Volume 1 Nomor 7 July 2024
E-ISSN: 3032-1298

https://economic.silkroad-science.com/index.php/IJBLPS

GREEN INFRASTRUKTUR IN THE GLOBAL ERA

Adelia Nur Safitri[1], Conny Damayanty[2], Andri Indrawan[3]
[1,2,3]Accounting Study Program, Faculty of Economics, University of Muhammadiyah Sukabumi
E-mail: adelianursafirti@gmail.com[1] , connydamayanty05@gmail.com[2], Andriindrawan@ummi.ac.id[3]

Article Info

Article history:
Received June 05, 2024
Revised June 25, 2024
Accepted July 05, 2024

Keywords:
Green Infrastructure, Sustainable Development Goals, Indonesia, Regulations, Challenges

ABSTRACT

This research aims to determine the development and implementation of green infrastructure, regulations and policies on green infrastructure as well as challenges, obstacles and solutions to green infrastructure in Indonesia. Sustainable development that pays attention to the environment in the era of globalization is very important to be implemented, this is in line with the Sustainable Development Goals (SDGs) which are a global reference to achieve a better and sustainable life. One of the SDGs targets is goal number 9 regarding "Industry, Innovation, and Infrastructure". Qualitative research methods with literature study techniques are the methods used in research. This study reviews the development and implementation of green infrastructure, regulations and policies on green infrastructure as well as challenges, obstacles and solutions to green infrastructure in Indonesia. The results of the study reveal that green infrastructure has an important role in realizing the Sustainable Development Goals (SDGs) where with technology there is great potential in supporting the development of green infrastructure to be more effective, efficient and sustainable. The implementation of green infrastructure in Indonesia has begun to be carried out, but there are still various negative impacts caused by challenges and obstacles such as limited human resources who do not understand the green infrastructure and economic system, so based on previous research there is a solution to mitigate these negative impacts, namely by implementing the green infrastructure framework.

Corresponding Author:
Adelia Nur Safitri
Accounting Study Program, Faculty of Economics, University of Muhammadiyah Sukabumi
E-mail: adelianursafirti@gmail.com

INTRODUCTION

The era of globalization is an era where demographic boundaries are increasingly biased, where international integration occurs which is characterized by the exchange of global information, products and culture. Technological developments in the increasingly rapid global era affect many sectors including economic, social and environmental(Eka Saputri et al., 2024).

Sustainable development involving various generations requires efforts that must be made together to achieve the goal, namely by balancing three important aspects (economic, social and environmental). Sustainable Development or Sustainable Development in Law Number 32 of 2009 which discusses Protection and Management Environmentalism is a conscious effortr and planned that combines aspects environmental, social and economic aspects into a development strategy with purposeguarantee the integrity of the environment and the quality of life of the present generation and future generation (Cahyani, 2020).

Sustainable Development Goals (SDGs) are a series of goals that established by the United Nations (UN) to achieve a better life better and more sustainable for everyone. There are 17 interrelated SDGs goals related and support each other to saythe various global challenges that we face facing. One of the targets of the Sustainable Development Goals Development Goals/SDGs) is Goals 9 regarding "Industry, Innovation, and Infrastructure". Infrastructure has a major role in making this happen sustainable development and has a direct impact of more than 80% sustainable development goals (SDGS) targets(Saragi, 2023). Therefore, Sustainable infrastructure development becomes relevant in the context servant global use (Habu et al., 2023).

Green Infrastructure isa concept, effort, and approach with the aim of maintaining a sustainable environment through spatial planning open green and preserving natural processes that occur in naturelike a cycle rainwater, soil conditions, and surface runoff where the application is very important closely related to spatial, social and economic aspects (Widyaputra, nd)

It cannot be denied that high population growth can occur causing some problemsah in the use of natural resources. Use Natural resources for implementing development are closely related to the environment and spatial layout. These two things have so far tended to be unplanned and unplanned sustainable, the result is a declinea environmental quality and function included natural resources in it (Cahyani, 2020).

Currently, the carrying capacity of the environment is threatened due to the large amount of development who doesn't pay attention to the environment. Hence the concept*green infrastructure* is becoming a priority in sustainable development regarding how solve problems without having a major negative impact on surrounding environment.The existence of a nationally oriented strategy in development green infrastructure to be able to memitting negative impacts of infrastructure development Achieving sustainable development goals is a joint effort must be prepared.

2. Literature Review

2.1 Sustainable Development Goals No 9

Sustainable Development Goals (SDGs) is a world development agenda that has a series of goals set to achieve a better and more sustainable life. The concept of Sustainable Development Goals (SDGs) emerged in 2012 in Rio de Jainero when a conference on sustainable development was held. There were 3 universal goals expected at the conference, namely environmental, social and economic. As a step to achieve the 3 universal goals, 17 SDGs goals were prepared which are interrelated and support each other as a step to overcome the various global challenges faced(Ishartono & Raharjo, nd).

Sustainable Development Goals (SDGs) no. 9 "Industry, Innovation, and Infrastructure" aims to build resilient infrastructure, increase inclusive and sustainable industry, and encourage innovation. Several targets to be achieved include developing quality, reliable, sustainable and resilient infrastructure, promoting inclusive and sustainable industrialization and increasing the proportion of industry in employment and gross domestic product, increasing access for industry and small-scale companies to financial services, improving infrastructure and retrofitting industry so that it can be sustainable, strengthen scientific research, increase the technological capabilities of the industrial sector, encourage innovation, and increase access to information and communication technology, as well as strive to provide universal and affordable internet access(Bappeda Jogja, nd).

2.2 Green Infrastructure

Green Infrastructure isa concept, effort and approach to maintain a sustainable environment through arranging green open spaces and maintaining natural processes that occur in nature such as the rainwater cycle, soil conditions and surface runoff, the application of which is very closely related to spatial, social and environmental aspects. and economics (Widyaputra, nd).

Green Infrastructure or green infrastructure is a concept that aims to maintain sustainability through the provision of green space and natural environmental maintenance processes. In recent years, the term green infrastructure has developed into man-made infrastructure that maintains the productivity of natural resources.(Fiftri Permono & Hindersah, nd).

Therefore, it can be concluded that Green Infrastructure is a concept in development that has the aim of protecting and preserving the environment.

METHODS

The method used in this research is qualitative research using a literature study approach technique. Literature study is a method used by researchers to collect data or find out sources related to a topic which can be obtained from various sources such as journals, books, the internet and other sources. It was chosen because this research aims to explore and understand in depth the development and implementation of green

infrastructure, green infrastructure regulations and policies as well as the challenges, obstacles and solutions for green infrastructure in Indonesia.

RESULTS AND DISCUSSION

4.1 Development and Implementation of Green Infrastructure

In the current era of globalization, all countries can quickly obtain all information regarding the main problems they are facing from year to year, this is one of the impacts of the rapid development of technology. The Ministry of National Development Planning/Bappennas has issued 8 targets, one of which includes quality and sustainable infrastructure development, apart from that this target is also included in SDGs goal number 9.

Green infrastructure is a concept in development that has the aim of protecting and preserving the environment. Green infrastructure can be interpreted as meaning that the infrastructure development carried out does not pollute the environment and is even attempted to improve the standard of living that is free from various kinds of pollution. The important thing that makes the implementation of green infrastructure must be carried out immediately, namely because of the increasing amount of environmental pollution, both pollution and water, considering that all levels of society will not be able to live if the use of clean water has started to deteriorate, especially in urban areas, so that wants and needs must be appropriate and balanced, Every level of society must be able to maintain and be responsible for the welfare of the natural water resource cycle, reducing air pollution is the main focus in achieving a clean, healthy and comfortable environment for the community. To achieve all this requires all levels of society to be involved and government policies that must continue to run, thus increasing the sense of shared responsibility in addition to placing emphasis on all relevant parties to immediately create a desire for the sustainability of water resources independently, namely by integrating water management into daily infrastructure. day.

In Indonesia, the implementation of Green Infrastructure has begun to be implemented, this is reinforced by the results of previous research, such as (Yulianti Suhana et al., nd) revealed that one of the Cikapundung river basins implemented the Soil Bioengineering concept as Green Infrastructure in preventing erosion. Apart from that, research conducted by (Nurhidayati & Hadari Nawawi, 2022) explained the results of his research in implementing Blue-Green Infrastructure through Permeable Pedestrian Pavements and Retention Pools to mitigate flood inundation in the city of Pontianak. In accordance with 2 previous studies (Triesna Budiani & Architectural Studies, nd) explained the evidence of his research in its application regarding the drainage system model with Permeable Pavement as well as Planters Box and Bioswale in realizing environmentally friendly handling of the Medan city drainage system and from all of that, there is one icon that will be the sustainability of green infrastructure in Indonesia, namely the deep Menteng Park The infrastructure is also equipped with free internet access,

which differentiates it from other city parks because it is based on information and communication technology.

The importance of implementing the use of green infrastructure in Indonesia in maximizing the interconnection of green space networks which is useful in preserving natural ecosystems to provide sustainable functions for humans. In this way, it gives back an absolute function to the ecosystem space as a result of running green infrastructure so that landscape features are created that guarantee the availability of environmental resources such as clean water, productive land and can even function as a recreational area. By returning ecosystem function, it can make an important contribution to nature and climate in maximizing sustainable development in the global era with an environmentally friendly system.

4.2 Obstacles and Challenges in Implementing Green Infrastructure

In the country of Indonesia, with a very large population, it has its own obstacles and challenges in managing the current situation due to the density of land for infrastructure development without being balanced with its obligations, namely reforestation. The implementation of green infrastructure in Indonesia has begun to be implemented but is still unbalanced because there are more developments that do not use green infrastructure standards. This is a challenge in itself, because the Green Infrastructure Framework incorporates new knowledge into the infrastructure development process and requires training for all parties involved in development infrastructure. Green Infrastructure requires large costs because before carrying out construction it is necessary to carry out environmental impact studies. In almost all developing countries, these studies are ignored because development concentrates on short-term costs and benefits, the impact on the environment is given little attention, and the low economic level of the population tends to ignore this. Therefore, economic resources are also a challenge in implementing the green infrastructure framework. This is because the application of this framework not only considers infrastructure functions, but also environmental functions, thereby increasing the economic factors needed to support it (Heryana & Firmansyah, 2024). It is difficult to introduce something new to all elements of society, especially irresponsible actors in infrastructure development in Indonesia, because most of the time there is resistance from stakeholders which becomes an obstacle in its implementation. Even though technology is sophisticated and developments are increasingly advanced, without an adequate increase in resources in terms of quality, making this happen will be quite difficult, resulting in slow movement. Having a good understanding of infrastructure development is very necessary, but human resources who have green skills and the ability to produce environmentally friendly manufacturing products are still not available(Erwinsyah, 2021). Adopting one of the methods that has been implemented in the UK, namely the Green Infrastructure Framework, is a solution that can be implemented by developing countries such as Indonesia which is currently carrying out a lot of infrastructure development.

Green Infrastructure framework is a structure for analyzing infrastructure development by considering the concept of green infrastructure. In implementing the regulations developed, they need to be more flexible so as not to lengthen the bureaucratic burden of the infrastructure development process. Problems can occur when the rules are more formal, that is, the rules are administrative in nature, prioritizing legality rather than the context of implementation of the framework itself. So bureaucracy can become bureaucracy that is too complicated because it prioritizes rules and procedures over the desired results(Heryana & Firmansyah, 2024).

4.3 Green infrastructure policies and regulations

There needs to be a strategy that is maximized in order to achieve the concept of Green Infrastructure criteria with the output of all existing or ongoing development following established standards, reinforced by regulations to minimize social and environmental impacts in infrastructure development.

In 2009, the first green infrastructure planning guidance was published by the Natural England organization in collaboration with the Town and Country Planning Association (TCPA). This guideline promotes the importance of green infrastructure with the concept of place-making, namely by recognizing and maintaining the original environmental character of a particular location, especially in locations that will be developed(Sidiq, 2018).

In Indonesia, regarding green infrastructure policies and regulations, the government has updated the policy in the form of Presidential Regulation no. 18/2020 which contains the National Medium Term Development Plan (RPJMN) 2020-2024. Apart from that, the implementation of green infrastructure regarding the planning and design of a green city in Indonesia is in line with Law Number 24 of 2007 concerning Disaster Management, Law Number 26 of 2007 concerning Spatial Planning, and Law Number 32 of 2009 concerning Protection and Management of the environment(Sidiq, 2018).

CONCLUSION

1. Green Infrastructure plays an important role in achieving Sustainable Development Goals (SDGs), especially goal 9 regarding industry, innovation and infrastructure. Green Infrastructure is part of environmental accounting that supports sustainable development.
2. Green Infrastructure does not only focus on environmental issues, but also plays a role in creating a more inclusive and sustainable future, in line with sustainable development goals. It also has a significant role in achieving sustainable development that is balanced between economic, social and environmental aspects.
3. Technology and innovation have a crucial role in developing Green Infrastructure, increasing its efficiency, effectiveness and sustainability.

4. Indonesia has various policies and regulations that support Green Infrastructure with the regulations being developed needing to be more flexible so as not to extend the burden of bureaucracy in the infrastructure development process.
5. Even when implementing it, there are many obstacles and challenges in implementing green infrastructure, such as the difficulty of introducing new concepts to all elements of society and resistance from stakeholders. However, Indonesia has started implementing green infrastructure in several development projects, such as Menteng Park and the Soil Bioengineering and Blue-Green Infrastructure concepts to mitigate environmental impacts.
6. The importance of maximizing strategies to achieve the Green Infrastructure concept with existing development output so that it follows sustainable principles.

Thus, implementing green infrastructure is an important step in maintaining environmental, social and economic sustainability. Even though there are obstacles and challenges, with collaborative efforts between the government, stakeholders and society, as well as the support of appropriate technology and regulations, Indonesia can continue to progress towards sustainable and environmentally friendly development.

REFERENCES

[1] Bappeda Jogja, "Infrastruktur, Industri Dan Inovasi," Jogja Dataku. [Online]. Available: [URL if available]. [Accessed: Date if available].

[2] F. A. Cahyani, "Upaya Peningkatan Daya Dukung Lingkungan Melalui Penerapan Prinsip Sustainable Development Berdasarkan Undang-Undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup," Indonesian State Law Review, vol. 2, pp. 50–65, 2020.

[3] E. Eka Saputri, G. K. Aji, R. K. Khoirunnisa, I. K. Salsabila, C. K. UIN, R. K. Rowolaku, J. Kajen, K. Pekalongan, and J. Tengah, "Tantangan Dan Prospek Akuntansi Syariah di Era Globalisasi," Jurnal Inovasi Ekonomi Syariah Dan Akuntansi (JIESA), vol. 1, no. 4, pp. 123–137, 2024. [Online]. Available: https://doi.org/10.61132/jiesa.v1i4.227. [Accessed: Date if available].

[4] O. Erwinsyah, "Peluang Ekonomi Hijau Dan Keterampilan Hijau Menuju Netral Karbon Indonesia Tahun 2060," Journal of Applied Business and Economics (JABE), vol. 8, no. 2, pp. 30–45, 2021.

[5] F. Permono and H. Hindersah, "Identifikasi Green Infrastructure dalam Mendukung Pengembangan Kawasan Peruntukan Industri di Kecamatan Ajibarang-Wangon," [Online]. Available: https://doi.org/10.29313/pwk.v0i0.29874. [Accessed: Date if available].

[6] E. F. Habu, A. F. Dora, M. J. Kehi, and M. R. Jaga, "Transformasi Masa Depan: Pengembangan Infrastruktur Untuk Kemajuan Kelurahan Rejosari, Kecamatan Jatirejo, Kota Mojokerto," Jurnal Pengabdian Kepada Masyarakat Nusantara (JPkMN), vol. 4, pp. 80–95, 2023.

[7] D. Heryana and A. Firmansyah, "Green Infrastructure Framework: Sebuah Strategi Pembangunan Infrastruktur Hijau Nasional," Journal of Law, Administration, and Social Science, vol. 4, no. 2, pp. 65–78, 2024.

[8] S. T. Ishartono and R. Raharjo, "Sustainable Development Goals (SDGs) Dan Pengentasan Kemiskinan," SHARE: Social Work Jurnal, vol. 6, pp. 154–272, 2018. [Online]. Available: http://www.bappenas.go.id/id/berita-dan-siaran- [Accessed: Date if available].

[9] A. Lako, Akuntansi Hijau Isu, Teori Dan Aplikasi, Salemba Empat, Jakarta, Indonesia, 2018.

[10] E. Nurhidayati and J. H. Hadari Nawawi, "Konsep Blue-Green Infrastructure (BGI) Melalui Permeable Pavements Peestrian Dan Kolam Retensi Untuk Mitigasi Genangan Banjir di Kota Pontianak," vol. 19, no. 1, pp. 40–55, 2022.

[11] A. Sidiq, "Konsep Infrastruktur Hijau Pada Area Khatulistiwa Park Kota Pontianak," vol. 2, no. 2, pp. 15–25, 2018.

[12] I. Triesna Budiani and P. Studi Arsitektur, "Model Permeable Pavement, Bioswale Dan Planters Boxes Sebagai Model Pengendalian Genangan Di Kawasan Permukiman Padat Kota Medan," JCEBT, vol. 6, no. 1, pp. 100–115, 2022. [Online]. Available: http://ojs.uma.ac.id/index.php/jcebt. [Accessed: Date if available].

[13] P. K. Widyaputra, "Penerapan Infrastruktur Hijau di Berbagai Negara: Mendukung Pembangunan Berkelanjutan Berbasis Lingkungan," [Online]. Available: [URL if available]. [Accessed: Date if available].

[14] A. Yulianti Suhana, H. Prodi, and I. Bandung, "Bandung Conference Series: Urban & Regional Planning Penerapan Konsep Green Infrastructure Dalam Mencegah Erosi di Kawasan Sub DAS Cikapundung," [Online]. Available: https://doi.org/10.29313/bcsurp.v2i2.ID. [Accessed: Date if available].