

Integrated Waste Management Place and Environmental Pillar Sustainable Development Goals: Solution or Threat?

Gde Putra Mahendra Junior¹, I Nyoman Bagiastra², Kadek Julia Mahadewi³

¹ Faculty of Law, Udayana University and ptrmhendra666@gmail.com

² Faculty of Law, Udayana University and nyoman_bagiatra@unud.ac.id

³ Faculty of Law, Undiknas University and juliamahadewi@undiknas.ac.id

ABSTRACT

This article discusses the issue of the Kesiman Kertalangu Integrated Waste Management Site (TPST) which has an impact on the surrounding community because the smoke produced causes disruption to people's sense of smell and even threatens public health, but basically the community is not protesting regarding the existence of the TPST but rather the impact caused by its activities. This article uses a normative legal research method, by taking a statutory approach, then the data collected will be processed using a qualitative approach and explained descriptively. The Kesiman Kertalangu TPST violates the right to a clean and healthy environment as mandated by the constitution, UUPPLH and the Sustainable Development Goal's concept. It is hoped that the government's responsibility regarding the impacts that occur will refer to article 54 UUPPLH and 82 of the Job Creation Law, then the Kertalangu TPST must have an SDG concept, especially Village SDGs, guided by Village SDG number 3, environmental restoration efforts must be made based on UUPPLH and the Job Creation Law. and carrying out sustainable waste management based on SDG's principles as well as developing technology is very necessary in solving problems by comparing it with waste management in Singapore, namely processing smoke from combustion into electrical power and scarp metal which produces high economic value.

Keywords: *Environmental Impact, Sustainable Development Goals, Environmental Restoration*

1. INTRODUCTION

Waste management is the world's main problem today, every country in the world is competing to solve the waste problem with science and technology. Piles of rubbish cause pollution to water, land and air. Indonesia is a country that faces a waste problem, because several large cities can produce waste volumes of up to 480-1300 tons per day. Various methods are used by the Indonesian government, one of which is the 3R process (*Reduce, Reuse, Recycle*) but is not yet effective in solving the waste problem, the volume of which continues to increase every day, currently new concepts and methods are needed to solve existing waste problems [1], [2].

The sight of rubbish piling up in city corners, rivers, ditches and empty land, seems to illustrate that the rubbish problem continues to increase, including in Denpasar City. Currently, according to the Bali Province Environmental Service, Denpasar City produces 957.59 tons of waste per day and reaches 349,000 tons per year, causing accumulation to occur at the Suwung Final Disposal Site (TPA) and several Temporary Disposal Sites (TPS) in Denpasar City. A new problem arose with the Suwung TPA being so full that sometimes piles of rubbish could be seen in front of residents' houses and at several TPS because there was no management other than throwing it into the TPA [3], [4].

Various strategies have been implemented by the Bali Provincial Government and the Denpasar City Government, namely by issuing Bali Governor Regulation Number 47 of 2019 concerning Source-Based Waste Management which invites the public to participate in managing the waste produced, not only that, the Bali Provincial Government also issued Bali Governor Decree

Number 381/03-P/HK/2021 of 2021 concerning Guidelines for Source-Based Waste Management in Villages/Subdistricts and Traditional Villages, but this cannot yet be a solution to the waste problem.

The new breakthrough was made based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number 6 of 2022 concerning National Waste Management and then the Kesiman Kertalangu Integrated Waste Management Site (TPST) was approved by the President of the Republic of Indonesia Joko Widodo on Monday, March 13 2023. The Kesiman TPST is one of Of the 3 TPSTs in Denpasar City which are expected to be able to solve the waste problem, especially in Denpasar City, the Kesiman Kertalangu TPST uses a machine management system. *Incinerator* which processes waste by burning it at high temperatures so that it can process large amounts of waste in a relatively short time. The Kesiman Kertalangu TPST is projected to process 450 tons of waste per day, with this target, the government and society are optimistic that the waste problem can be resolved in the next few years. In general, the Kesiman Kertalangu TPST carries out waste collection, waste management and waste processing activities to be returned to the environment.

After 3 (three) months of operation, the Kesiman Kertalangu TPST caused problems, namely the results of burning waste using *incinerator* It emits smoke and creates a strong stench, causing protests from the public. This smell has the effect of disrupting people's sense of smell, thereby hampering activities around the TPST area adjacent to Biaung Market. Protests carried out by local residents ranged from reporting to related agencies to putting up billboards around the TPST demanding their right to clean and healthy air. In fact, the community did not protest regarding the existence of the Kesiman Kertalangu TPST, but the problem was the result of the foul-smelling smoke that disturbed people's sense of smell and activities.

The huge impact of waste burning smoke is very dangerous for the environment and humans, according to the Institute *The Environmental Protection Agency* (EPA) smoke from burning waste can release toxic substances into the air such as *Nitrogen Oxide*, *Carbon Monoxide* and pollution particles, apart from containing dangerous substances, smoke from burning also has health effects such as irritation, respiratory problems, disrupts the reproductive system and can even cause cancer and death. Apart from humans, smoke from long-term burning can cause serious impacts on the environment, such as acid rain, thinning of the ozone layer, and global warming (*Global Warming*) [5], [6].

The right to a healthy environment is guaranteed by the Constitution, namely in Article 28H of the 1945 Constitution of the Republic of Indonesia which states that: "Everyone has the right to live in physical and spiritual prosperity, to live and to have a good and healthy living environment and is entitled to health services.", apart from the Constitution in Law Number 32 of 2009 concerning Environmental Protection and Management (hereinafter abbreviated as UUPPLH) states the right to a good and healthy environment. In summary, article 65 of the UUPPLH provides the right to a good and healthy environment, access to participation and justice in a healthy environment, to raise objections to activities that have a negative impact and the right to make complaints due to environmental pollution [7], [8].

The longer the smoke resulting from burning in the air can cause air pollution, according to Article 1 point 14 of Law Number 32 of 2009 concerning Environmental Protection and Management, air pollution is the entry or introduction of living things, substances, energy and/or other components into the environment [9]. life by human activities so that it exceeds established environmental quality standards. Apart from causing air pollution, the consequences of the Kesiman Kertalangu TPST

activities also conflict with the principles and objectives of *Sustainable Development Goal's* (SDG'S) or what is known as sustainable development. The essence of sustainable development is the internalization of the impact of every social and economic action on the environment. This means that every social and economic activity needs to avoid/prevent or take into account its impact on environmental conditions, so that the environment can continue to carry out its function to support life now and in the future. So far, environmental impacts have been borne or become the burden of society, not the costs of economic actors and not the habits and social behavior of Indonesian society.

Currently, the SDG's have been implemented in village areas, with reference to Presidential Regulation Number 59 of 2017 concerning Implementation of the Achievement of Sustainable Development Goals, giving birth to the Village SDG's which have 7 development agendas. Agenda number 6 is regarding villages having to protect the environment, disaster resilience and climate change. The impact of the Kesiman Kertalangu TPST violates the principle of natural balance in the Village SDGs which prioritizes preserving the earth for community sustainability. That after seeing the impact caused by the Kesiman Kertalangu TPST, the Denpasar City Government should think of a solution related to the harmony between the construction of the TPST so that it does not have an impact on air quality damage and air pollution in the Kesiman Kertalangu area [10].

The Denpasar City Government must be firm in making decisions regarding the problems that occur, how the Kesiman Kertalangu TPST can continue to operate and environmental restoration efforts must be carried out. This is the government's responsibility regarding environmental restoration which must be carried out by referring to article 54 paragraph 1 of the UUPPLH which states that "Every person who pollutes and/or destroys the environment is obliged to restore the function of the environment. The stages in carrying out recovery are regulated in article 54 paragraph 2 UUPPLH, namely:

1. Stopping sources of pollution and cleaning pollutants;
2. Remediation;
3. Rehabilitation;
4. Restoration; and/or
5. Another way that suits the development of science and technology.

Then, to reduce the problem of implementing Governor's Regulation Number 47 of 2019 concerning Source-Based Waste Management which is the hope of reducing waste, good information and technology support is needed to support this.

Based on the background presented, the author will discuss the impact of the Kesiman Kertalangu TPST on the environment which threatens residents and the Kesiman Kertalangu TPST which must run in accordance with *Sustainable Development Goal's* which prioritizes development that has minimal impact on the environment and the author will also contribute ideas regarding handling problems at the Kesiman Kertalangu TPST using analysis from related sources such as books, articles or journals. So, in connection with the above, the author will write an article with the title "**Integrated Waste Collection Site and Environmental Pillar Sustainable Development Goal's : Solution or Threat?**".

2. METHODS

This article uses normative legal research methods, by identifying and reviewing related laws and regulations regarding problems at the Kesiman Kertalangu TPST in Denpasar City, as well

as other research, assessments and references related to this problem. This article uses a legal approach (*statue approach*) in analyzing existing problems. All data collected was then processed using qualitative methods and then explained descriptively. This article begins by describing the problems that occurred at the Kesiman Kertalangu TPST in terms of related law and sustainable development including solutions related to environmental restoration. The existence of the Kesiman Kertalangu TPST, which is a solution to the waste problem, but has a negative impact on society, is contrary to UUPPLH and Sustainable Development (SDG's). This article then explains regulations regarding environmental impacts, sustainable development and environmental restoration efforts that can be carried out to solve the problems that occur. Then this article provides solutions based on the data collected.

3. RESULTS AND DISCUSSION

3.1 Problems of Integrated Waste Management from an Environmental Law perspective

The Kesiman Kertalangu Integrated Waste Management Site (TPST) is here to solve the waste problem, using machines *Incinerator*. It is hoped that it can destroy large amounts of waste in a short time. However, this high activity causes an impact on the environment and local residents, the smoke resulting from burning over time will cause a decrease in air quality which can later cause air pollution. People complain that the unpleasant odor caused by burning is very disturbing to the community, both from the sense of smell to the activities of local residents [11].

The conditions that arise are the government's responsibility for the impacts that occur, in Article 28H of the 1945 Constitution which states that "Everyone has the right to live in physical and spiritual prosperity, to have a place to live, and to have a good and healthy living environment and the right to receive health services." Environmental responsibility is a series of obligations of a person or party to be responsible to sufferers or people who have been harmed for their rights to a healthy environment. The responsibility carried out is universal compensation, so it can be individual responsibility (*Private Compensation*) and environmental restoration responsibilities (*Public Compensation*) which is dynamic in nature so it can be public and private. In other words, if a person or institution causes environmental harm to society, they must provide responsibility, once it is resolved, that person or institution is also responsible for environmental restoration.

Responsibility in the form of environmental restoration is regulated in article 54 paragraph 1 of UUPPLH which states that every person who pollutes and/or damages the environment is obliged to restore environmental functions and then article 54 paragraph 2 explains the stages in efforts to restore environmental functions, namely terminating the source. pollution and cleaning of polluting elements, remediation, rehabilitation, restoration and/or other methods in accordance with developments in science and technology. According to article 20 of the UUPPLH, there are 2 types of compensation, namely compensation for sufferers whose rights to a good and healthy living environment have been violated and suffered. As well as environmental restoration costs to the state. This provision can open up opportunities as a basis for pollution victims to file environmental lawsuits. The team formed by the government determines the amount of losses that will be borne by polluters, the research team covers the fields of ecology, medicine, socio-culture, and other necessary fields.

Not only in UUPPLH, efforts to be responsible for environmental restoration are also explained in article 82 of Law Number 11 of 2020 concerning Job Creation (Job Creation Law) in number 1 which states that the central government has the right to force the person responsible to carry out environmental restoration due to pollution and/or destruction. environment, in number 2 the central government has the right to appoint a third party to carry out environmental restoration due to environmental pollution and/or destruction, the costs of which are borne by the person responsible.

Based on the provisions above, the responsibility is carried out by the Denpasar City Government, the Bali Provincial Government and the Central Government in efforts to restore the

environment. Recovery aims to provide a healthy and clean living environment for the people of Kesiman Kertalangu Village, but does not stop the process of the Kesiman Kertalangu TPST because this TPST is the hope for resolving waste in Denpasar City in particular. The government must seek mutually beneficial solutions and continue to develop technology so as not to cause an impact on the environment.

3.2 Related Integrated Waste Management Site Problems Sustainable Development Goal's.

Sustainable Development Goal's (SDG's) or what are often called Sustainable Development Goals are essentially development that places citizens and the environment at the center of attention. Development cannot be carried out immediately without thinking about and looking at other aspects, namely the environment and the lives of other living creatures. Implementing environmentally sound development is one effort to maintain environmental functions so that they can still be utilized in the future. Conceptually, Sustainable Development requires synergy between government and society in realizing development, remembering that society is the main subject in natural resource management activities, considering that society lives directly side by side with nature so that it directly feels the positive and negative impacts of natural resource utilization activities [12].

The SDGs were ratified on October 25 2015 by 193 United Nations member states at the UN session entitled " *Transforming Our World: The 2030 Agenda Of Sustainable Development*". The SDGs themselves have 5 dimensions in the SDGs, namely: People, Planet, Prosperity, Peace, and Partnership. The SDG's have 17 goals, 169 targets and 241 indicators globally. In an effort to implement the SDG's in Indonesia, ratification was carried out by issuing Presidential Regulation Number 59 of 2019 concerning Implementation of the Achievement of Sustainable Development Goals. Indonesia is developing additional pillars, namely the pillars of law and governance. The global Sustainable Development Goals (SDGs) began in 2016 and provide an evidence-based framework for sustainable development planning and programming until 2030.

The goal of sustainable development requires partnerships to achieve the goal (SDG's 17), so in this case the Village SDGs are prepared. The legal basis for the formation of Village SDGs refers to Presidential Regulation Number 59 of 2017, with the hope that village SDGs can contribute 74% to the Sustainable Development Goals. In contrast to the Global SDGs, the Village SDGs have 18 goals, namely:



Figure 1. Village SDGs (source: Indonesian Ministry of Villages)

The picture above is the 18 Village SDG's, there is an addition to Village SDG's number 18, namely Dynamic Village Institutions and Adaptive Village Culture, the rationale for this addition is respecting the existence of the Indonesian nation which is very diverse in religion, culture, language, customs and accommodating local wisdom. productive village communities and institutions to survive and even develop. With the existence of SDG's Villages, it is hoped that they will be able to

solve problems by following the existing indicators for each goal, and be able to create a sustainable village community in accordance with the spirit of SDG's Villages.

The problem faced by Kesiman Kertalangu Village is the smoke problem caused by TPST activities which threatens public health and disrupts community activities, this clearly intersects with the 3rd (three) Village SDG goal, namely Healthy and Prosperous Villages. The presence of smoke from burning can threaten the health of the community around the Kertalangu TPST, as explained by the agency *The Environmental Protection Agency (EPA)* smoke from burning waste can release toxic substances into the air such as *Nitrogen Oxide, Carbon Monoxide* and pollution particles, apart from containing dangerous substances, smoke from burning also has health effects such as irritation, respiratory problems, disrupts the reproductive system and can even cause cancer and death.

The people of Kesiman Kertalangu Village must have their rights protected in obtaining a healthy and prosperous environment, in this case the Government as the manager of the Kesiman Kertalangu TPST must make new efforts to align the development of the TPST with the impacts it causes. There must be sustainable waste management where indicators are developed, then a legal basis is created and implemented with full supervision. Apart from that, community efforts in independent waste management can be implemented throughout Denpasar City to reduce the amount of waste volume per day, so as to reduce the volume and activities of waste management at the Kesiman Kertalangu TPST.

3.3 Environmental Recovery Efforts Due to the Impact of Integrated Waste Management Sites

In essence, the environment is an ecosystem, so the laws that regulate aspects of the environment must be viewed as a system. The legal system consists of legal sub-systems, including the environmental legal sub-system. The environmental legal sub-system consists of principles, rules and also includes institutions and processes to make them happen in reality [13]. The legal system is a norm and rule to regulate human behavior. Legal action implies the use of authority and implies obligations and responsibilities. The state's responsibility towards every citizen or third party is shared by almost all citizens. If we examine further the role and responsibilities of the state through the government, this is related to the basic principles implemented in Law Number 32 of 2009 concerning Environmental Protection and Management. The importance of the environment in Indonesia must be protected and managed very well based on the principles of state responsibility, the principles of preservation and continuity and the principles of justice.

The problem of foul-smelling smoke resulting from waste management activities at the Kesiman Kertalangu TPST has resulted in a threat to the people of Kesiman Kertalangu, this clearly violates several legal substances, namely:

1. The 1945 Constitution of the Republic of Indonesia

Article 28 H of the 1945 Constitution states that: "Everyone has the right to live in physical and spiritual prosperity, to have a place to live, and to have a good and healthy living environment and the right to receive health services."

2. Article 65 Law Number 32 of 2009 (UUPPLH)

In summary, article 65 of the UUPPLH provides the right to a good and healthy environment, access to participation and justice in a healthy environment, to raise objections to activities that have a negative impact and the right to make complaints due to environmental pollution.

In this case, the Denpasar City Government is responsible for air pollution that occurs as a result of smoke from burning waste carried out at the Kesiman Kertalangu TPST, while referring to

the Theory of State Responsibility, namely requiring the state or government concerned to take responsibility for the pollution caused. The construction of the Kesiman Kertalangu TPST was carried out by the Denpasar City Government and the Central Government to overcome the waste problem in Denpasar City, however this development still does not implement sustainable principles because it is indicated that it causes air pollution in the form of unpleasant odors in the area of residents around the TPST.

In accordance with Law Number 32 of 2009 concerning Environmental Protection and Management as stated in Article 54 paragraph (1), it reads: "every person who pollutes and/or destroys the environment is obliged to restore the function of the environment". In this case, a person who pollutes/damages the environment is obliged to stop the source of environmental destruction and pollution through remediation, rehabilitation, restoration and other methods that are in accordance with developments in science and technology. In this case, the Denpasar City Government is responsible for the consequences of air pollution. The government can carry out efforts such as remediation by improving air quality in the area around the TPST by relying on the latest science and technology in processing smoke caused by burning waste [14].

In resolving the problem of air pollution due to TPST, the government can carry out an assessment of the existing legal substance, by following the law as a guideline in making improvements to the pollution that occurs, namely:

1. Law Number 32 of 2009 concerning Environmental Protection and Management, regulates recovery. Article 54 paragraph 1 concerning responsibility for restoring environmental functions, Article 54 paragraph 2 concerning the stages taken to restore the environment
2. Law Number 11 of 2020 concerning Job Creation, namely article 82 paragraph 1 which states that the government can make coercive efforts to take responsibility for environmental pollution, then article 82 paragraph 2 which states that the central government has the authority to appoint third parties in environmental restoration efforts.
3. Article 20 of the UUPPLH provides an explanation of 2 types of compensation due to pollution, namely compensation for sufferers whose rights to a good and healthy living environment have been violated. As well as environmental restoration costs to the state.

To achieve a solution to the problem, a strong legal structure is needed to implement the legal substance described above, namely by unifying the stack holders, namely the Denpasar City Government, the Bali Provincial Government and the Central Government by continuing to coordinate and find solutions so that the program regarding TPST continues and does not detrimental to society. Efforts to develop this legal structure are aimed at ensuring that later institutions that support solving this problem can carry out all their functions in the context of the success of the Kesiman Kertalangu TPST and that environmental health and cleanliness as a right of the Kesiman Kertalangu community is fulfilled.

To make this happen, the formation of a legal culture in society is very important in forming values that can support solving air pollution problems. The community must play an active role in waste management and form a pattern for processing waste independently in accordance with the Regulation of the Governor of Bali Number 47 of 2019 concerning waste management on a basis, with these efforts being able to reduce the volume of waste every day so that the TPST can run optimally with a small volume of waste as a result. new patterns of waste management carried out by the community.

3.4 Efforts to Solve Problems with the Concept of Sustainable Waste Management.

In achieving sustainable development from an environmental perspective, an environmentally sound waste management system can contribute to the realization of a sustainable village/city, because environmentally sound waste management will create a good environment.

This shows that sustainable waste management can influence the achievement of SDGs targets, especially SDGs 3, 7, 13, 14 and 15.

Integrated Sustainable Waste Management (ISWM) is a concept for sustainable waste management by integrating 3 (three) main dimensions, namely stakeholders, waste system elements, and strategic aspects. Apart from these three dimensions, waste management policies in each country are also the basis for a sustainable waste management approach. In carrying out Sustainable Waste Management, it is necessary to analyze the fulfillment of sustainable indicators in waste management, with the aim being that this management does not cause or minimize impacts on the environment and society. so that in the future the problems faced by Kesiman Kertalangu Village can be resolved with this concept. There are 6 (six) indicators that must be considered in sustainable waste management, namely:

1. Environmental Indicators

Waste management with the system currently in progress can be categorized as a breakthrough that is not yet optimal, considering that apart from the problem of waste generated from the community, there is also waste generated from industrial and tourism activities regarding *food waste*. So, with the increase in volume, if you still use the old system, it will take up a lot of land in the formation of TPS/TPA later and can pollute the land, water and air due to accumulated waste.

2. Economic Indicators

In carrying out Mota waste management, it will not be separated from the main economic elements in terms of financing, both outgoing and incoming costs. .The cost of waste management can be viewed from the amount of fees received compared to the amount of waste managed.

3. Social Indicators

The societal paradigm must be shifted from culture *end to pipe* or collecting, transporting and throwing away becomes a culture of limiting, recycling, processing waste, product engineering and remediation. Socialization of environmental preservation and waste awareness must continue to be promoted so that understanding of the importance of processing waste from the source can reach all roles.

4. Technical Indicators

Waste management currently refers to a reactive approach, namely the application of an end to pipe system with a collect-transport-dispose habit so that the land requirement for the backfill process is quite large, so there is a need for breakthroughs such as the Kesiman Kertalangu TPST but must still adhere to the principles of Sustainable Development.

5. Institutional Indicators

Relating to the social and political structures that control waste management, such as the division of functions and responsibilities of the institutions concerned, the procedures and methods applied, and the availability of institutional capacity.

6. Political Indicators

Relating to 'political boundaries' in waste management, such as existing legal and regulatory frameworks, decision-making processes, and role determination.

Sustainable waste management is a form of responsibility for consumption and production that has been carried out (SDGs 12). Excessive consumption will of course produce excess waste,

thereby affecting the area of existing waste disposal sites. By establishing new patterns and concepts in waste management and of course supported by synergy between the Government and the Community, in the future we can reduce the volume of waste.

3.5 Efforts to Solve Problems Using Science and Technology

Waste processing at the Kesiman Kertalangu TPST uses isitem *Incinerator* namely by burning the waste which can reduce the volume of waste by up to 97 percent and the weight of the waste by up to 70 percent and the heat produced from the combustion residue can be used to generate electricity. So, in this case the waste is used into energy (waste to energy). with incinerator technology we can also save land that was previously only used as a final disposal site (TPA).

On the system *incinerator*, it is necessary to group waste into two types, including waste that can be burned in incinerators (*incinerable waste*) or waste that does not pollute the environment when burned and does not cause damage to the burning device. Then the waste that cannot or cannot be burned in the incinerator (*non-incinerable waste*) or waste that can cause pollution and can cause damage to the burner.

In the process of burning waste or what can also be called incineration, the fuel used is oil to start burning the waste. From the combustion process, flue gas will emerge which has a high temperature and the combustion will flow through the boiler tube which will absorb the hot steam that has been produced. The discharge of gas from chimneys which causes CO₂ can now be overcome by completing flue gas processing in order to minimize the negative impact of flue gas. Apart from exhaust gas, there is 20 percent of ash remaining from the burned waste, which requires special processing so that it does not become a new problem.

The resulting ash waste can be separated with a magnet and can be sold as ash scrap. Apart from that, the hot steam coming from the boiler can be processed into electricity by flowing into a turbine which is integrated with the generator, the water vapor contained in the tool will be condensed, the generator can be adjusted. with the level of electricity owned by national power plants. Like what was done by the State of Singapore, it succeeded in burning 2.55 million tons of waste with 4 *Incinerator* which produces 1.158 million kWh fsn mrnghsdilksn 24.000 Tons of Scrap Metal which has a high economic value. Here the author hopes that as soon as possible there will be a concrete solution regarding air pollution caused by the Kesiman Kertalangu TPST without stopping TPST activities because this is the solution that according to the author is the most appropriate for the waste problem compared to the old method which will only make waste pile up at the Final Disposal Site (TPA).

CONCLUSION

The Kesiman Kertalangu TPST, even though it aims to handle waste using an incinerator machine, causes negative impacts on the environment and the health of the surrounding community. Responsibility for these impacts is regulated by article 54 paragraphs 1 and 2 of the UUPPLH and article 82 of the Job Creation Law, with a focus on restoring environmental functions. The problems at the Kesiman Kertalangu TPST are related to the SDGs, especially SDG 3 (Health and Welfare), and must consider the impact on the environment and the lives of other living creatures. In handling the impact of the Kesiman Kertalangu TPST, the government must comply with legal provisions, including articles in the UUPPLH and the Job Creation Law, to carry out environmental restoration. Draft *Integrated Sustainable Waste Management* (ISWM) is proposed as a sustainable approach to managing waste at the Kesiman Kertalangu TPST. The importance of paying attention to environmental, economic, social, technical, institutional and political indicators in waste management. The use of incinerators at the Kesiman Kertalangu TPST with modern technology to reduce the volume of waste, utilize the heat produced, and process waste gas to minimize negative impacts. Thus, solving problems at the Kesiman Kertalangu TPST requires a holistic approach that involves understanding environmental law, the principles of sustainable development,

environmental restoration efforts, the concept of sustainable waste management, as well as the wise application of science and technology. Apart from that, collaboration is needed between the government and society in achieving sustainable development goals, especially related to waste management.


ACKNOWLEDGEMENTS



I would like to express my sincere gratitude to all those who have participated in this research. I would also like to thank the institutions and libraries that provided access to the various literature and documentation resources that supported this research. Their contribution is very meaningful in producing comprehensive and accurate analysis.

REFERENCES

- [1] F. Aini, "Pengelolaan Sampah Medis Rumah Sakit atau Limbah B3 (Bahan Beracun dan Berbahaya) di Sumatera Barat," *J. Educ. Dev.*, vol. 7, no. 1, p. 13, 2019.
- [2] A. S. Alisjahbana and E. Murniningtyas, *Tujuan pembangunan berkelanjutan di Indonesia: konsep, target, dan strategi implementasi*. Unpad Press, 2018.
- [3] I. K. Budha, P. I. Wahyuni, and P. Aryastana, "Transformasi Lingkungan dan Pengelolaan Persampahan di Kota Denpasar: Kajian Efektifitas Tempat Pengelolaan Sampah Terpadu (TPST)," *J. Ilm. Telsinas Elektro, Sipil dan Tek. Inf.*, vol. 6, no. 2, pp. 158–172, 2023.
- [4] N. F. Herlia, "Mekanisme Teknologi Pengolahan Sampah Menjadi Sumber Energi Listrik Terbarukan," *J. Technopreneur*, vol. 10, no. 2, pp. 10–16, 2022.
- [5] Y. Hesti, "Upaya Penanganan Limbah B3 Dan Sampah Rumah Tangga Dalam Mengatasi Pandemi Corona Sesuai Dengan Surat Edaran No. Se. 2/Menlhk/PSlb3/Plb. 3/3/2020tentang Pengelolaan Limbah Infeksius (Limbah B3) Dan Sampah Rumah Tangga Dari Penanganan Corona Virus Disease," *J Pro Justitia*, vol. 1, no. 2, 2020.
- [6] E. Khairina, E. P. Purnomo, and A. D. Malawani, "Sustainable Development Goals: Kebijakan Berwawasan Lingkungan Guna Menjaga Ketahanan Lingkungan Di Kabupaten Bantul Daerah Istimewa Yogyakarta," *J. Ketahanan Nas.*, vol. 26, no. 2, pp. 155–181, 2020.
- [7] N. Pertiwi, "Implementasi Sustainable Development di Indonesia." Global Research and Consulting Institute (GlobalRCI), 2017.
- [8] A. A. Purba, "Urgensi Pengetatan Baku Mutu Udara Ambien Indonesia (Studi Kasus Gugatan Pemulihan Udara DKI Jakarta)," *Padjajaran Law Rev.*, vol. 8, no. 1, pp. 11–99, 2020.
- [9] S. S. Rangkuti, "Hukum Lingkungan dan Kebijakan Lingkungan Nasional Edisi Keempat," *Surabaya Airlangga Univ. Press Kampus C*, 2015.
- [10] A. F. Rahmawati and F. D. Syamsu, "Analisis pengelolaan sampah berkelanjutan pada wilayah perkotaan di indonesia," *J. Binagogik*, vol. 8, no. 1, pp. 1–12, 2021.
- [11] M. Rahim, "Strategi pengelolaan sampah berkelanjutan," *J. Sipil Sains*, vol. 10, no. 1, 2020.
- [12] I. M. A. Utama and I. N. Suharta, "The challenges of water pollution: Enforcement of water pollution control," *Hasanuddin Law Rev.*, vol. 4, no. 1, pp. 81–87, 2018.
- [13] D. Tulenan, "Proses Penyelesaian Sengketa Tindakan Pencemaran dan Perusakan Lingkungan Hidup Menurut Undang-undang Nomor 32 Tahun 2009," *Lex Soc.*, vol. 1, no. 3, 2013.
- [14] Y. Widowaty and E. Heriyani, "Optimalisasi Pemanfaatan Sampah Menjadi Nilai Ekonomis dan Dampaknya dalam Mengurangi Pencemaran Lingkungan," in *Prosiding Seminar Nasional Program Pengabdian Masyarakat*, 2022.

BIOGRAPHIES OF AUTHORS

	<p>Gde Putra Mahendra Junior Bachelor of Law at Legal Studies Program, Undiknas University. Studied Bachelor for 4 years by taking a concentration in Criminal Law. Then continued his Master's Studies at Udayana University. Email: ptrmhendra666@gmail.com</p>

	<p>I Nyoman Bagiastra Bachelor of Law at Udayana University, then continued his Master's Studies at Brawijaya University. After completing his master's education, he continued his Doctoral Education in Law at Udayana University. Email: nyoman_bagiastra@unud.ac.id</p>
	<p>Kadek Julia Mahadewi Bachelor of Law at Udayana University, then continued his Master's Studies at Udayana University by taking concentration on Law and Society. In 2019, she became a permanent lecturer at Undiknas University. Email: juliamahadewi@undiknas.ac.id</p>