



The Analysis of Sustainable Development Performance of Construction Projects in the Local Government of Bengkulu City-Indonesia

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Abstract Sustainable development as a human effort to improve the quality of life, but still trying not to go beyond the ecosystem that supports life. Ideally, the sustainability of development requires an approach to achieving sustainability or sustainability of various aspects of life that include ecological, economic, socio-cultural, political, and sustainability of defense and security. The concept of sustainability is a simple yet complex concept, so the notion of sustainability is also very multidimensional and multi-interpretation. This requires a deeper understanding of the meaning of sustainable development. This study analyzes the understanding of sustainable development process, understanding of performance in sustainable development process, and identification of factors and indicators of sustainable development performance in construction project through literature review approach with comparative analysis method. In its application, a number of literature were collected for comparisons of literary opinions as a basis for determining the variables and research factors. The results show that sustainable development is a development that seeks to meet the needs of today without reducing the ability of future generations to meet their needs, performance in the process of sustainable development is the result of work that has a strong relationship with the strategic goals of development that contribute to social and economic value, research factors are based on three principles of sustainable development, ie environmentally sustainable or ecological balance, socially responsible or social progress, and economically viable or economic growth.

Keywords performance, construction project, sustainable development

1. Introduction

Today the issue of sustainable development has become an important issue that needs to be socialized in the community. Sustainable development as a human effort to improve the quality of life, but still trying not to go beyond the ecosystem that supports life. The government certainly needs a realistic and workable policy strategy accompanied by an appropriate control system in the implementation of sustainable development.

The concept of sustainability is a simple yet complex concept, so the notion of sustainability is also very multidimensional and multi-interpretation. Heal in Fauzi [1] states that the concept of sustainability development at least contains two dimensions, namely the dimension of time because sustainability is nothing else about what will happen in the future and the dimension of interaction between economic system, natural resources and environment. Pezzey [2] states that sustainability has a static and dynamic sense. Static sustainability is defined as the utilization of renewable natural resources with constant technological pace, while the sustainability of the dynamic side is defined as the utilization of non-renewable natural resources with ever-changing technological levels.

Ideally, the sustainability of development requires an approach to achieving the sustainability or continuity of various aspects of life that include ecological, economic, socio-cultural, political, and sustainability of defense



and security. But in reality, this concept is still very normative so that the operational aspects of this concept of sustainability are many experience obstacles.

This study is a preliminary study that analyzes more deeply the understanding of sustainable development on construction projects related to the understanding of sustainable development processes, understanding performance in sustainable development processes, and identification of factors and indicators of sustainable development performance on projects construction. The research was done through literature review approach with comparative analysis method.

2. Research Problem

Based on the background of the above problems, the subject matter in this study can be formulated, namely:

1. What is the understanding of a sustainable development process?
2. What is the understanding of performance in the process of sustainable development on construction projects?
3. What are the performance factors in the process of sustainable development on construction projects?
4. What are the indicators of performance factors in the process of sustainable development on construction projects?

3. Literature Review

3.1. Sustainability Development

Concerns about the concept of sustainable development have begun since Malthus in 1798 feared the availability of land in the UK due to rapid population explosions. One and a half centuries later, the concern for sustainability is strengthened, resulting in the term sustainability development [3].

Sustainable development (sustainability development) is a principled development process to meet current needs without compromising the needs of future generations. In Stockholm United Nation Conference on Human Enviromental in 1972 or otherwise known as the Stockholm Declaration, sustainable development is all natural resources on earth, including air, water, land, flora and fauna, especially examples representing parts of the natural ecosystem, must be safeguarded for the benefit of present and future generations through appropriate or careful planning or management.

According to George [4], the definition of sustainability development is closely related to meeting the needs of the present generation equally (intra-generational equity) and meeting the needs of present and future generations in a fair (inter-generational equity). Both are the principles of sustainable development, where intra-generational equity is an important condition for sustainability, while inter-generational equity is an important condition for development.

3.2. Implementation Process of Construction Projects

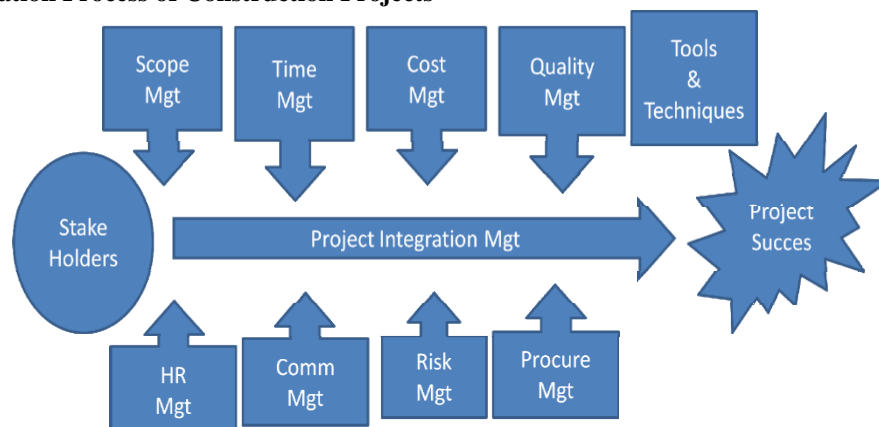


Figure 1: Project Management Framework [5]



Project activities are temporary activities that last for a limited time, with a specific allocation of resources and are intended to perform tasks that have been targeted. In the construction project, to control these activities required a system called project management.

According to the Project Management Body of Knowledge (PMBOK), project management is the application of knowledge, skills, tools / tools and techniques, to project activities to meet the requirements and needs of the project. Project management processes are grouped into 5 groups, namely the initiation process, the planning process, the executing process, the controlling process, and the closing process. The project management framework can be seen in Figure 1.

3.3. Project Performance

Project Performance is a project work system that compares actual work with the approximate workings of a contract agreed upon by the owner and contractor. According to Barrie in Pramana [6], reporting on the performance outcomes of a project must meet five components namely, forecasts that will provide a standard for comparing actual results with forecasts, actual events, forecasts based on seeing what will happen in the future future variants that state to what extent the actual outcome is different from what is predicted, and the thought to explain the state of the project. If in a report there are irregularities, the management will examine and understand the reasons behind it. For that required control of work to fit the budget, schedule and specifications that have been determined

3.4. Portrait of Infrastructure Development in Bengkulu Province

Bengkulu province is one of the provinces located on the island of Sumatra with a population of approximately 1.9 million people, which is still quite left behind in infrastructure development than other provinces on the island of Sumatra. According to data from Bappenas (2017), the population of Bengkulu province is among the poorest in Sumatra Island in the second rank after Aceh Province. The poverty rate of Bengkulu Province in 2017 reaches 325,600 people or 17.03 percent of the population of 1.9 million people. Poverty is spread in rural areas as much as 227,530 inhabitants and in urban as many as 98,070 inhabitants.

The weak economy is very influential on regional income. The lack of regional income and the low capability of development financing originating from investment also hampered the implementation of the construction of facilities for regional facilities such as roads, bridges, electricity, to basic facilities and infrastructure such as clean water and sanitation. This has caused the province's dependence on the central government.

3.5. Relevant Research Results

Some of the research results selected as the basis of reference support in this study are Green Building and Sustainable Infrastructure: Sustainability Education for Civil Engineers by J. T. Kevern. This study describes one of the factors that are developing green building and infrastructure. These factors can be used as one of the factors in this study.

Other references are Challenges for Sustainability Assessment by Indicators by Fernando Rodríguez López and Gonzalo Fernández Sánchez. This study presents an overview. It discusses various approaches and sustainability requirements. The indicators compiled in this study can also be used as one of the indicators in this study.

The next reference is the Conceptual Sustainability Framework for Sustainable Urban Development in Xuzhou Core City by Hongling Liu, Ronald Wennersten, Pingjia Luo, Lulu Jiang and Wei Dong. This research is conducted to develop and implement it can guide the city planners in developing the master plan of city or area based on eco-city. The framework developed according to a more comprehensive and integrated plan for Xuzhou city based on cross-sectoral planning. The method used in this study can be adopted for this study.

4. Research Methodology and Analysis

4.1. Research Process

The study was conducted using an explorative study approach consisting of literature study, questionnaire survey, field observation, documentation and expert interviews. In summary, the research process undertaken can be observed in Figure 2 below:



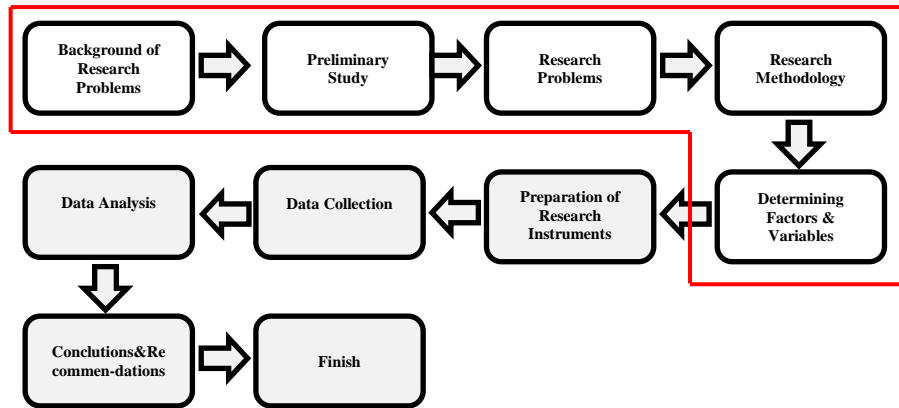


Figure 2: Research Process

This study is a preliminary study of continuous development performance analysis studies on construction projects that are limited to the determination stage of research factors and indicators. Research begins with the selection of problems followed by a preliminary study with the intent to seek information required by the researcher to make the problem clear. The next stage is to formulate the problem so that research can be done best, and clearly must start from where. After formulating the problem, the study proceeds to formulate a basic assumption or something that is believed to be true by the researcher who will serve as a research reference, choose the type of approach to be used, and determine the factors and variables based on the source of research data.

4.2. Research Instruments

The research instrument is a tool used by researchers to obtain data. Instruments used can be a questionnaire, interview, observation, literature, and documentation. The use of research instruments is tailored to the type of data required.

4.2.1. Primary Data

The primary data collection in this research will be conducted by questionnaire survey and interview to the respondent of research, field observation, and tracking of development documentation data in the last few years as deemed necessary.

4.2.3. Secondary Data

Secondary data collection conducted by researchers in a way not directly to the object of research, but through documents related to the object of research. Secondary data collection will be done through official website of Public Works Department, Central Bureau of Statistics (BPS), and other official elements involved in infrastructure asset management in Bengkulu Province.

4.3. Research Methods

The analysis used in this preliminary study used literature review approach with qualitative and comparative research methods.

4.3.1. Qualitative Research Methods

Qualitative research method is one of method to get truth in answer research problem. Qualitative research is classified as a scientific research built on theoretical basis.

4.3.2. Comparative Research Methods

In its application, the comparative research method or comparative analysis is done by collecting a number of literature for comparisons of opinions in the literature, as a basis for making decisions on the answers to the research problem.



4.4. Analysis

4.4.1. Understanding of Sustainable Development Process

Brundtland in the World Commission on Environmental Development (WCED) in 1987 also mentioned the notion of sustainable development is development that seeks to meet the needs of today without reducing the ability of future generations to meet their needs. In the High Level Conference on Sustainable Development in 2002 it was stated that sustainable development is a condition in which people can set themselves as prepared in multilateral free trade on the condition that good governance is created.

According to Budiharjo and Sudjarto [7], the definition of sustainable development is a city that in its development is able to meet the needs of today's society, able to compete in the global economy by maintaining the harmony of their social vitality environment, culture, politics and security defense without neglecting or reducing the ability of future generations in fulfilling their needs.

4.4.2. Understanding Performance in Sustainable Development Processes

Performance in the process of sustainable development is the result of work that has a strong relationship with the strategic goals of development that contribute to social and economic value. According to Dipohusodo (1996), the performance control process generally consists of three main steps: setting performance standards, measuring performance against standards by comparing actual performance with performance standards, and performing corrective actions in case of deviation from established standards.

4.4.3. Sustainable Development Performance Factors

Continuous performance should be considered since determining the type of infrastructure to be built through design and specification, during construction, infrastructure operations including maintenance and repair and deconstruction. In the construction industry, sustainable construction itself is creating a healthy environment using efficient resources, using ecological principles [8].

By implementing sustainable construction techniques, the construction industry can reduce lifecycle costs, increase asset values, and reduce energy and waste consumption. The construction industry can adapt according to the owner's needs for sustainable assets and services, so as to integrate sustainable capabilities in its strategy and business services [9].

Some of the factors affecting the performance of sustainable development include communication system between leadership and human resources, knowledge and ability of human resources engineering, creativity and innovation owned by human resources, supporting machine facilities, character of regional leadership, arrangement of development strategy, quality of work result, financial liability payments, leader's experience, ethical standards and moral HR, human resource productivity, managerial and entrepreneurial skills, leader's innovation and mindset, human resource management, delegation of tasks and authority, leadership skills, financial flow management.

4.4.4. Indicators of Sustainable Development Performance Factors

The indicators of sustainable development performance are based on the technical guidance of the Regional Sustainable Development Performance Rating issued by the Environmental Impact Management Agency, the Deputy for the Control of Environmental Damage in 2001 which states that the goal of sustainable development is based on three principles: environmentally sustainable or ecological balance, socially responsible or social progress, and economically viable or economic Growth. Furthermore, these aspects increase with the institutional sustainability.

5. Conclusion and Recommendation

5.1. Conclusion

Based on the results of research and discussion above, it can be concluded as follows:

1. Sustainable development is a development that seeks to meet the needs of today without compromising the ability of future generations to meet their needs.



2. Performance in the process of sustainable development is the result of work that has a strong relationship with the strategic goals of development that contribute to social and economic value.
3. Factors affecting the performance of sustainable development, among others, is a communication system between the leadership and human resources, knowledge and skills of human resources engineering, creativity and innovation owned by human resources, supporting machine facilities, character of regional leadership, setting of development strategies, financial obligations, leader's experience, ethical standards and moral HR, human resource productivity, managerial and entrepreneurial skills, leader's innovation and mindset, human resource management, delegation of tasks and authority, leadership skills, financial flow management.
4. Research indicators are based on three principles of sustainable development, i.e. environmentally sustainable or ecological balance, socially responsible or social progress, and economically viable or economic Growth. Furthermore, these aspects increase with the institutional sustainability.

5.2. Recommendation

This research is expected to contribute to various stakeholders in sustainable development, whether government, private, community, and other stakeholders, to better understand and consider the factors and indicators of sustainable development, and methods that can be recommended in the process of improving the performance of sustainable development.

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