be reported to the central WIKA (PT. Waskita Karya Tbk, 2020).

Each project work is required to implement CSR for the environment and the communities around each project. CSR at the project level is managed by workers at the project site, then must be reported to the central WIKA:

- **BIMA 50MW CSR PLTMG**
  The activities carried out included WIKA *Mengajar*, the provision of building materials, the distribution of water torrents, the distribution of groceries, the distribution of sacrificial animals, as well as assistance to earthquake victims.

- **CSR RUSUNAWA COURT**
  the program implemented at the project site was hydroponic planting, mural-making, and car wash business. The construction of the hydroponic framework is carried out in stages, because the construction is carried out in the homes of residents and in the *Pengadegan* Village office. The materials used to build the hydroponic frame are from pipes that are not used anymore in the project. The success of the program is marked by the flourishing of hydroponic plants, which then has an impact on environmental change in *Pengadegan*.

3.1.3 PT. PP (Persero), Tbk

PTPP is well conscious that the activities of the business do play a role in changing the landscape and have the potential to inflict impacts on the climate. This negative effect is what the Organization hopes to mitigate, even eradicate, by designing and applying the green build model (PT. PP Tbk, 2020)

PTPP has set out six measures to minimize or eliminate the negative effect of the Company's operations on the environment, namely (PT. PP Tbk, 2020).

1. Maximizing land / regulating construction operations that affect the environment,
2. Minimizing the waste produced,
3. Maintaining the efficiency of energy resources,
4. Retaining the accessibility of water supplies,
5. Managing material usage,
6. Building and environment management.

PTPP led the way in launching green movement in Indonesian construction industry in 2008. We've implemented green constructions to programs that we're working on to reduce the negative environmental effects of building project growth. PTPP also recognizes Indonesia's creation of a Green Building Council.

Occupational Health and Safety Management Policies on work-related injury and disease prevention • Continuous enhancement of occupational health and safety by the relevant stakeholders • Good work environment treatment and consideration of the environmental effects of all job activities • Effective utilization of resources in all activities and active involvement in environmental and ecology conservation

3.2 ISO 14001 company implementation comparison

The Comparison of ISO 14001 impelementation are divided into to: *Do* (Operational) and *Check* (Performance Evaluation)

3.2.1 Do (Operational)

The comparison of ISO 14001 for operational planning and control are described in Table 1 below.

Table 1. Operational Planning and Control

PT. Waskita Jaya Tbk	PT. Wijaya Karya Tbk	PT. PP (Persero) Tbk
Waskita's commitment to green building (GRI 103-2) Waskita's commitment to green building / eco-friendly project is enforced by following efforts: 1 Waskita has met the responsibilities of rendering environmental documents (AMDAL, Documents on Environmental Management and Planning (DPPL)) based on the Environmental Protection and Management Act No. 32 2 Greening and tree planting activities.	One of WIKA's products that support environmental sustainability is to build green construction, and green building. In the process, the development will prioritize the use of environmentally friendly materials, reduce the use of wood, and reduce energy consumption by up to 30% compared to conventional buildings. WIKA strives to minimize the impact on settlements and the environment of the community.	PTPP is making every effort to follow 3R (Reduce, Reuse, Recycle) theory. With respect to raw materials / materials mainly coming from nature, the Organization aims to use them as easily as possible so as not to create a lot of excess while preserving raw materials. In line with quality, the Company's policies include the use of prefab and reinforced concrete structures, careful preparation of the use of concrete and steel

PT. Waskita Jaya Tbk	PT. Wijaya Karya Tbk	PT. PP (Persero) Tbk
Waskita aims to reuse the materials used in carrying out its construction sector business operations as a pledge to reducing adverse environmental impacts. For example, Waskita may not immediately dispose for used water from cleaning concrete equipment containing cement in the manufacture of precast concrete but collects it in a tub such that the residual cement settles. Waskita also prioritizes the introduction of Good Corporate Governance (GCG) and in managing Waskita implements the highest quality (best practice) in the construction field. Implementation of GCG seeks to improve productivity in order to add value to both environmental and social dimensions of shareholders and stakeholders.	Throughout the year2018, WIKA did not carry out community relocation activities related to the projects carried out. Likewise, no projects are implemented in locations with high levels of biodiversity, or conservation areas.	construction materials, as well as the use of stone veneer which can be used several times and can be restored.

The comparison of ISO 14001 for emergency preparedness and response are described in Table 2 below.

Table 2. Emergency Preparedness and Response

PT. Waskita Jaya Tbk	PT. Wijaya Karya Tbk	PT. PP (Persero) Tbk
Implementation of SMHSE in the Organization refers to ISO 9001:2008 Quality Management Standards Framework; ISO 14001:2004; OHSAS 18001:2007; as well as the Protection Management System in compliance with regulations introduced since 2007, namely the National Police Chief Regulation (PERKAP) Number: 24 of 2007 which was introduced in all units of work (PT. Waskita Jaya, 2019). Certification and preparation to handle risks: 1. ISO 9001 Internal Audit Training: 2015 & ISO 14001: 2015 Introduction 2. Workshop on risk management of ventures by businesses / educational institutions 3. Risk management Education and training, certified in the field of risk management	WIKA establishes HSE requirements that must be fulfilled by subcontractors in every project. Requirements that must be met by subcontractors include: • project site entry requirements; • PPE completeness, uniforms, and completeness other general; • rigger and lifting; • heavy equipment and lifting equipment; • hot work (welding, cutting, grinding); • Limited workspace and height, above sea water; • mobilization and demobilization of material and equipment; • SHE personnel, Supervisors and Workers; • Electrical safety equipment, generators, tools communication and other equipment; • BBM stockyard; • housekeeping	In fulfilling its vision and mission, PTPP sets guidelines in the areas of Efficiency, Safety & Health (K3) and the Environment relevant to all units within the organization. Quality policy: customer support and satisfaction, continual enhancement of quality, innovation and market methods, use of digital technologies, global experience professionals

3.2.2 Check (Performance Evaluation)

The comparison of ISO 14001 for *Check* (Performance Evaluation), in the aspect of monitoring, measurement, analysis and evaluation are described in Table 3 below.

Table 3. Monitoring, measurement, analysis, and evaluation

PT. Waskita Jaya Tbk	PT. Wijaya Karya Tbk	PT. PP (Persero) Tbk
In 2015 Waskita received GOLD award certification from the Indonesia Green Building Council. The credential has a term of validity until 16 November 2018. Human Capital (HC), as a leading player in the construction sector, is a strategic ally in the realization of the goals and plans that were set together. Thus, Waskita also offers excellent and qualified human resources through the implementation of the Manpower Planning system thru observable and detailed HC management.	All complaints and complaints report from the public will be recorded in the Correction Opportunities (CPP) and Request for Corrective and Preventive Action (PTKP) forms. CPP & PTKP reports must be known by the person in charge of the project and verifier.	The concept of productivity by paperless implementation and other measures has brought down paper usage from 69,768 reams in 2018 to 62,800 reams in 2019. With these benefits, PTPP helped to minimize tree felling as the raw pulp material. Reducing energy and fuel consumption; PTPP managed to immediately reduce direct greenhouse emissions, which was one of the causes for climate change and global warming.

The comparison of ISO 14001 for *Check* (Performance Evaluation), in the aspect of clauses management review are described in Table 4 below.

Table 4. Clauses Management Review

PT. Waskita Jaya Tbk	PT. Wijaya Karya Tbk	PT. PP (Persero) Tbk
As of December 2018, Waskita has not received concerns related to environmental issues. This shows Waskita's dedication to emphasize sustainability considerations in the environment in the business operations they conduct, which has been well carried out by all company staff.	The implementation went well, and in 2018 WIKA did not issue complaints, penalties for violations related to failure to comply with environmental laws and regulations.	As stated by the QHSE Bureau, a range of achievements in environmental quality and control became fuller with no concerns regarding environmental problems addressed to PTPP. The Organization also imposed no penalties or fines in 2019 for failure to comply with environmental laws and regulations

In this discussion, the implementation of ISO 14001 in construction company. Other case study can be seen in the previous research (Apriliani, Hasibuan, & Sidjabat, 2019), that not only discuss about ISO 14001, but also ISO 9001 implementation. For different industrial sector, such as cement industries (Sidjabat, Habibah, & Pasaribu, 2019), coal and heavy mining industries (Givano & Sholichah, 2015). and also MSMEs (Micro, Small and Medium Enterprises) (Gunawan, Asyahira, & Sidjabat, 2020), the implementation of ISO 14001 can give several innovative ideas and action plans that can shape a better future for sustainability growth in industrial sectors.

4 Conclusion

In this case study, three industries/company have implemented the clauses of ISO 14001 in their activities. Mainly their do the material recycling and also concern more to minimize the work accident. This effort affected the result of the environmental and social complaint, which is zero for each year based on sustainability report that released by PT Waskita Karya Tbk and PT Wijaya Karya Tbk in 2018 and PT PP (Persero) Tbk in 2019. This means the implementation of ISO 14001 as a Environmental Management System as sustain and give the positive result for the management system in construction company.

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