

Legal Protection of Compost Fertilizer Technology Patent in Celincing Mangrove Forest Tourism

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Abstract

Disputes over ownership of a brand are still a problem that is often faced by business actors, including those experienced by compost fertilizer business actors in Suka Baru Village, Ketapang Regency, West Kalimantan. many of these business actors have been running their businesses for a long time, but do not have certain brands that have been registered with the directorate general of intellectual property. from these problems, this study aims to determine and analyze legal protection efforts against compost fertilizer inventors made from mangrove waste in Suka Baru Village, Ketapang Regency, West Kalimantan, and to examine the patent registration system for these products. The method used is interdisciplinary legal research by relying on primary data in the form of interview results, as well as secondary data consisting of primary and secondary legal materials. The results showed that compost fertilizer from mangrove waste in Suka Baru Village has not received adequate legal protection. This is due to the community's low understanding of the importance of patents and the requirements of patentability. In addition, the patent registration system in Indonesia adheres to the first to file principle, i.e. patent rights are granted to the party who first submits the application. If this problem is not immediately followed up, it has the potential to lead to ownership disputes, including claims from other parties to the invention.

Keryword: Patent Rights; compost; Mangrove Waste

INTRODUCTION

Indonesia is known as a megabiodiversity country that has abundant natural resources, including mangrove ecosystems that are widespread in various coastal areas. West Kalimantan, as one of the provinces in Indonesia, has a coastline of 1,940 kilometers that is dominated by mangrove ecosystems along its coast. Ketapang Regency, one of the regencies in West Kalimantan, has a mangrove plant population recorded at 5,330 plants (BPS Ketapang Regency, 2023). The existence of mangroves not only has an important ecological function in protecting the coastline from abrasion and as a habitat for various marine biota, but also holds economic potential if utilized sustainably by coastal communities.

Mangrove forests are typical ecosystems that grow in coastal areas or near river mouths, and are influenced by tides. These plants are generally found in tropical and subtropical regions that are protected from strong ocean waves. In the context of

sustainable environmental management, utilizing mangroves and their waste for the economic benefit of the community is one of the creative strategies that should be appreciated and developed (SUTOPO, 2007).

Environmental problems due to organic waste are also a serious concern in sustainable development. One solution that is widely developed is the manufacture of compost as an environmentally friendly alternative to organic fertilizers. Compost is the result of weathering of organic materials such as leaves, reeds, straw, and other organic waste carried out naturally with the help of microorganisms (Hamzah, Yunandra, & Pebriandi, 2020). Compost fertilizers contain complete macro and micro nutrients, such as nitrogen (N), phosphorus (P), potassium (K), calcium (Ca), magnesium (Mg), sulfur (S), and micro elements such as chlorine (Cl), iron (Fe), manganese (Mn), copper (Cu), zinc (Zn), boron (B), and molybdenum (Mo).

Seeing this potential, the community in Suka Baru Village, Benua Kayong District, Ketapang Regency, initiated a local innovation by making compost from mangrove waste found along the coast of the village. In the manufacturing process, mangrove waste, which is usually wasted and pollutes the environment, is processed together with manure into compost that can be used to fertilize the soil. This innovation not only provides added value to the community but also opens up new economic opportunities by making organic agricultural products, such as vegetables (chilies, leeks, eggplants, etc.) as products that can be consumed by themselves or sold to local markets.

However, although this innovation has great economic potential and environmental benefits, the people of Suka Baru Village do not yet understand the importance of legal protection for their inventions. The mangrove waste compost fertilizer product has not been registered with an authorized institution to obtain a patent. In fact, patents are exclusive rights granted by the state to inventors for their inventions in the field of technology for a certain period of time, provided that the invention is new, contains inventive steps, and can be applied in industry (Wahyuni et al., 2022).

Indonesia adheres to the first to file system in patent registration, meaning that patent rights are granted to the party who first submits the application, not to the party who first invented or created. Consequently, if the innovations of the Suka Baru Village community are not immediately protected through available legal mechanisms, it is likely that other parties who see this opportunity will claim to be the inventor and register it first. This could lead to legal conflicts, loss of economic potential, and harm the community, which is actually the party most entitled to the invention.

The problem of the lack of public understanding of the importance of patents is not a new phenomenon. In a study conducted by Anggritha Esthi (2018) entitled *"Tinjauan Yuridis Tentang Pemberian Hak Paten Sebagai Perlindungan Hukum Bagi Penemu di Bidang Teknologi"*, it is mentioned that the low level of public understanding of the patent system and legal protection of inventions has led to the non-optimal utilization of the Patent Law as an instrument of legal protection (Hasan et al., 2024). Reluctance or ignorance in registering inventions opens up opportunities for intellectual property rights violations and unauthorized appropriation of inventions by other parties.

In addition, the public also still sees the patent registration process as complicated, expensive, and requiring certain technical legal expertise (Khaerudin, 2021). The absence of adequate legal assistance or education from the government or related institutions further exacerbates this condition. As a result, many local

innovations have great potential but do not receive proper legal protection, so they cannot be further developed into highly competitive regional superior products.

METHODS

This research uses an interdisciplinary legal approach by integrating several approach methods as follows: a) Statute Approach, which is an approach taken by examining legal norms and various implementing regulations relating to patents, especially based on Law Number 13 of 2016 concerning Patents. b) Conceptual Approach, which is an approach taken through the study of concepts and theories put forward by experts, which are relevant to the legal protection of patents. c) Sociological Approach, which is an approach that focuses on analyzing social reality in the field, to understand how legal norms regarding patents are implemented in community practice (Adiyanta, 2019).

The synergy of the three approaches is expected to provide a comprehensive understanding of how the legal system supports the innovation process. The lack of public understanding of the importance of patent protection is often a major obstacle in providing effective legal protection to an invention. Without patent protection, inventions become vulnerable to claims or misuse by other parties, which can ultimately harm the inventor (Marzuki, 2019). By obtaining a patent, the inventor not only obtains legal protection for the exclusive rights to his work, but also has the opportunity to obtain economic benefits from the results of innovation and product development in a sustainable manner.

The data collection techniques in this study were observation, interviews, and documentation studies.

1. Observation; Observations made in this study are observations. Observations were made by conducting a survey to the research location, namely in Suka Baru village, Ketapang district.
2. Interview; Interviews were conducted to find out, complete data and efforts to obtain accurate data and the right data sources. In this research the author interviewed farmer groups and the community of Suka Baru village, Ketapang district.
3. Documentation Study; Documentation studies in research are needed to sharpen research analysis related to legal protection against making compost from mangrove waste in Suka Baru village, Ketapang district.

DISCUSSION AND RESULT

Intellectual Property and the Urgency of Legal Protection

Intellectual Property can be defined as the right to obtain legal protection for human intellectual works, as regulated in various instruments of legislation in the field of Intellectual Property, including the Law on Copyright, Patents, Industrial Designs, Trade Secrets, Plant Varieties, Integrated Circuit Layouts, and Trademarks. This protection is given to recognize and protect copyrighted works, inventions, and innovations that have economic value and benefits for the wider community (Pertiwi, 2018).

The basic concept of Intellectual Property Rights (IPR) is rooted in the idea that every intellectual work is born from a creative process that requires sacrifice in the form of energy, time, cost, and other intellectual resources. These sacrifices produce works that not only contain aesthetic or scientific value, but also have economic value

that can be enjoyed by both the creator and the user community. Therefore, it is important to give proper appreciation to these works through legal protection mechanisms. As stated by Agari, (Majid et al., 2023) legal protection of intellectual property aims to appreciate the results of human thought and provide guarantees for exclusive rights to the utilization of these works.

The rapid development of technology and information has accelerated the birth of various inventions, innovations, and new creative expressions in various fields of life. This condition reflects the important role of creativity and innovation in supporting economic, social and cultural progress. The results of these intellectual works, whether in the form of inventions in the field of engineering, creations in the field of art and literature, or innovations in the field of technology, require adequate legal protection so that the creators obtain exclusive rights and economic incentives for their creations. In line with the opinion of Agari, (Majid et al., 2023) every form of intellectual work must be guaranteed legal protection to ensure that the innovation is not misused by other parties and to encourage the growth of a healthy innovation climate.

Furthermore, intellectual property protection serves as a strategic instrument in promoting the growth of a knowledge-based economy. Countries that have a strong IPR protection system generally show higher levels of innovation, as businesses and individuals feel more secure in developing and commercializing their work. Therefore, an intellectual property protection system is not only important for individual creators, but also for national economic development as a whole (Hawin & Riswandi, 2020). Thus, the protection of intellectual property is a crucial element in order to create a balance between the interests of inventors or creators and the public interest. This protection allows creators to benefit from their work, while the public continues to have access to innovations and creativity that benefit their daily lives. In this context, law enforcement on intellectual property infringement is a necessity to maintain a fair and sustainable innovation ecosystem.

Means of Legal Protection in the Context of Intellectual Property Rights Enforcement

In order to carry out and realize legal protection effectively, it is necessary to have a means or mechanism that can be a forum for implementing the protection. This means of legal protection functions as an instrument that regulates how the rights of individuals or groups are protected, as well as providing procedures in dealing with potential violations of the law (Darusman, 2016). According to Asri Dyah Permata Budi (2018), the means of legal protection can be divided into two main forms, namely preventive legal protection and repressive legal protection.

First, preventive legal protection is a form of protection provided with the aim of preventing rights violations. This protection is realized through normative arrangements in laws and regulations, which function as guidelines or signs for the community in acting. Through these rules, the government provides clear boundaries related to rights and obligations, so that people can know their space and avoid actions that can violate the rights of others. In the context of intellectual property, this preventive protection is realized in the form of registration of intellectual property rights, issuance of rights certificates, and legal counseling to the public regarding the importance of protecting intellectual works (Taliashvili & Shamatava, 2019).

Second, repressive legal protection is protection provided after the violation of rights, which is generally realized through dispute resolution mechanisms, either through litigation in court or non-litigation channels such as mediation or arbitration. This protection is reactive, which aims to resolve conflicts, restore rights that have been violated, and provide a deterrent effect to the perpetrators of violations through sanctions. The sanctions imposed can be in the form of criminal penalties (such as imprisonment or fines) or civil sanctions (such as damages or cease-and-desist orders). In the realm of intellectual property, repressive protection is important to uphold the exclusive rights that have been granted to creators or inventors, as well as to maintain a fair climate of innovation and creativity (Seuba, 2017).

These two forms of protection complement each other and are an integral part of a legal system that aims to maintain a balance between individual interests and the public interest. Preventive protection encourages legal awareness and compliance with applicable norms, while repressive protection provides a guarantee that violations of protected rights will have strict legal consequences. Thus, the existence of effective and optimally functioning means of legal protection is needed to create legal certainty, justice, and comprehensive protection of intellectual property rights in the midst of increasingly dynamic times (Irianto et al., 2024).

Law No. 13/2016 on Patents, particularly in Article 160, Article 161, and Article 162, expressly regulates the protection of the rights of patent holders and the prohibition for other parties to use these rights without permission. These provisions aim to provide legal certainty to patent holders and prevent infringement of their exclusive rights.

Specifically, Article 160 stipulates that any person, without the consent of the patent holder, is prohibited from performing certain acts relating to the object of the patent. This prohibition covers two broad categories, viz:

- a) In the case of Product Patents, any person is prohibited from making, using, selling, importing, leasing, delivering, or making available for sale or lease the patented product. This means that all economic activities related to the commercialization of products protected by patents must be with the permission of the patent holder. Commercial action against the product without such permission is considered a patent infringement.
- b) In the case of Process Patents, the prohibition applies to the use of a production process that has been granted a patent. In other words, no one is allowed to use a patented method or process to make a product, nor take any further action referred to in the product patent category (such as selling or leasing the results of the process), without obtaining the consent of the patent holder.

1. Article 161, "Any person who intentionally and without right commits the act as referred to in Article 160 for Patent, shall be punished with imprisonment of 4 (four) years and/or a maximum fine of Rp1,000,000,000.00 (one billion rupiahs)."

2. Article 162 "Any person who intentionally and without right commits the act as referred to in Article 160 for a simple Patent, shall be punished with imprisonment of 2 (two) years and/or a maximum fine of Rp500,000,000.00 (five hundred million rupiah)".

Law Number 13 of 2016 on Patents provides legal protection to inventions produced in the field of technology, both in the form of processes and products. The

protection aims to recognize and protect the rights of inventors over their creations, as well as provide legal certainty for the utilization of the invention in the midst of increasingly rapid industrial and technological developments.

A patent is granted to a work or idea of invention in the field of technology that has met certain substantive requirements, namely novelty, inventive step, and industrial applicability. The invention in question can be in the form of a new product resulting from a certain technical process, or in the form of a production method/process itself. In other words, patents not only protect the physical form of the product, but also cover the underlying innovative technique or process.

In line with the opinion of Rahmadi (Usman, 2003) in order to protect the rights of inventors and prevent various legal problems in the future, it is very important to register a patent for the resulting invention. Patent registration is an essential preventive measure to provide formal recognition of the ownership of exclusive rights to the invention. These exclusive rights include the right to prohibit others from using, manufacturing, selling, or distributing the invention without the permission of the patent holder.

In the context of the invention of compost fertilizer from mangrove waste, patent registration is crucial to protect the innovation from potential misuse by others, whether in the form of plagiarism, unauthorized exploitation, or claims of ownership of the invention by unauthorized parties. Without patent protection, the risk of invention infringement is high, which can ultimately harm the inventor both in terms of economic and moral rights recognition.

Furthermore, patent registration of the invention of compost fertilizer from mangrove waste not only provides protection to the inventor, but also encourages the economic added value of the innovation. Patent rights can be the basis for commercialization, licensing cooperation, attracting investors, or even developing environmentally friendly technology-based businesses based on local innovations. Thus, the application of legal protection through the patent registration mechanism is an important strategy to maintain the originality of inventions, support innovation-based economic growth, and provide proper rewards to innovators who have contributed to the development of science and technology.

Potential for Mangrove Ecosystem-Based Agricultural Innovation in Suka Baru Village, Benua Kayong District, Ketapang Regency

Suka Baru Village is one of the villages located in Benua Kayong District, Ketapang Regency, West Kalimantan Province. The lives of the people in Suka Baru Village are largely dependent on the traditional economic sector, namely as fishermen, cattle breeders and farmers. These natural resource-based economic activities have been going on for generations and have become the backbone of the village community's socioeconomic life.

One of the attractions of Suka Baru Village is the existence of Celincing Beach, a well-known local tourist destination in Ketapang Regency. Celincing Beach not only offers the charm of the natural beauty of the beach, but also has an important wealth of mangrove ecosystems. Part of this beach area consists of mangrove ecosystem areas that are overgrown with various types of vegetation, such as mangrove trees (*Rhizophora* spp.), firi-api (*Avicennia* spp.), and nipah (*Nypa fruticans*).

Mangrove ecosystems in Celincing Beach have a vital ecological role, including in producing large amounts of litter (fallen leaves, twigs, and other organic materials).

This litter contributes to maintaining soil fertility, enriching nutrients, and improving soil structure around coastal areas. This potential was then utilized by the community of Suka Baru Village to develop a local innovation in the form of compost made from mangrove waste, combined with the addition of manure.

Making compost from mangrove waste is a form of sustainable innovation that not only supports environmental conservation, but also increases the economic value of the local community. The organic fertilizer produced is not only used for personal agricultural needs, such as for the cultivation of chilies, eggplants, and various other types of vegetables, but also marketed to vegetable farmers in the surrounding area. In addition, agricultural products in the form of vegetables and fruits grown using the compost fertilizer are also sold, thus providing an additional source of income for the community (Suryamizon, 2017).

This initiative reflects the efforts of the Suka Baru Village community in managing natural resources in a productive and sustainable manner, while demonstrating creative adaptation to the surrounding environmental conditions. By utilizing organic waste from mangrove ecosystems, the community not only increases agricultural productivity, but also contributes to the conservation of coastal environments that are vulnerable to damage.

Although the innovation of making compost from mangrove waste carried out by the people of Suka Baru Village has a high economic value and has the potential to continue to be developed, until now the product has not received adequate legal protection (Triadi et al., 2025). One of the main causes of this condition is the low level of public understanding of the importance of patenting a product resulting from an invention. Many people do not realize that their innovations, if not legally protected, are vulnerable to the risk of claims or expropriation by other parties.

This is all the more important given that the patent registration system in Indonesia adheres to the "first to file" principle, i.e. the patent right will be granted to the party who first files the application for registration, not to the party who first invents the invention. Thus, if an invention is not registered immediately, there is a high possibility that other parties may claim ownership of the invention simply because they filed the patent application first. This condition will certainly harm the original inventor, both legally and in terms of economic potential.

Therefore, a very important and urgent first step to protect the inventor's rights to compost made from mangrove waste is to officially register a patent. Patent registration provides strong legal protection to the invention, by granting exclusive rights to the inventor to use, produce, sell, or license the invention to other parties for a certain period of time specified by law.

Through patent registration, inventors gain protection against misuse of their inventions by unauthorized parties, while opening up opportunities to maximize the economic benefits of the invention, either through direct sales, license agreements, or commercial cooperation with business partners. Patent protection also encourages a sense of security for inventors to continue to carry out further development of their products, improving the quality, efficiency, and competitiveness of products in the market.

In addition, patents can be a valuable asset recognized in the modern business world, which in turn can increase the commercial value of products, strengthen the bargaining position of inventors, and encourage innovation-based economic growth at

the local level. Patents can also serve as capital to obtain funding from investors who see business prospects from legally protected inventions.

Benefits of Patent Registration for Inventors of Compost Fertilizer from Mangrove Waste

Patent registration of mangrove waste-based compost fertilizer inventions provides various strategic benefits for inventors, both in terms of legal protection, intellectual ownership, and strengthening commercial potential (Ritonga et al., 2024). Some of the main benefits that can be obtained from patent registration include:

1. **Legal Protection of Inventions;** Patent registration provides strong legal protection to the invention, thus preventing other parties from using, manufacturing, selling, or exploiting the product without authorization. With this exclusive right, the inventor is guaranteed protection from acts of intellectual property rights infringement, such as imitation, piracy, or appropriation of the idea by a third party. This protection also allows inventors to legally sue those who are found to be infringing on their patent rights, thus creating a sense of security in developing and marketing their innovative products.
2. **Guarantee of Ownership of Intellectual Property Rights;** Through patent registration, the rights to the invention are officially recognized and documented in the name of the inventor. This strengthens the inventor's position as the legal owner of the invention in the business and legal arena. Ownership of valid intellectual property rights will increase the credibility of the inventor in the eyes of business partners, consumers, and funding institutions. In addition, patents can also be used as objects in various commercial transactions, such as licenses, franchises, or even sold for further economic benefits.
3. **Increased Commercial Value of Products;** Products that have secured patent protection have a significant added value in the market. The exclusive rights that inventors have allow them to selectively regulate the production, distribution, and use of such products. Inventors can set the terms and conditions of use of their inventions, set prices, and manage licensing to third parties in exchange for royalties or other compensation. Thus, patents open up opportunities for inventors to gain maximum economic benefits from their innovations, while expanding the market reach of products based on local innovations.
4. **Encouraging Innovation and Sustainable Development;** The guarantee of rights protection through patents provides a strong incentive for inventors to continue innovating. Inventors will be more motivated to conduct further research and development without worrying that their work will be taken or used without permission by other parties. This safe innovative environment encourages the creation of new products that are higher in quality, more efficient, and more competitive in the market, thus strengthening the contribution of innovation to intellectual property-based economic growth.

With patent protection, inventors of compost fertilizer from mangrove waste can focus more on developing the technology and its commercial potential without worrying about rights violations.

Inventor's Rights in the Implementation of an Invention

In carrying out and developing his/her invention, an inventor not only has the obligation to comply with applicable legal provisions, but is also granted a number of inherent rights over his/her work. These rights are important to protect the inventor's personal and economic interests in the invention. In general, inventor rights can be classified into two main categories, namely moral rights and material rights (Kurnianingrum, 2019).

- a) **Moral Rights;** Moral rights are rights that are personal and eternally attached to the inventor. This right is explicitly recognized in Law No. 13/2016 on Patents, specifically in Article 75 which regulates the transfer of patents. Although patent rights can be transferred to other parties through agreements, inheritance, grants, or other forms of transfer, the inventor's moral rights remain indelible. In other words, the inventor retains the right to be named as the inventor in the relevant patent document, regardless of who becomes the subsequent patent holder. Recognition of this moral right reflects respect for the intellectual contribution and personal identity of the inventor in the development of science and technology.
- b) **Material Rights;** In addition to moral rights, inventors also have material rights that relate to the economic value of their inventions. These material rights authorize the inventor to derive financial benefits from his invention. Any party who wishes to use a patented invention must first obtain permission from the patent holder, which is usually done through a license mechanism or other usage agreement. Thus, the inventor is entitled to receive compensation in the form of royalties, fees, or other forms of economic benefits for the use of his invention. This protection of material rights provides motivation for inventors to continue to innovate and contribute in producing new works that benefit the wider community.

These two types of rights, moral rights and material rights, are complementary. Moral rights safeguard the honor and reputation of inventors, while material rights ensure that inventors can enjoy the economic benefits of their work. The protection of both rights is the main foundation in building a healthy, fair, and sustainable innovation ecosystem amidst the rapid development of science and technology.

CONCLUSION

Based on the results of the research conducted, it can be concluded that legal protection of the invention of mangrove waste-based compost fertilizer is an urgent need. To protect inventors from various potential legal problems in the future, including the risk of ownership claims by other parties, strategic efforts are needed through the patent registration mechanism. Patent registration of compost processing technology from mangrove waste not only guarantees exclusive rights to the inventor, but also protects the economic value contained in the creative idea. Thus, the inventor not only gets recognition for his innovative contribution, but also gets optimal opportunities to manage and develop his invention in a sustainable manner. Legal protection through patents will encourage the creation of a more conducive innovation

ecosystem, strengthen the economic independence of local communities, and contribute to development based on the wise and sustainable use of natural resources.

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