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Green Building Implementation Model in Tasikmalaya City Public Service Mall: An Environment-Based Approach

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Abstract

The Green Building implementation model in the Tasikmalaya City Public Service Mall (MPP) with an environment-based approach aims to create efficient, sustainable, and environmentally friendly public facilities. This study develops a model that integrates sustainability principles in the design, operation, and management of MPP, taking into account the local characteristics of Tasikmalaya City. The main focus of this model includes energy efficiency through energy-saving technology and renewable energy sources, efficient water management, and the use of environmentally friendly building materials available around the region. The implementation of Green Building in MPP is expected to reduce operational costs, increase user comfort and satisfaction, and reduce environmental impacts, such as reducing carbon emissions and conserving natural resources. This model also encourages the importance of collaboration between the government, the private sector, and the community in its implementation. By providing policy recommendations and strategies for the implementation of Green Building in other public facilities, this research aims to make Tasikmalaya City a model environmentally friendly city in Indonesia.

Keywords: *Public Service Mall, Green Building.*

Introduction

The Tasikmalaya City Public Service Mall (MPP) has a strategic role as an integrated service center designed to improve accessibility, efficiency, and quality of community services. MPP integrates various services from government, private, and other institutions in one location, allowing the community to take care of various administrative needs, such as licensing, tax payments, or health services, without the need to move around. This not only saves time, effort, and costs, but also provides easy access for the community, including those from suburban areas. With a centralized and easy-to-reach location, MPP contributes to the equitable distribution of public services in Tasikmalaya.

The existence of MPP also increases transparency and accountability of public services through an integrated and technology-based system. The digitization of services, such as electronic queues and online applications, reduces the opportunity for corrupt practices while speeding up the service process. On the other hand, the adoption of modern technology allows for faster, more accurate, and real-time services, thereby reducing people's waiting times. In addition, inter-agency coordination within the MPP encourages the improvement of the quality of public services by creating a better experience for users, while cutting the long bureaucratic chain. By minimizing the overlap of functions between agencies, the service process becomes simpler and administrative obstacles can be overcome.

The presence of MPP also reflects the commitment of the Tasikmalaya City government in providing innovative, transparent, and community-friendly services. This not only strengthens public trust in the government, but also improves the image of local governments. Furthermore, MPP has the potential to be integrated with the concept of green building, thereby supporting operational efficiency as well as sustainable development in line with the national and global agenda. With these various benefits, the Tasikmalaya City MPP functions not only as a place to manage administrative documents, but also as a symbol of inclusive and effective modernization of public services. Its presence helps encourage regional development, improve community welfare, and accelerate the achievement of the local government's vision in providing high-quality public services.

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The high activity in the Tasikmalaya City Public Service Mall (MPP) as an integrated service center has a significant impact on the environment, especially through energy consumption, waste production, and other natural resource needs. As a public facility that serves thousands of users every day, MPP operates almost non-stop, with many electronic devices, lighting, air conditioning systems, and digital infrastructure that require large energy consumption. This use of energy, if not managed efficiently, can contribute to carbon emissions that negatively impact the environment.

In addition, the intensity of community visits produces a high volume of waste, both in the form of organic and inorganic waste. This waste comes from visitor activities, such as food, beverages, or the use of single-use materials in the administrative service process, such as paper and plastic. If not managed properly, the accumulation of waste can pollute the surrounding environment, reduce the aesthetics of buildings, and increase the burden of municipal waste management.

The need for other natural resources, such as water, has also increased significantly in MPPs. Water is used for basic needs such as sanitation, cleanliness of facilities, and the needs of visitors and employees. High water consumption without the application of conservation methods can lead to waste of resources, especially in areas that have limited availability of clean water.

Overall, intensive MPP operations without a sustainable approach can put pressure on the environment. Therefore, innovative measures are needed, such as the implementation of the green building concept that prioritizes energy efficiency, waste management, and resource conservation, to minimize environmental impacts while still providing optimal services to the community.

The need for an innovative approach that integrates sustainability in the operations of the Tasikmalaya City Public Service Mall (MPP) is very important to reduce the environmental impact due to the high level of activity that occurs in the facility. MPP as a public service center that involves many visitors every day, certainly has great potential in producing negative impacts on the environment, such as high energy consumption, large waste production, and excessive use of natural resources. Without proper mitigation measures, this environmental impact can worsen as the number of visitors increases and the facility develops. Therefore, innovative approaches that integrate sustainability principles in MPP operations can mitigate these impacts in several effective ways. One of them is the application of energy efficiency technology, such as the use of energy-efficient LED lighting, environmentally friendly cooling systems, and the use of renewable energy such as solar panels. By optimizing energy use, MPPs can reduce the consumption of electrical energy that often comes from sources that contribute to pollution and carbon emissions, supporting carbon footprint reductions in line with global efforts to reduce the impact of climate change.

Additionally, it is important to implement effective waste management systems, such as on-site waste segregation, recycling, and the use of environmentally friendly materials. Waste generated by activities in MPPs, both organic and inorganic, can be treated more efficiently if proper management is implemented, reducing the burden on municipal waste management systems and minimizing environmental pollution. Reducing the use of single-use materials and implementing the concept of "zero waste" can also help reduce the impact of waste generated. Furthermore, the management of natural resources, such as water and building materials, needs to be a concern. The use of water-saving technologies, such as automatic sprinklers and rainwater utilization systems, can reduce clean water consumption, while the selection of environmentally friendly building materials and the implementation of energy-efficient designs can significantly reduce the use of natural resources.

Another approach that can be applied is to create green open spaces around MPPs. The presence of plants and greening not only helps improve air quality but also has a positive impact on visitor comfort and maintains ecological balance. In addition, the digitization of services in MPP, such as applications for online queues, online services, and electronic document management, also plays a role in supporting sustainability. The reduction in the need for paper and digital data management not only improves efficiency but also reduces unnecessary resource use. Overall, integrating sustainability in the operations of the Tasikmalaya City MPP is very important to reduce the environmental impact caused by daily activities at this facility.

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With an innovative approach based on sustainability principles, MPP can not only provide efficient and quality public services but also serve as a real example for the community and local governments of how public facilities can operate in an environmentally friendly manner without sacrificing performance or service quality. This approach is also in line with the goal of sustainable development and supports the city of Tasikmalaya to become a greener and more environmentally friendly city.

A lot of research related to Green Building has been carried out, including Nsairat, et.al. (2009), Martínez, et.al (2012), Presley, et.al (2012), Richard John de Dear, et.al. (2012), Joseph, et.al (2013), Zmeureanu, et.al. (2006), Zhen-Yu, et.al (2014), Omer, et.al (2008). Green Building is a building design, construction, and management concept that aims to reduce negative impacts on the environment and improve the quality of life of its residents. The concept integrates sustainability principles at every stage of the building's life cycle, from planning, construction, use, maintenance, to demolition. The main goal is to create a more efficient environment in the use of natural resources, reduce pollution, and improve comfort for its residents.

The basic principles of Green Building include four key interconnected aspects to create environmentally friendly and sustainable buildings:

Energy Efficiency

Energy efficiency is one of the main aspects of Green Building. Green buildings are designed to minimize energy consumption by using energy-efficient technologies and designs, such as good thermal insulation, efficient LED lighting, and environmentally friendly cooling or heating systems. The use of renewable energy, such as solar panels, is also part of this principle, with the aim of reducing dependence on fossil energy that contributes to climate change and reducing operational costs in the long run.

Waste Management

Waste management is another basic principle in Green Building, which focuses on reducing, sorting, and recycling waste generated during building construction and operations. Green Building prioritizes the use of environmentally friendly building materials that are easily recycled or decomposed naturally. Efficient waste management systems and the use of less materials can reduce the amount of waste disposed of in landfills as well as reduce pollution. Some green buildings also apply the principle of zero waste design, where almost all waste can be recycled or reused.

Carbon Emission Reduction

Reducing carbon emissions is a key principle in climate change mitigation efforts. Green Buildings are designed to reduce greenhouse gas emissions, especially carbon dioxide (CO2), which results from the use of fossil energy for heating, cooling, lighting, and transportation. The use of energy efficiency technologies, sustainable building materials, and the integration of renewable energy sources such as solar panels or wind turbines, can reduce the carbon footprint of buildings. In addition, reducing transportation needs and using environmentally friendly transportation, such as bicycle lanes or electric vehicles, also contribute to the reduction of mobility-related carbon emissions.

Increased User Comfort

Green Building also focuses on improving user comfort by creating healthy spaces and supporting well-being. This involves comfortable temperature regulation, sufficient natural lighting, good indoor air quality, and the use of building materials that are not harmful to health. The use of natural ventilation, design that pays attention to natural lighting, as well as the avoidance of the use of harmful materials such as formaldehyde or other toxic chemicals, are essential to create a healthy environment for residents. Green buildings often include green open spaces that can improve the quality of life of users by providing areas for relaxation and recreation.

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Green Building is a concept that prioritizes sustainability and efficiency in all aspects of buildings, from energy use, waste management, to the comfort of its occupants. Principles such as energy efficiency, waste management, carbon emission reduction, and improved user comfort aim to create environmentally friendly buildings while supporting a better quality of life for their occupants. The application of these principles makes Green Building an important solution in facing global environmental challenges, such as climate change and natural resource degradation, while creating healthier and more comfortable spaces for the community.

The benefits of Green Building in the context of public facilities are significant, especially in improving operational efficiency and supporting sustainable development. The application of the green building concept not only provides benefits for managers and residents, but also brings a wide positive impact on society and the environment. By adopting sustainability principles, public facilities such as Public Service Malls (MPP) can function more efficiently, be environmentally friendly, and provide comfort for their users.

Improving Operational Efficiency is one of the main benefits of Green Building. Through energy-efficient technologies such as LED lighting, solar panels, and efficient cooling and heating systems, energy consumption can be minimized, which in turn reduces operational costs in the long run. Better management of resources such as water and waste also contributes to the cost efficiency and sustainability of the facility.

In addition, Environmental Impact Reduction is also an important focus in Green Building. Public facilities that adopt this principle can reduce their carbon footprint, reduce the waste of natural resources, and manage waste more effectively. With the implementation of energy-efficient design and the use of environmentally friendly building materials, negative impacts on the environment can be minimized.

Supporting Sustainable Development is another aspect that is no less important. Environmentally friendly public facilities are more resilient to climate change and natural disasters, while supporting the achievement of the Sustainable Development Goals (SDGs). The government that implements Green Building also shows its commitment to environmental preservation and the quality of life of the community, supporting the sustainability of local ecosystems.

Improving User Comfort and Health is another benefit that is very felt. With the application of optimal natural lighting, maintained air quality, and design that pays attention to comfort, public facilities designed with Green Building principles create a healthy and pleasant space for visitors and staff. The existence of green open spaces also provides significant psychological and physical benefits for users.

Improving Public Image and Trust is also a positive impact of the implementation of Green Building. Environmentally friendly public facilities improve the image of the government or facility manager, show a commitment to sustainability, and inspire people to care more about the environment.

Overall, Green Building in the context of public facilities provides a wide range of benefits, not only in terms of operational efficiency but also in reducing environmental impact, improving user comfort, and supporting sustainable development. The application of Green Building principles helps create a greener, more environmentally friendly, and more comfortable environment for the community.

The application of the Green Building concept in Public Service Malls (MPP) in Tasikmalaya City has great relevance as a strategic step to maintain environmental sustainability while improving the quality of public services. MPPs that integrate various public services in one location are often visited by the community, so it is important to adopt Green Building principles to ensure that energy, resources, and waste management is carried out efficiently and environmentally friendly. By implementing Green Building, MPP can reduce environmental impact, especially in reducing energy consumption and lowering carbon emissions, through the use of energy-saving technologies such as solar panels and LED lighting. In addition, the use of environmentally friendly building materials and an effective waste management system will reduce the amount of waste that goes into landfills and extend the life cycle of buildings. The Green Building concept also contributes to improving the quality of public services, as a design that prioritizes the comfort and health of residents can create a more comfortable and healthy space for visitors and employees. Maintained

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air quality, comfortable temperatures, and sufficient natural lighting will increase comfort and productivity, while green open spaces can provide a place for people to rest. In addition, Green Building can improve MPP's operational efficiency with better energy and water management, as well as reduce operational costs through the use of environmentally friendly materials and efficient waste management systems. MPPs that adopt Green Building are also an example of sustainable development in Tasikmalaya City, supporting the commitment of Tasikmalaya City in realizing sustainable development goals (SDGs), and inspiring people to apply similar principles in their daily lives. Thus, the implementation of Green Building in the Tasikmalaya City MPP not only supports environmental sustainability, but also makes a positive contribution to the quality of public services and the quality of life of the community as a whole.

The implementation of Green Building in Tasikmalaya City faces several main obstacles that affect the adoption of this sustainable development concept. These obstacles can hinder the application of environmentally friendly principles in the building and infrastructure development sector. One of the main obstacles is the high initial investment cost, which is greater compared to the construction of conventional buildings. The application of environmentally friendly technologies, such as sustainable building materials, renewable energy systems, and energy efficiency, requires higher costs in the construction stage. While long-term energy savings can offset the initial costs, many developers and building owners are hesitant to invest without adequate financial support. In addition, the lack of awareness and understanding among stakeholders is also a significant obstacle. Many parties, both the government, developers, and the community, have not fully understood the benefits of Green Building, both in terms of energy savings, waste management, and residents' health. This causes them to be less motivated to adopt environmentally friendly principles in development. In addition, the limited infrastructure and resources in Tasikmalaya City are also obstacles, especially related to the availability of skilled workers who are able to implement green technology and supporting facilities such as rainwater management or environmentally friendly waste treatment. Limited regulations and incentives from local governments also affect the implementation of Green Building, given the limited support in the form of subsidies or tax exemptions that can motivate developers. In addition, social and cultural challenges in Tasikmalaya City, which is more conservative in technological and lifestyle changes, are slowing down the adoption of Green Building. Some people tend to choose proven development without considering environmentally friendly innovations. To overcome these obstacles, the active role of the government, communities, and the private sector is needed to raise awareness, provide incentives, and build infrastructure that supports sustainable development. With the right steps, Tasikmalaya City can realize greener and more environmentally friendly development in the future.

The lack of case studies or technical guidance related to the implementation of Green Building in public facilities, especially in small and medium cities such as Tasikmalaya, is one of the main obstacles in adopting sustainable development principles. Some of the factors that contribute to this problem include limited experience and references in certain areas. In small and medium-sized cities, such as Tasikmalaya, the implementation of Green Building tends to be limited due to a lack of experience in implementing environmentally friendly standards and technologies. Most of the case studies and applications of Green Building still focus on large cities that have more resources and infrastructure. This makes it difficult for small towns to get references that are suitable for their local conditions, making it difficult for developers and stakeholders to plan and implement Green Buildings. In addition, the lack of affordable technical guidance for the implementation of Green Building in public facilities is another obstacle. Many of the existing guidelines on green technology are often too complex or expensive, making them inaccessible to developers, especially in areas with limited budgets. Without proper guidance, developers or local governments often feel confused to start a Green Building project. Limited access to environmentally friendly technology is also a challenge, as public facilities in small towns often find it difficult to access more sophisticated and efficient technologies. The high cost of procuring this technology makes many parties reluctant to invest in technology that has not been proven effective in the local context. In addition, the lack of collaboration between the government and the private sector in small cities is also an obstacle, as local governments may not be sufficiently encouraged by policies or regulations for the implementation of Green Building, while the smaller and limited private sector, which has limited capabilities, does not have enough resources to create case studies or technical documentation that can be used as a reference. Lastly,

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the lack of research and development at the local level exacerbates this problem, as research centers that focus on the development of green technologies and case studies of Green Building implementation in small towns are very rare. Without continuous local research, the implementation of Green Building in public facilities becomes more difficult. Therefore, to accelerate the adoption of Green Building in small towns like Tasikmalaya, there needs to be increased research and development, as well as better collaboration between the government, the private sector, and academia in providing more practical and affordable technical guidance.

This study aims to identify priority areas for the implementation of Green Building in the Tasikmalaya City Public Service Mall (MPP) in order to determine strategic aspects that support environmental sustainability and the efficiency of public facilities. In addition, this research also aims to develop an effective Green Building implementation model that is in accordance with local conditions, by paying attention to the geographical, social, and cultural characteristics of Tasikmalaya. Furthermore, this study analyzes the impact of the implementation of Green Building on operational efficiency, user satisfaction, and environmental impact reduction, as the basis for evaluating the success of its implementation. Finally, this research will produce policy recommendations that can be applied in other public facilities in Tasikmalaya, thereby supporting a more environmentally friendly and sustainable urban transformation.

Research Methods

The methodology in this study will be explained descriptively (depicted) using qualitative research principles. In order to support the research method, the author uses the following data collection techniques:

1. Literature Study, which is data collection by studying books, regulations on spatial planning and relevant written documents about Public Service Malls.

2. Field Study, which is a way to get data and collect data related to the material for discussing the problem that is directly researched on the research object using the following techniques:

   a. Observation, which is collecting data by observing and recording.

   b. Interview techniques

   The interview technique is an effort to obtain data by holding oral questions and answers with predetermined informants. The interview techniques conducted by the researcher consist of two types, namely:

   1. An *in-depth interview*, is "An interview conducted between the interviewer and the informant regarding a carefully discussed problem". (Ali, 1997). This technique uses guided *interview guidelines* as an instrument.

   2. An independent interview, is "An interview process in which the interviewer does not intentionally direct questions and answers to the main points of the research focus." (Ahmadi & Narbuko, 1997).

FGD

Focus Group Discussion (FGD) is the *sharing* of questions and answers on certain topics that are directed at the formation of a consensus or consensus, starting with efforts to explore or devote ideas from several experts in accordance with the field of expertise as well as technical and theoretical mastery of the various fields in question (Irwanto, 2006).

Data analysis activities are carried out in conjunction with data collection activities, namely through triangulation. The definition of *triangulation* is a technique for checking the validity of data that utilizes

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something else. Outside the data is for the purpose of checking or as a comparison of the data. In other words, according to (Moleong, 2013), with *triangulation*, researchers can *recheck* their findings by comparing data with various *sources*, *methods*, or *theories*. Descriptive data analysis is intended as an effort to explain parts of the entire data through clarification and categorization, so that a more systematic series of descriptions can be arranged. The series is through data collection, field notes, and data presentation.

Discussion

National policies related to green buildings in Indonesia are regulated through various regulations, one of which is the Regulation of the Minister of Public Works and Public Housing (PUPR) No. 2 of 2015 concerning Green Building Buildings. This regulation was issued to encourage the application of sustainability principles in building construction in Indonesia, both in aspects of design, construction, operation, and building maintenance. The purpose and scope of this regulation is to create buildings that are environmentally friendly and efficient in the use of natural resources, as well as reduce negative impacts on the environment, such as excessive energy consumption, pollution, and waste of resources. The scope of this regulation includes various types of buildings, such as residences, offices, trade, industry, and others that have an impact on the environment, both existing buildings and those that are still in the planning or construction stage.

In this regulation, there are several basic principles of green buildings that must be applied, including: energy efficiency, with buildings designed to minimize energy consumption through energy-saving technologies and the use of renewable energy sources such as solar panels; natural resource management, which includes the efficient and environmentally friendly use of building materials and rainwater management for non-potable needs; waste management, which emphasizes on recycling and reducing construction waste; improving the quality of the indoor environment, by ensuring good air quality, natural lighting and temperature control; and sustainable construction and management, to minimize the impact on local ecosystems and ensure buildings are easy to manage in the long term.

The Regulation of the Minister of PUPR No. 2 of 2015 also includes a green building certification mechanism, which is given by accredited institutions such as the Green Building Council Indonesia (GBCI), based on the achievement of buildings in meeting sustainability criteria. This certification shows that the building has met sustainability standards that provide long-term benefits to the environment and its occupants.

The impact and importance of this policy is very significant in encouraging sustainable development in Indonesia. With clear regulations on green buildings, the government can ensure that building construction not only prioritizes cost efficiency and aesthetics, but also pays attention to the long-term impact on the environment. This policy supports Indonesia's efforts to reduce its carbon footprint, save energy and water, and create healthier and more comfortable buildings for its occupants. In addition, this regulation also plays an important role in achieving the sustainable development goals (SDGs) globally. Overall, the Regulation of the Minister of PUPR No. 2 of 2015 concerning Green Building is the legal basis that supports efforts to realize sustainable development, as well as introducing clear standards and procedures for developers and the community in creating environmentally friendly and efficient buildings in Indonesia.

The compatibility between the Regional Medium-Term Development Plan (RPJMD) of Tasikmalaya City and environmentally friendly infrastructure is clearly seen in the various strategic plans listed in the RPJMD document. The Tasikmalaya City RPJMD focuses on developing infrastructure that supports environmental sustainability, which is in line with efforts to create a city that is more environmentally friendly and resilient to climate change. Some of the main conformities that show the relationship between RPJMD and environmentally friendly infrastructure in Tasikmalaya City include the development of green infrastructure, the implementation of environmentally friendly transportation, natural resource management and energy conservation, efficient waste management, infrastructure development based on social and economic sustainability, and increasing resilience to climate change.

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The development of green infrastructure in the Tasikmalaya City RPJMD includes the construction of green open spaces (RTH), city parks, and better drainage systems, which aim to reduce air pollution and improve environmental quality. In addition, the application of Green Building principles to public facilities, including buildings that use environmentally friendly technology, is also included in this plan. One of the other priorities is the development of an environmentally friendly transportation system, which includes the construction of better bicycle lanes and pedestrian facilities, as well as the improvement of renewable energy-based or more efficient public transportation services, which are expected to reduce greenhouse gas emissions and air pollution.

The Tasikmalaya City RPJMD also prioritizes efficient management of natural resources, including water and energy management, by encouraging the use of renewable energy, such as solar panels, as well as energy-saving technologies in the building and industrial sectors. In addition, efficient water management and environmentally friendly wastewater treatment systems are also part of this plan. Efficient waste management, based on recycling principles, is also an important focus, with the development of infrastructure for waste separation at the household level and recycling facilities.

In addition to physical and environmental aspects, the RPJMD also seeks to create infrastructure that supports social and economic sustainability, such as the development of health facilities, education, and public services that integrate environmentally friendly principles. On the other hand, the plan to increase the city's resilience to climate change, by managing coastal areas and strengthening drainage systems, is also an important part of the Tasikmalaya City RPJMD. The planned green infrastructure will serve as rainwater absorption, as well as a more efficient drainage system to reduce the impact of climate change.

Overall, the Tasikmalaya City RPJMD shows a strong commitment to creating a greener, healthier, and more resilient city to climate change. By integrating sustainability principles in every aspect of development, this plan aims to improve the quality of life of the community in the long term, as well as create environmentally friendly and sustainable infrastructure.

Indonesia's commitment to the Sustainable Development Goals (SDGs), especially Goal 11 (Sustainable Cities and Communities) and Goal 13 (Climate Action), is very evident in various policies and initiatives implemented at the national and regional levels. Indonesia is committed to supporting the achievement of the SDGs as part of efforts to realize inclusive, sustainable, and resilient development, especially in the face of global challenges such as climate change and rapid urbanization.

Tujuan ke-11: Sustainable Cities and Communities

Goal 11 of the SDGs aims to create inclusive, safe, resilient, and sustainable cities. Indonesia, as the country with the largest population in Southeast Asia and with an increasing rate of urbanization, faces great challenges in realizing environmentally friendly and livable cities. Therefore, the Indonesian government has launched a number of policies that support sustainable city development.

One of Indonesia's strategic steps is through the National Medium-Term Development Plan (RPJMN) policy, which emphasizes the importance of sustainable urban development through improved green infrastructure, better spatial planning, and improved quality of life in urban areas. In addition, Indonesia also encourages the application of the Green Building concept to the construction of public and private buildings that are more environmentally friendly, as well as increasing the accessibility of public transportation based on renewable energy to reduce congestion and pollution.

In this context, smart cities that use technology to manage resources efficiently, such as technology-based water, energy, and waste management systems, are also being developed. Examples are the development of cities that are integrated with green transportation systems, the use of renewable energy, and the provision of green open spaces to improve air quality and reduce the impact of climate change.

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Goal 13: Climate Action

The 13th goal of the SDGs focuses on taking urgent action to address climate change and its impacts. Indonesia, as a country vulnerable to climate change, has demonstrated its commitment to reducing greenhouse gas emissions and improving resilience to climate change. Indonesia has ratified the Paris Agreement on Climate Change, which sets a target of reducing greenhouse gas emissions by 2030 by 29% independently and 41% with international support.

As part of its climate change mitigation and adaptation efforts, Indonesia has developed policies such as the National Action Plan on Climate Change (RAN-API), which focuses on reducing emissions in the energy, industrial, forestry, and agricultural sectors. In addition, Indonesia also implements sustainable natural resource management policies, such as sustainable forest management, reforestation, and the use of renewable energy, such as solar and wind energy.

Climate change adaptation programs have also been launched in various regions, including the development of disaster-resilient infrastructure, flood risk management, and drainage system improvements in major cities. Indonesia is also active in global efforts to reduce the impact of climate change through international cooperation, including with developed countries in climate change financing and green technology transfer.

Priority areas for the implementation of Green Building in MPP Tasikmalaya City.

The application of Green Building principles in the Tasikmalaya City Public Service Mall (MPP) can be focused on several priority areas that support environmental sustainability, resource efficiency, and improving service quality. These priority areas include energy efficiency through the use of energy-efficient lighting systems such as LEDs, solar panel installations, and energy-efficient natural ventilation. Water management is also an important focus, including the installation of stormwater management systems, water-saving technologies, and the treatment of reusable wastewater. In addition, waste and solid waste management needs to be optimized by providing waste sorting facilities and the use of biodegradable materials. In construction or renovation, the selection of environmentally friendly materials such as recycled concrete or non-toxic materials is essential to support health and sustainability. The addition of green open space around the building is also needed to improve aesthetics while functioning as a water catchment area. Indoor air quality can be improved through good ventilation systems, placement of indoor plants, and the use of low-emission materials. As a public facility, MPP can also be a center for environmental education through interactive information boards and environmental management campaign programs. By focusing on these areas, MPP can be a real example of the implementation of Green Building in public facilities in small cities such as Tasikmalaya.

Effective MPP implementation model

The development of the implementation model of the Tasikmalaya City Public Service Mall (MPP) must consider local characteristics, such as geographical, demographic, socio-cultural, and resource availability aspects to ensure effectiveness and sustainability. The design of MPPs needs to be adapted to the needs of people who have high mobility and need quick access to services, including by integrating local architectural elements and ensuring facilities that are friendly to people with disabilities. In addition, digitization of services can be a solution to reduce dependence on manual systems, for example through integrated online platforms and increasing digital literacy. In terms of development, the application of locally-based Green Building principles, such as energy efficiency, rainwater management, and the use of environmentally friendly materials, can improve sustainability.

Collaboration between the government, the private sector, and the community is key, where local MSMEs can be involved in operations, and community participation forums are used to identify specific needs. Public education is also needed through intensive socialization and sustainability campaigns, such as reducing plastic waste. To ensure success, a continuous monitoring and evaluation system must be

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implemented with clear performance indicators and policy revisions based on public input. With this approach, the MPP of Tasikmalaya City is not only an efficient public service center, but also reflects the cultural values, sustainability, and needs of the local community.

Impact of Green Building implementation

The implementation of Green Building principles in the Tasikmalaya City Public Service Mall (MPP) has a positive impact on three main aspects, namely operational efficiency, user satisfaction, and environmental impact reduction. In terms of operational efficiency, energy-saving technologies such as the use of LED lights, solar panels, and natural ventilation reduce electricity consumption, while rainwater management systems and water-saving devices reduce utility costs. Organized waste management also supports operational efficiency by reducing disposal costs and increasing recycling potential. In terms of user satisfaction, the application of natural ventilation, the use of non-toxic materials, and the addition of indoor plants improve air quality and comfort. The addition of green open spaces and disability-friendly architectural design further strengthens the positive user experience. In addition, integrated environmental management in MPP can be an educational tool to increase public awareness of the importance of sustainability.

From an environmental perspective, the implementation of Green Building reduces negative impacts through energy efficiency that reduces carbon emissions, water conservation by utilizing rainwater, and waste reduction through a sorting system that supports recycling. The selection of sustainable building materials also helps reduce the carbon footprint. All of these measures support the reduction of the effects of climate change and the responsible management of resources. Overall, the implementation of Green Building in the Tasikmalaya City MPP can be a successful model for operational efficiency, improving the quality of public services, and environmental protection, so as to be able to inspire other small and medium-sized cities in Indonesia.

Policy recommendations to support the implementation of Green Building in public facilities

To encourage the implementation of Green Building in other public facilities in Tasikmalaya, strategic policies are needed that cover various important aspects. *First,* strengthening regulations and standards for Green Building through the preparation of Regional Regulations (Perda) that regulate the use of environmentally friendly materials, energy efficiency, and sustainable building design. This can be complemented by local technical guidance that adapts energy-saving technologies, water management, and waste management to the geographical and cultural conditions of Tasikmalaya. This policy must also be accompanied by incentives in the form of subsidies or tax reductions for buildings that meet standards, as well as disincentives for those who do not.

Second, capacity building and stakeholder education through technical training for government employees, contractors, and developers. Cooperation with academic institutions is also important to produce innovative solutions related to technology and Green Building design. Additionally, public campaigns can help raise public awareness of the importance of environmental sustainability.

Third, the application of technology and innovation by encouraging the digitization of real-time energy and water management and the use of local energy-efficient and environmentally friendly technology to reduce the impact of costs and carbon footprint.

Fourth, collaboration between sectors, such as partnerships between the government and the private sector through the Public-Private Partnership (PPP) scheme, is also important to support the construction or renovation of public facilities. The participation of local communities in the management of green open spaces can strengthen the sustainability of this program.

Fifth, funding and financing incentives, such as grants, soft loans, or funding from the company's CSR (Corporate Social Responsibility) program, can accelerate the implementation of Green Building projects.

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Finally, monitoring and evaluation by establishing green performance indicators, such as energy efficiency and waste reduction, as well as conducting periodic environmental audits, will ensure that the implementation of Green Building runs according to standards and continues to grow.

With this integrated policy, Tasikmalaya City has the potential to become a pioneer in the implementation of Green Building in public facilities, support environmental conservation, and improve the quality of services for the community.

Conclusion

The implementation model of Green Building in the Tasikmalaya City Public Service Mall (MPP) with an environment-based approach is a strategic step to realize efficient, sustainable, and environmentally friendly public facilities. The model is designed with local characteristics in mind, including architectural design that is adaptive to culture and geographical conditions, optimization of energy-saving technologies and water management, and the use of locally available environmentally friendly building materials.

The implementation of Green Building in MPP not only improves operational efficiency through energy savings and utility costs, but also has a positive impact on user satisfaction through a comfortable and aesthetic environment. In addition, these efforts are able to significantly reduce environmental impacts, such as reducing carbon emissions, conserving water resources, and better waste management.

For the sustainability of implementation, this model also emphasizes the importance of collaboration between stakeholders, capacity building through education and training, and policy support in the form of regulations, incentives, and periodic monitoring. This environment-based approach is not only relevant for the MPP of Tasikmalaya City, but can also be a reference for the implementation of Green Building in other public facilities, making Tasikmalaya a pioneer of environmentally friendly cities in Indonesia.

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