Achievement of Sustainable Region Under the Informal Settlement SDG's Parameters: Case Study - Tegal Mulyorejo Baru, Surabaya City

Ima Rahmawati Sushanti and Ivan Adiel Abednego[a]
Departement of Architecture, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia

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Abstract: In the area of informal settlements in the region Tegal Mulyorejo Baru dealing by the river passing in front of it has a function as a residential, residential and student boarding houses as well as residential and business into one area that has a portrait of the dimensions of housing is to be studied. Still not an optimal achievement of sustainable development based on the criteria of Sustainable Development Goals (SDG's) in the region becomes very necessary to the assessment of the achievements, settlement building sustainable and determine the direction of development towards Surabaya as an intelligent city (Smart City) with smart environments (Smart Environment). The study was conducted in order to determine the achievement of sustainable development based settlement based on the parameters of Sustainable Development Goals (SDG's) and determine the direction of development in accordance with the environment in the area of intelligent (smart environment). The method used in this research is descriptive qualitative with collecting primary data and secondary data. The results showed that the achievement of sustainable development goals is being met is SDG's 15 elements of 17 elements present. Unmet is element 1) Energy is clean and affordable and 2) Manufacture, innovation, and infrastructure. And in order to realize the achievement of all the elements SDG's that meet the criteria are then made efforts to achieve through smart environment towards sustainable cities and settlements with attention to aspects of Smart Environment, namely management of holistic resources and sustainable urban planning.

1 INTRODUCTION

Sustainable development is a way to understand the world as a complex interaction of a system of economic, social, environmental, and political. Normative or ethical view of the world, how to determine the purpose of a well-functioning society, to provide welfare for its citizens today and in future generations. The three pillars of the indicators in the development concept of Sustainable Development Goals (SDGs), i.e., the first indicator of inherent human development (Human Development), including education, health. The second indicator attached to his environment (Social Economic Development), such as the availability of facilities and environmental infrastructure, as well as economic growth. Meanwhile, the third indicator is attached to a larger environment (Environmental Development), such as the availability of natural resources and environmental quality are good (Ramadhani, 2018). Ongoing settlement construction, especially in urban areas is one of the efforts to achieve sustainable development continue to be developed. It becomes very important given the high rate of urbanization that affects more dense urban areas in Indonesia and even the world. Even based on estimates of more than 70% of the population living in the city world 2050 (Suhono, 2016). Surabaya is the capital of East Java province which is growing rapidly and the potential of urban life. Surabaya City gradually promotes the social, economic, environmental and cultural as efforts to achieve the vision of a city that is prosperous character and ecology-based global competitiveness by supporting the achievement of smart urban development (Smart City) through smart environments (Smart Environment). Surabaya itself has done Surabaya Green and Clean program that

[a] https://orcid.org/0009-0005-4878-1701

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supports the development of settlements in a sustainable manner. Implementation of Surabaya Green and Clean program has several stages and in accordance with Standard Operating Procedures (SOP) in order to reduce the level of errors and omissions of the actors in the implementation of SGC and for the sake of improving the efficiency and effectiveness of the duties and responsibilities of the individual and the organization as a whole (Kumalasari et al., 2005). In order to achieve the goal of SDG's, that is making cities and settlements inclusive, secure, resilient, and sustainable. focused on addressing the challenges of urban in creating opportunity and prosperity without spending their land and resources, the necessary attention and sustained effort and integrated by all parties so as to achieve the goal, namely to make efforts ratings based on indicators of SDG's so it can do a holistic approach to address the multi-faceted sustainability issues that could affect the development of settlements in a sustainable manner, even within the framework of development policies in the context of State (Udin, 2018). Problems faced by the present increasingly complex, particularly environmental and development issues. The construction itself is an effort to cultivate and utilize natural resources to improve people's welfare. So the use of natural resources must be harmonious and balanced with environmental functions.

Development in Indonesia cannot be said to apply 100 percent of sustainable development. There are still many public policies which there is no thought of the concept of sustainable development. Urban settlements would be a problem not resolved completely if not given attention and optimal treatment to all its potential and problems. In the area of informal settlements in the region Tegal Mulyorejo Baru facing the river crossing has a function as a residential and boarding students as well as residential and business into one of the regions that have a portrait dimensions of housing is to be studied in this aspect of the achievement of the development of sustainable settlement and SDG's as well as creating an environment smart (Smart environment) both on the housing and the surrounding environment. Therefore, efforts in the area assessment based on aspects of sustainable settlement construction, SDG's and its efforts to achieve the vision and mission of the city of Surabaya with the concept of the intelligent city (Smart City) that has an intelligent environment (Smart Environment).

1.1 Issues

The problem in this research is still not optimal achievement of sustainable development based on the criteria of SDG's so it becomes very necessary to the assessment of the urban settlement area for determining compliance aspects of settlement construction continuing toward SDG's and determine the direction of development towards Surabaya as an intelligent city (Smart City) with an intelligent environment (Smart environment). Selected case studies in the area of informal settlements along the way Tegal Mulyorejo

1.2 Aim

The purpose of this study was to determine the achievement of sustainable settlement development based on aspects of sustainable residential development within SDG's dimensions and determine the direction of development in accordance with the environment in the area of intelligent (smart environment).

2 RESEARCH THEORY AND METHOD

2.1 Sustainable Settlement Development

Sustainable development as a human effort to improve the quality of life while maintaining the ecosystem supporting sustainable life after life. Sustainable development is considered as a complex concept, for implementation are interrelated and many things that need to be considered. One cause of the implementation of sustainable development in Indonesia is not optimal is the lack of our understanding of sustainable development itself. Poor understanding of not only occur on the nation's political elite but also academics. Another problem is the lack of political commitment and goodwill of stakeholders (stakeholders)to be able to implement sustainable development (Abdoellah, 2016). Sustainable housing is not only to meet the current generation but also future generations, and not just satisfy basic needs but also the quality of the environment (Chiu, 1999). A holistic approach is used to determine the context of sustainability in the construction of a residential neighbourhood (Thorns, 2004).

2.2 Sustainable Development Goals (SDG's)

As part of the post-2015 development agenda, the UN has facilitated the development of Sustainable Development Goals (SDG's) (United Nations, 2015). Unlike their predecessors, the Millennium Development Goals (MDGs), this goal is more to discuss than just poverty but focus on the overall human and ecosystem well-being. Achieving this requires addressing three dimensions of sustainable development (social, economic, and environmental) in an integrated and synergistic manner (Costanza, 2016), SDGs addressed and signed by all countries, both developed and developing. With 17 goals, 169 targets, and more than 300 indicators SDGs be good and proper instruction for use. 17 SDG's objectives include: 1)Without Poverty; 2) Without Hunger; 3) Healthy and Prosperous Life; 4) Quality Education; 5) Gender Equality; 6) Water and Improved Sanitation; 7) Clean and Affordable Energy; 8) Decent Work and Economic Growth; 9) Infrastructure, Industry, and Innovation; 10) Reduced gap; 11)Sustainable cities and settlements; 12) Consumption and Production Responsible; 13) Address Climate Change; 14) Marine Ecosystems; 15) Ecosystem Mainland; 16) Peace, Justice, and Institutional Tough; and 17) A Partnership to Achieve Objectives.

Efforts to achieve sustainability must be understood, understood, and known to be true (Blair et al., 2003). The perspective of sustainability based on the achievement of a technology-based approach (technocenter) is more sluggish (weak) when paired with the environmental balance approach (ecology / ecocenter) is strong (strong) (Winston, 2007). Therefore we need a good understanding of the important characters (Edwards, B, and Turrent, 2004), ideal conditions (Winston, 2012), and the resulting impact (Islam, 1996) on sustainable residential construction activity. Factors inhibiting the attainment of sustainability (Bergman et al., 2007) can be seen on the transition process change achievement of sustainability (Turcotte and Geiser, 2010), and it can be done with the achievement of the votes to build a framework for the assessment of sustainable housing that is based on the principles of sustainability context major (Zubaidi, 2007). Value achievement of sustainability rating system called 'rating system' to demonstrate the value of sustainability in the achievement of sustainable housing dimensions (Allwinkle and Cruickshank, 2011). The potential that exists behind the process of sustainable development can be explored and developed through innovation and achievement rate assessment system modifications(Cohen, 2012). 'Rating system' to demonstrate the value of sustainability in the achievement of sustainable housing dimensions (Boamah S, 2003; Abu Hasan, Abu Bakr, et al, 2011). The potential that exists behind the process of sustainable development can be explored and developed through innovation and achievement rate assessment system modifications (Cohen, 2012). 'Rating system' to demonstrate the value of sustainability in the achievement of sustainable housing dimensions (Allwinkle and Cruickshank, 2011). The potential that exists behind the process of sustainable development can be explored and developed through innovation and achievement rate assessment system modifications. (Cohen, 2012) The concept of Smart City and Smart Environment The concept of an intelligent city, better known by the name of a very popular smart city developed as a concept of arrangement cities in the world in recent years along with the rapid development of technology. This concept was initially grown since the 1990s which began worldwide internet connection since its introduction in the 1960s. According to [20], development of the Internet in that period was the one who made the service even easier with the information that can be accessed via the website provided by the city government. Although still limited in the form of services in one direction with only the information that is static and limited on urban policy, land use and planning, but no denying that this is the beginning of the emergence of the concept of a smart city. In addition, [21] divides the smart city into six dimensions, namely: (1) Smart economy, (2) Smart mobility, (3) Smart environment, (4) Smart people, (5) Smart living, and (6) Smart governance.

The concept of Smart Environment according to [21] includes several aspects that support the related (1) Management of resources, comprised of energy, carbon footprint, air quality, waste generation and water consumption as well as (2) planning sustainable cities, which consists of planning resistance climate, density and solid waste generation.

2.3 Research Methods

The method used in this research is descriptive qualitative with collecting primary data and secondary data. The primary data obtained by observation and interviews with respondents in the case studies. While the secondary data obtained by searching the relevant literature SDG's, ongoing settlement construction and smart environment.

Analyses were performed using the parameters of sustainable development aspects of the settlement in a cultural context, is to know the achievements of housing and settlements in a sustainable and housing for smart environments based on criteria SDG's. And further efforts to determine the direction or strategy SDG's achievement in the concept of a smart environment

3 RESULT AND DISCUSSION

3.1 Sustainable Settlement Development

Mulyorejo Tegal district has a function as a residential area, which is dominated by informal settlements as residential, residential and boarding houses for students and residential and business. The settlement is located along the road facing the river environment in residential areas. Mulyorejo Tegal as a whole can be seen in Figure 1 map image as follows:

Figure 1. Map images Tegal New Mulyorejo Source: Map Citra, 2018

Life Settlements are performed by residents in the economic, cultural or social activities of citizens, and the environment can be seen in Table 1 below:

Table 1, The living conditions of the settlement based on the activities of people

No.	Aspects of Settlement	Time	locations	Activity
1	Economy	Afternoon	Boarding House, Public Eating, Public Sembako, street vendors or Roving Coffee Shops, Laundry Dry Cleaning, Bird Seller, Public Pulse, Clothes Shops, Repair Patch Tire	Students boarding, people selling products or services, selling complex residents outside circumference.
2	Social	Afternoon	Playground, Parking Area	Children playing, vehicles and citizens or residents outside or consumer parking
3	Culture	Morning Afternoon Evening	Public space Street, patio or yard, river terraces, and river edges.	Interactions, transactions, eating, discussion, and enjoy the view.
4	Environment	Morning Afternoon Evening	Private and RTH Public	Greening, Maintenance, and Planning (Urban farming); Vegetation Trees, Shrubs, Trash

Based on the aspects of sustainable development, the existing condition of life settlements in Tegal Mulyorejo region can be divided based on the following aspects: Natural Environment, Building Environment, and Social, Economic and Cultural Environment.

1. Natural Environment
   Existing environmental conditions in the vicinity of settlements, which is indicated by the presence of vegetation along the river opposite the residential areas and afforestation and drainage that crosses the road environment Mulyorejo Tegal region. It can be shown in Figure 2 below:

Figure 2, The road condition Tegal neighbourhood of New Mulyorejo Sources: Observations, 2018

From the condition that there can also be seen that the cleanliness of the environment is well preserved in the region. Only the condition of river water that looks cloudy and dirty because of sedimentation or deposition of garbage that will require attention and optimal handling. It can be shown in Figure 3 below:

Figure 3. River conditions in neighborhoods Tegal New Mulyorejo Sources: Observations, 2018

2. Building Environment
   Residential environment and settlements in the area of Tegal Mulyorejo consist of a habitable house with tropical architecture form a floor and two floors. Conditions viable building permanent structures, utilities complete and adaptive forms of the tropical climate were quite good aesthetically. The residential building conditions can be seen in Figure 4 below:

Figure 4. Conditions decent residential building in Tegal New Mulyorejo Sources: Observations, 2018

In the development of some of these residential woke linear follow and overlooking the river in front of him and partly awakened regularly in clusters on the side of it. Residential environmental conditions can be seen in Figure 5 below:

Figure 5, Conditions Tegal neighborhoods in New Mulyorejo Sources: Observations, 2018

3. Socio-Economic, Cultural Environment
   The lives of people in the New Mulyorejo Tegal region economically supported by its ability to entrepreneurship. Residents take advantage of their home's occupancy or support their economic life by making the function of occupancy as a place of business and even a boarding house for students. So that the welfare of livelihoods in the region is quite good. Economic conditions with a fairly good level of welfare can be seen in Figure 6 below:

Figure 6. Economic conditions Tegal neighbourhood of New Mulyorejo Sources: Observations, 2018

A very dynamic life was also demonstrated by the activity or activities consisting of community residents and students from the morning until the afternoon that utilizes several locations in the region, particularly in the use of public space according to their needs. The public rooms are citizens or residents and students who were in that area to use the area as space along the river banks, both for the activity of talking, enjoying the view of the river or even eat together. For more details, several sociocultural activities of citizens in the settlement environment is shown in Figure 7 below:

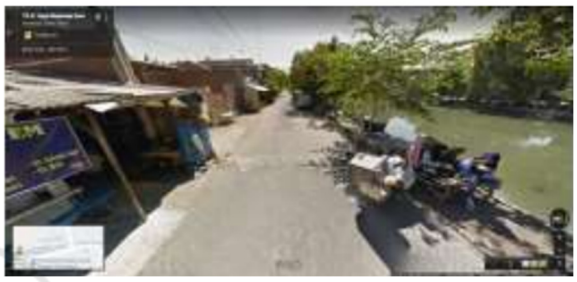

Figure 7. Space socio-cultural activities in neighbourhoods Tegal New Mulyorejo Sources: Observations, 2018

3.2 Outcomes Analysis Based on Kriteria SDG's Sustainable Development

The analysis is done based on aspects of sustainable development with regard to the outcome observed in the settlement area Tegal Mulyorejo, SDG's criteria as an indicator that determines whether or not all parameters reached SDG's it. For more analysis of the achievement of sustainable development in the residential area of Tegal Mulyorejo based on criteria SDG's can be seen in table 2 below:

Table 2.

No.	The dimension of Sustainable Development	SDG's Achievement	Criteria SDG's Completions	Criteria SDG's Not Yet Achieved
1	Social dimension ➢ The livelihoods of residents who heterogeneous including the ability of citizens to entrepreneurship in increasing revenue ➢ Welfare level was pretty good. ➢ The education level of a good citizen. The average educated graduated from high school and partially completed Bachelor ➢ Institutional existence in society. ➢ The creation of a public space of society, both residents, consumers, businesses, and students as a means of social interaction and participation to reduce disparities.	1. Healthy and Prosperous life 2. quality Education 3. Decent Work and Economic Growth 4. Peace, Justice and Institutional Tough 5. Partnership To Achieve Objectives	1. Without Poverty; 2. Without Hunger; 3. Healthy and Prosperous life; 4. Quality Education; 5. Gender equality; 6. Water and Improved Sanitation; 7. Decent Work and Economic Growth; 8. Reduced disparities; 9. Sustainable cities and settlements; 10. Consumption and Production Responsible; 11. Address Climate Change; 12. Marine Ecosystems; 13. Mainland ecosystems; 14. Peace, Justice and Institutional Tough; and 15. Partnership To Achieve Objectives.	1. Clean and Affordable Energy 2. Infrastructure, Industry, and Innovation.

2	Economic dimension			
	➢ Utilization of occupancy not only as a residence but also provide economic added value as a place of business and boarding houses for students who are studying. ➢ Having a decent livelihood even creative and innovative entrepreneurship ➢ Have high levels of income and wealth is good. ➢ Entrepreneurship skills demonstrated society's role in improving the economy of individual and group productive society ➢ The role of citizens actively and productively done by all citizens regardless of gender	1. without Poverty 2. without Hunger 3. Decent Work and Economic Growth 4. reduced gaps 5. Gender Equality 6. Cities and Sustainable Settlement	1. Without Poverty; 2. Without Hunger; 3. Healthy and Prosperous life; 4. Quality Education; 5. Gender equality; 6. Water and Improved Sanitation; 7. Decent Work and Economic Growth; 8. Reduced disparities; 9. Sustainable cities and settlements; 10. Consumption and Production Responsible; 11. Address Climate Change; 12. Marine Ecosystems; 13. Mainland ecosystems; 14. Peace, Justice and Institutional Tough; and 15. Partnership To Achieve Objectives.	1. Clean and Affordable Energy 2. Infrastructure, Industry, and Innovation.
3	Environmental dimensions			
	➢ The availability of clean water and sanitation in each occupancy even to support his efforts. ➢ The existence of sufficient vegetation along the banks of the river, along the street and courtyard. ➢ Still not exploited clean and affordable energy, as is still visible where the river Water Resources turbid and dirty due to sedimentation and waste generation ➢ The use of environmentally friendly shelter materials as well as affordable. ➢ The level of knowledge and insight into the people were quite good and innovative in maintaining the balance of the environment makes the surrounding residential neighborhood and pretty clean and beautiful and adaptive environment.	1. Water and Improved sanitation 2. Consumption and Production Responsible 3. Address Climate Change 4. Marine ecosystems 5. ecosystem Mainland	1. Without Poverty; 2. Without Hunger; 3. Healthy and Prosperous life; 4. Quality Education; 5. Gender equality; 6. Water and Improved Sanitation; 7. Decent Work and Economic Growth; 8. Reduced disparities; 9. Sustainable cities and settlements; 10. Consumption and Production Responsible; 11. Address Climate Change; 12. Marine Ecosystems; 13. Mainland ecosystems; 14. Peace, Justice and Institutional Tough; and 15. Partnership To Achieve Objectives.	1. Clean and Affordable Energy 2. Infrastructure, Industry, and Innovation.

4 CONCLUSIONS

According to the research conducted on Informal Settlement Region in Jalan Tegalsari Mulyorejo, then it shows that:

1. Achievement of the objectives of sustainable development with due regard to aspects of sustainable development and SDG's the criteria are met SDG's 15 elements of 17 elements present. Unmet isunsur1) Clean and Affordable Energy And 2) Industry, Innovation and Infrastructure.
2. In order to realize the achievement of all the elements that meet the criteria are then performed SDG's achievement of SDG's strategy through the Smart Environment towards a sustainable settlement of the city and with due regard to aspects of Smart Environment, namely through: (1) Management of resources, comprised of energy, carbon footprint, air quality, waste generation and water consumption as well as (2) sustainable urban planning, which consists of planning climate resilience, density and solid waste generation.

5 SUGGESTIONS

In order to achieve the vision and mission of the city of Surabaya on an ongoing basis, particularly settlement building sustainable, it requires the involvement of many parties to participate actively with the approach holistic in planning, managing and evaluating all stages of development in urban areas so as to achieve the vision and mission of the city within the framework of development goals sustainable in all aspects

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