Environmental management and the implications to the plant varieties protection in Bangka Belitung Islands

D Darwance*, R Sari, and M S Anwar
Faculty of Law, Universitas Bangka Belitung, Indonesia

*E-mail: darwance@yahoo.co.id

Abstract. Plant varieties protection is one of intellectual property rights branches providing protection to breeders, a people who carries out research and testing or the activity of discovering and developing a plant variety to produce new variety. In addition, it also known local varieties, namely varieties that already exist and are cultivated from generation to generation by farmers, and belong to the community. Varieties cannot be protected if one of them on the contrary to the environmental sustainability. On the other hand, the environment is one of the problems faced by the people of Bangka Belitung Islands until now, especially when it is associated with mining activities. This empirical juridical research method analyzes how the impact of environmental protection and management efforts towards the efforts to protect plant varieties in the Bangka Belitung Islands. The result of the research indicates that the damaged environment due to massive mining has implications to the protection of plant varieties in this area. The clearing of land plots and housing that has been happening lately also has implications, either cleared or built on land that was originally primary forest or built on land that was originally a plantation consisting of local varieties.

1. Introduction
The result of human though with his intellectual creativity succeeded in giving birth to many things, one of them is plant breeding, that is a method that systematically assembles genetic diversity to be a form for human life, including science and technology [1]. It aims to get better plant varieties which in turn is more profitable used by the farmers. Therefore, plant breeding is a way in the effort to fulfill national food needs through the result of breeding carried out by a person or several breeders [2]. Then normatively, the result of breeding can be protected, which is known by Plant Variety Protection (PVP).

In Indonesia, in fact PVP is the implementation of various international obligations that must be carried out, especially related to World Trade Organization/Trade Related Aspects of Intellectual Property Rights (WTO/TRIPs), which obliges each member country to have and to do the law regulation in the field of Intellectual Property (IP) including Plant Variety Protection [2]. Especially, an intellectual property right is one pillar of a country's economic development.[3]

As stated in the explanation of the Law Number 29 of 2000 concerning on Plant Variety Protection, that Indonesia is one of country having biological diversity resources as a source of germplasm that can be used to assemble future superior varieties. Therefore, the effort to increase productivity is strongly influenced by success in improving the genetic potential of plant varieties so the activities that can produce superior plant varieties need to be encouraged through the provision of incentives for people or business entities engaged in plant breeding which resulting new varieties.
The efforts to increase competitiveness can be carried out, among others by: increasing the productivity and quality, and also developing an integrated agribusiness system. The increasing of productivity and quality is influenced by innovation development success, especially in improving the genetic potential of plant varieties. Therefore, people or business entities engaged in plant breeding should be provision of reward, such as by giving the law protection on intellectual property right in resulting new plant varieties, including in enjoying economic benefits and other breeder rights. It also uses to encourage passion and creativity in the field of plant breeding, so that it can results the discovery of various superior varieties. The development of agriculture is focused on resource and energy efficiency, environmental safety and profitability.

In the Article 2 Paragraph (1) the Law of PVP stated the varieties that can be given PVP are the varieties of plant types or species which are new, unique, similar, stable, and named. Similar means the main or the important characteristics on the varieties are proven to be similar even though it varies as a result of different planting methods and environments. Meanwhile, the Article 3 of the law of PVP stated the varieties that cannot be given PVP is varieties whose use is contrary to environmental sustainability. Although it is not mentioned in more detail, based on the provisions it can be concluded that the environmental aspect is one of the criteria so that certain varieties can be given protection. In addition, it is also known as local varieties, namely varieties that already exist and are cultivated from generation to generation by farmers and belong to community.

In the Article 11 Paragraph the Law of PVP, explicitly stated that in terms of transgenic varieties, thus the description at the time of application must also include a description of the compounds content that can interfere with the environment accompanied by a statement of safety for the environment and human health from the authorized agency. Transgenic Varieties is a variety which is resulted through genetical manipulation technique. Related to the environment, it is emphasized in the explanation of this provision stated that safe in this case means it is not harmful to the environment, including biological resources and human health. On the explanation stated that, “Considering that in the manufacturing process of transgenic varieties may use materials or parts of organism that in their original form having risks to the environment, including biological resources and human health. This environmental requirement is also found in the protection of geographical indications [5].

Globalization is demanded for eco-friendly which has a huge impact on the environment [6]. In other side, the environment becomes a serious problem in Bangka Belitung Island. Wahala Lingkungan Hidup Bangka Belitung Islands records that about 1,053,253.19 hectares of land in this area is damaged in critical condition or 64.12 percent of land area. The worst forest damage is ond Bangka Islands, it is 810,059.87 hectares or 76.91 percent of Bangka Belitung land area [7]. The data is certainly interesting to be studied further, especially when it is related to the protection of crop varieties in the region which normatively requires the environment as one of the substantive aspects. Therefore, this article will be reviewed the environmental management and its impact on the plant varieties protection in Bangka Belitung Islands.

2. Method
This research was conducted based on empirical juridical research method with a legal approach so that what is analysed and studied is the operation of law in the society. More specific, this research was conducted to determine public compliance with the law, the role of law institution in the process of law enforcement, and the implementation of law rule [8] and also research on legal effectiveness [9]. However, In this research, only the role of legal institutions in the law enforcement process and implementation of the rule of law will be studied [10]. Therefore, it is reviewed regulations that regulates the protection of plant varieties, especially related to the requirements to be registered from the environmental aspect. To find out empirical facts, interview was conducted to the researcher at Assessment Institute for Agricultural Technology of Bangka Belitung Islands. Then, the data is processed using qualitative analysis method.
3. Results and Discussion

3.1. Environmental Factors in the Protection of Plant Varieties in a Normative Framework

Indonesia is a developing country who is trying to carry out the development of science & technology in various aspects of life, one of them is in the field of agricultural technology [11]. The development of agricultural technology has important role in the success of the productivity of the resulting farm, and also improve the quality of agricultural products. Therefore, it needs to be applied a various knowledge and technology-based efforts such as crossing techniques that can produce new varieties with better advantages and benefits than previous plants. This technique is well-known as plant breeding [11].

Plant breeding needs an intellectual ability in order to produce a quality product. Therefore, that plant varieties should get protection within the framework of intellectual property law, which is granted a registration [11]. Plant Variety Protection (PVP) is one of some types of intellectual property rights. In Indonesia, the development of intellectual property rights related to PVP is just started from the Law Number 6 of 1989 concerning on Patent. However, this law does not permit the granting of patent protection to foods, drinks, and also plant varieties. This regulation was revoked later into the Law Number 13 of 1997 as the implication of the TRIPs (Trade Related Aspects of Intellectual Property Rights) Agreement ratification. One of the results is foods, drinks, and plant varieties can be given patent protection, although in fact that in this new law, new plant varieties have not been adequately regulated. A similar thing happened when the Law Number 13 of 1997 was also revised to become the Law 14 of 2001.

Inadequate regulation related to the protection of plant varieties at that time was the Law Number 12 of 1992 concerning on Plant Cultivation System. However, this law does not give protection on the rights having by plant breeders, but it only gives rewards, such as advantages and benefits for breeders. The rest, it can be said that the breeder gets nothing. This is certainly unfair when compared to the time, cost and effort that has been spent by a breeder in finding new plant varieties. Currently, the protection of plant varieties is regulated in the Law Number 29 of 2000 concerning on Plant Varieties Protection (PVP). The PVP concept is developed due to the provisions on patent which does not provide protection for new plant varieties as a result of the plant breeding [12]. As stated in the background section, that environmental factors are one of the important factors in the protection of plant varieties regulated in this law. Environmental management is one of the key tools for ensuring sustainability development [13].

The birth of the Law Number 29 of 2000 concerning on Plant Varieties Protection one of them as a consequence of Indonesia’s participation in General Agreement on Tariffs and Trade (GATT) in 1994 ratified based on the Law of the Republic of Indonesia Number 7 of 1994. The agreement contains about the agreement of TRIPs. One of the substances is the obligation for participating country to create and align IPR laws and regulations with TRIPs itself, including the PVP. [14] Every country member is obliged to ratify the world trade agreement and create a regulation related to plant varieties protection that they trade.

The law-making of PVP adopts International Convention for the Protection of New Varieties of Plants (UPOV), it is an international provisions which specifically provides protection for new varieties of plants that are formed to protect the rights of breeders; exclusive rights granted to the holder to produce or reuse and sell plant varieties that have been produced [12]. Indonesia prefers to sui generis without become a member country of UPOV [14]. Although Indonesia is not a member country of UPOV, in forming the regulations, Indonesia refers to convention of UPOV[14]. In principle, the implementation of PVP awards in Indonesia aims to support and to provide opportunities for the business world to increase its role in various aspects of agricultural development. This is getting more important considering that assembling of superior varieties in Indonesia currently is mostly carried out by government research institutions [2].

As an agricultural country, indeed Indonesia should have a set of regulation providing protection to the researchers/breeders who succeeded in discovering new plant varieties. Besides providing, it can be a motivation for researchers/breeders to be more innovative in developing various types of existing plants. Moreover, provisions in the form of law in this context is a necessary means to encourage and
protect activities in producing superior plant varieties, so it is needed a special rule that can provide guarantees and legal protection clearly and unequivocally, i.e. the recognition of intellectual property rights for invention results in the form of new plant varieties [12].

By regulating the rights of plant breeders, then it is expected that it will encourage creativity that will bring the investment in plant breeding, so it can result various discovery of superior quality varieties [14]. The Law of PVP is arranged as the effort to further improve of interest and role of people of legal entity to conduct plant breeding in order to improve new superior varieties [12]. The protection of new plant varieties rights to enjoy the economic benefits of the varieties found is a form of appreciation and recognition for the success of breeders in finding or developing new plant varieties that were not contained in the legislation before the enactment of the PVP Law [12].

Economical benefit is a form of appreciation, recognition, and PVP rewards for the success of plant breeders [14]. The benefits for plant breeders who obtain PVP rights are; to increase the education and research related to the process of breeding and conserving biological resources and at the same time to develop science and technology and also to encourage the breeders in developing the breeding research to increase their welfare [14]. The law protection on the plant varieties as one of intellectual works is much needed, not only for the benefit of plant breeders but also intended to stimulate the creativity of plant breeders to produce new plant varieties [15]. The resulted plant varieties must be different from other plant varieties which is characterized by differences in physical form to differences in plant characteristics.

The protection of plant varieties is essentially a form of protection in the field of intellectual property [16]. The protection of plant varieties is influenced by the intellectual result of plant breeders in creating a new seed that has never been created, and and has never received protection of plant varieties [16]. Based on those theory, it can be said that a person who has property rights to a variety of plants must be given protection that is by giving appreciation, restoration or replacement, and also incentive towards the conducted effort to avoid the risk of imitation by other parties, so that if the protection has been obtained, it can spur economic growth in the surrounding area [16].

3.2. The Implications of Environmental towards PVP in Bangka Belitung Islands
As part of this multicultural country, Bangka Belitung Islands Province also has a lot of wealth, both in terms of culture and natural products [17]. Besides being known as a white pepper producing area, Bangka Belitung Islands is also well-known as the largest tin mining area. Both pepper and tin are closely related to the environment. Pepper with its characteristics and qualities is influenced by environment which is scientifically proven to make pepper in this area different from pepper in other regions. At least, it is proven by the recognition of pepper as a registered geographical indication at the Ministry of Law and Human Rights of the Republic of Indonesia. Likewise, there is not any mining which is not related to the environment. It because of exploitation activity and mining exploitation that has been conducted in the environment.

In other side, the arrangement of Law of PVP is on the basis of on the basis of sustainable function and environmental quality. Therefore, to get protection on the plant breeding result, one of the varieties should meet the criteria from the environmental aspect. In the Article 2 Paragraph (1) the Law of PVP stated varieties that can be provided PVP including varieties of plant types or species which are new, unique, similar, stable, and named. Similar means the main or the important characteristics on the varieties are proven to be similar even though it varies as a result of different planting methods and different environments. Meanwhile, the Article 3 of the law of PVP stated that varieties that cannot be given PVP is the varieties whose use is contrary to environmental sustainability. Although it is not mentioned in more detail, based on the provisions it can be concluded that the environmental aspect is one of the criteria so that certain varieties can be given protection.

More about environment, In the Article 11 Paragraph (4) the Law of PVP, explicitly stated that in terms of transgenic varieties, thus the description at the time of application must also include a description of the compounds content that can interfere with the environment accompanied by a statement of safety for the environment and human health from the authorized agency. Transgenic
Varieties is a variety resulted through genetical manipulation technique. Related to the environment, it is emphasized in the explanation of this provision stated that safe in this case means it is not harmful to the environment, including biological resources and human health.

From these several provisions, the conclusion is the environmental aspect is a very important indicator in PVP. First, environmental aspect becomes a measuring power to see whether certain varieties will change or not when planted in areas that have different environmental characteristics. Second, environmental aspect becomes a reference to ensure varieties that even in the first aspect met, but if it is against the principles of the environment, then it is not be able to give protection. Therefore, in this context the environmental management becomes very important, both in terms of varieties resistance and varieties implication towards the surrounding environment. On the other hand, the relationship between a human being and nature has always been controversial, human-induced impact on the natural environment has become particularly significant, and changes in this area today, as is known, are irreversible [18]. Today Environment management system has emerged as one of the most significant function in the overall management structure that aims to mitigate the adverse impact of overall business operations [19].

The damaged environment due to massive mining in the Bangka Belitung Islands has implications to the protection of plant varieties in this area, especially local plant varieties that mostly live in the wild. It is stated by Tri Wahyuni, the researcher in Assessment Institute fo Agricultural Technology of Bangka Belitung Islands. In addition to the damaged environment due to tin mining, In addition to the damaged environment due to tin mining, the clearing of land plots and housing that has been happening lately also has implications, either cleared or built on land that was originally primary forest or built on land that was originally a plantation consisting of local varieties, such as duku, cempedak, mangosteen, durian, and so on. Therefore, it is necessary to take steps to save this variety from extinction, especially by local governments, such as building a conservation area that contains a collection of local varieties of plants. This is in accordance with what was conveyed by V.B. Kuvaev [20].

4. Conclusion
One of the reasons of PVP Law arrangements is on the basis of sustainability of the function and quality of the environment. Therefore, to get protection towards the result of plant breeding, the varieties should fulfill one of the criteria of environmental aspect, according to the Article 2 Paragraph (1), Article 3, and Article 11 Paragraph (4) the Law of PVP. The environment is one of the criteria so that certain varieties can be protected. Thus, the environmental aspect becomes a very important indicator in PVP. In Bangka Belitung Province, the damaged environment due to massive mining has implications to the protection of plant varieties in this area, especially local plant varieties that mostly live in the wild. The clearing of land plots and housing that has been happening lately also has implications, either cleared or built on land that was originally primary forest or built on land that was originally a plantation consisting of local varieties. It is necessary to take steps to save this variety from extinction, such as building a conservation area that contains a collection of local varieties plants.
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