



The Urgency of Regulating the Protection of Indonesia's Genetic Resources for the People's Welfare

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Abstract— As a consequence of being a mega biodiversity country Indonesia needs strong legal instruments to protect its genetic resources. The legal basis for protecting genetic resources as spread across various fields and in imbalanced regulation tends to be concentrated in certain fields. This weakness is worsened by partial and legal study concentration in just certain fields beside the absence of a blue print genetic resources protection which must be the duty and responsibility of the Ministry of Environment. This makes the regulation on genetic resource protection like a patchwork. This article illustrates the importance of a complete and comprehensive regulation on genetic resources protection in Indonesia. This research uses legal research methods, specifically using regulations that apply in Indonesia. Until now the regulations on genetic resources protection are still spread across several fields and are not comprehensive and some even conflict with each other. It is like a "doughnut with a hole in the middle" because there are several fields that do not have regulations, especially in the fields of trade, tourism, village government. as well as the field of research (biotechnology) so that it will possibly have an impact of potentially bioprospecting and biopiracy practices which will endanger the genetic resources in Indonesia as well as the people's welfare. The implementation of omnibus bill technique in drafting statutory regulations is to be a right moment to comprehensively evaluate all the existing statutory regulations on genetic resources protection.

Keywords: *blueprint, genetic resources, legal instruments protection.*

I. INTRODUCTION

Indonesia has biodiversity including ecosystems, species and genetics and it is the second largest mega biodiversity countries in the world [1]. Based on the flora and fauna richness Indonesia is ranked second after Brazil, that is 418.78 of the Global Biodiversity Index whereas Brazil is 512.34 [2]. However, in terms of Environmental Performance Index Indonesia is ranked 164th with 28.2 score while Brazil is ranked 81st having 43.6 score [3]. As a mega biodiversity country Indonesia urgently requires a regulations that is to protect its biodiversity. This paper will focus on the genetic resources.

Indonesia has issued legislation to protect the genetic resources but the direction of the government's policy regarding the resources protection is not obvious and they even seem patchy and therefore they are not comprehensive. It is the duty of the Ministry of Environment that is responsible for administering the environmental sector to make a blue print that will confirm the policy direction of the resources protection legislations. Such a requirement is pictured by several existing writings, for example Betho Deus Pangestu (2016) describing genetic resources protection, traditional knowledge, and the position of indigenous people that is focused on the Nagoya Protocol as an international agreement (source of international law) [4]. Tisni Santika (2016) states that a *sui generis* regulatory concept is needed to protect genetic resources and traditional knowledge in an intellectual property system; the concept of state sovereignty is implemented on a case-by-case model because it is not only about intellectual property issue but also includes human rights aspect and cultural protection; and it combines sustainable diversity methods together with cultural and economic diversity in its use [5]. Rohaini (2017) suggests positive protection on genetic resources and traditional knowledge through optimizing patent laws and *sui generis* regulations; to revise the existing regulations regulating *sui generis* elements that consist of objectives, scope and protection criteria, traditional knowledge rights holders, beneficiaries and procedures for obtaining rights and resolving disputes [6]. Sudaryat (2020) refers the three international agreements, namely the Convention on Biological Diversity (CBD), the Cartagena Protocol and the Nagoya Protocol; the need of *sui generis* regulations to protect the genetic resources; and optimization of information technology in genetic resource databases [7].

This article will provide a comprehensive explanation on the regulations in Indonesia regarding the genetic resources and relate them with future regulatory needs so that it will show the urgency of a comprehensive regulation on genetic resources protection in Indonesia.

II. LITERATURE REVIEW

Before elaborating further it is necessary to know the meaning of legislation and genetic resources. A legislation is a written regulation as intended in the Act on the Establishment of Legislation, particularly articles 7 and 8 [8]. The term of genetic resources replaces the term of germplasm contained in previous legislations but the term of genetic resources was used after Indonesia ratified the United Nations Convention on Biological Diversity (CBD, 1992). Genetic resources according to CBD, 1992, are genetic materials having real or potential values. Meanwhile, one of the legislations, namely the Act Nr. 22 of 2019, article 1 point 5, says that genetic resources are genetic materials originating from plants, animals, or microorganisms containing units that function as carriers of hereditary traits and have real or potential values. The concept of protection according to article 1 point 2 of the Act Nr. 32 of 2009 on Environmental Protection and Management (UUPPLH) does not stand alone but it goes hand in hand with environmental management. The definition of environmental protection and management according to the UUPPLH includes planning, utilization, control, maintenance, supervision and law enforcement activities in order to prevent environmental pollution and/or damage in a systematic and integrated manner.

In drafting laws and regulations, with the large number of existing laws and regulations, Indonesia often faces obstacles in terms of clarity in the formulation of norms and conflicts between regulations. Lego Karjoko, Josephine Santosa, and I Gusti Ayu Ketut Rachmi Handayani (2019) wrote about inconsistent arrangements in Social and Environmental Responsibility in Indonesia using Ron Fuller's theory [9]. In this article, it was found that the terms, concepts, scope and mechanisms for implementing Social and Environmental Responsibility in various laws and regulations were not consistent [9].

III. METHOD

This paper applies a legal method (doctrinal research), namely legislation synchronization based on statute approach [10] [11]. This article will explain the legal regulations that use vertical synchronization and horizontal synchronization. Therefore, the data used are the legal regulations governing genetic resources in Indonesia which are currently in force: a) the Constitution (UUD NRI 1945); b) MPR Decree; c) regulations in all areas governing genetic resources; and d) bills prepared by the Indonesian government.

IV. REGULATION OF GENETIC RESOURCES

A. *The Constitution of the Republic of Indonesia 1945 (UUD NRI of 1945)*

The Indonesian Constitution does not specifically regulate genetic resources. This can be understood because of its position as the basic rule of the state (*Staatsgrundgesetz*) [12]. However, article 33 of UUD NRI 1945 regulate the State's power over the land, the water and the natural resources which are used for the welfare of the people. This regulation is the basis for the legislation making on natural resources, including genetic resources.

B. *MPR RI's Decree Nr.IX/MPR/2001 on Agrarian Reform and Natural Resources Management*

This decree does not specifically regulate genetic resources but it could be viewed as a basis for renewing the legislations on agrarian and natural resources. Article 5 paragraph (2) of the decree contains policy directions of natural resources management covering a) to conduct a review of various legislations in relation with the natural resources management in the context of intersectoral policies synchronization based on the principles as intended by Article 4 of the decree; b) to realize the optimal use of various natural resources through quality and quantity identification and inventory of the natural resources as a potential for the national development. Article 6 of this Decree mandates that the DPR and the President must immediately regulate agrarian reform and natural resource management, revoke, amend and/or replace all regulations that are not in line with the MPR RI Decree.

C. *Environmental Regulations*

The legislations on Environmental Affairs that directly regulate genetic resources are:

- 1) Act Nr. 5 of 1990. This act does not work in the form of norms within its body but it mentions genetic sources and germplasm in its explanation. This act has been outdated from the current and future needs of biological natural resources protection and utilization, especially seen from technological advances and international legal sources regulating genetic and biotechnology resources.
- 2) Article 63 UUPPLH in conjunction with Article 22 Number 23 Law no. 6 of 2023 which regulates the duties and authorities of the central, provincial and district governments. However, this provision conflicts with attachment letter K to Law no. 23 of 2014, especially the division of government affairs in the environmental sector, namely the biodiversity subsector. UUPPLH does not specifically regulate genetic resources.
- 3) Government Regulation no. 21 of 2005 regulates the Biosafety of Genetically Engineered Products. This rule is an implementation of Article 8 paragraph (2) of Law no. 23 of 1997 concerning Environmental Management (UUPPLH).

This government regulation remains in effect even though the UUPLH has been revoked. This regulation needs to be revised after the enactment of the Nagoya Protocol.

- 4) Regulation of the Minister of Environment Nr. P.2/MENLHK/SETJEN/KUM.1/1/2018. This Regulation is issued to support the implementation of the Nagoya Protocol as stated in preamble letter b. This regulation is a practical step to anticipate the aftermath of the Nagoya Protocol ratification, 2010, and it contains very limited material regarding access to genetic resources and profit sharing. This ministerial regulation is linked to the Government Regulation Nr. 5 of 2021, especially in the attachment of the requirements of environmental sector licensing and the regulation of the Minister of Environment and Forestry Nr. 3 of 2021. Environment and Forestry sectors are not included even though business activities utilizing genetic resources have damage and bioperacy risks. Business licensing associated with genetic resources is only limited to the seeding aspect.

Indonesia has ratified three international agreements, namely CBD (1992), Cartagena Protocol (2010) and Nagoya Protocol (2010) into their respective acts as a logical consequence since Indonesia adheres to a dualism system that intrinsically differentiates the international legal system and the national legal system. A ratification of an international agreement is an implementation form of *pacta sunt servanda* principle based on good faith principle as regulated in Article 26 of the Vienna Convention (1969). However, the essence of the three acts is only to establish international agreements and therefore they require further regulations in the form of legislations. Apart from that, the content of the convention and the two protocols need to be followed by implementing regulations according to the each country's policies. This is something that has not been implemented by the Ministry of Environment and Forestry, for example about the benefit formulation and profit sharing of the genetic resources use in more detail and according to Indonesian conditions.

D. Regulations on Agricultural Affairs

Legislation on agricultural affairs is the most complete in regulating the genetic resources and genetic engineering protection, namely:

- 1) Act Nr. 29 of 2000;
- 2) Act Nr. 18 of 2009;
- 3) Act Nr. 13 of 2010;
- 4) Act Nr. 18 of 2012;
- 5) Act Nr. 39 of 2014; and
- 6) Act Nr. 22 of 2019.

All of these regulations were amended by Act Nr. 6 of 2023. In addition, Indonesia has ratified the ITPGRFA with Act Nr. 4 of 2006. The legislation in the agricultural sector is the most complete in regulating the genetic resources and some suitable institutions were even established by the Regulation of Minister of Agriculture Nr. 19/Permentan/OT.020/5/2017 and the regulation number 13 of 2023, including BBPSI Biogen. Thus, the Ministry of Agriculture is the most well organized in initiating and implementing regulations regarding the genetic resources protection and utilization.

E. Fisheries Sector Regulations

The Act Nr. 31 of 2004 on Fisheries as amended by the Act Nr. 45 of 2009 and the Act Nr. 6 of 2023 contains norms on genetic protection of fish (germplasm) and control of genetically engineered fish. The implementing regulations, both governmental and ministerial regulations, contain provisions on genetic diversity and patterns, synthetic materials, especially for pearls and genetic engineering and the requirements as well. This can be seen in the Attachment to Government Regulation no. 5 of 2021 concerning the Fisheries Sector, Minister of Maritime Affairs and Fisheries Regulation no. 10 of 2021, Minister of Maritime Affairs and Fisheries Regulation no. 5 of 2023 and Minister of Maritime Affairs and Fisheries Regulation No. 6 of 2023.

F. Health Sector Regulations

Legislation in the health sector will always relate to genetic resources, especially their use for traditional medicine and traditional health services as regulated in Law no. 17 of 2023 (new Health Law) along with existing implementing regulations based on previous law, namely Law no. 36 of 2009. Legislation in the health sector follows the guidelines issued by WHO. Although there is no any single international agreement in health sector WHO has issued guidelines regarding traditional medicine which include: a) WHO Traditional Medicine Strategy 2014-2023; b) The Regional Strategy for Traditional Medicine in the Western Pacific 2011–2020; c) Quality Control Methods For Herbal Materials; and d) General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine.

Based on WHO data: a) Chivian and Bernstein (2008) found that biodiversity which provides benefits in biomedical discoveries for humans is actually extinct due to human activities; b) data from UN Comtrade in 2013 shows that sixty thousand species have been used for medicine, nutrition and even five hundred thousand tonnes of materials from these species continue to increase in

trade; c) According to WHO data from NAPRALERT, it is estimated that the global trade value of medicinal plants can exceed US\$ two point five billion and will continue to increase due to industrial needs and demand [13]. Almost all countries over the world have policies on the use of traditional medicines as can be seen in the picture below [14]. Thus, in the health sector, the direction and policy of regulating traditional medicine in Indonesia will always follow the world and other countries development.

Figure 1. Countries that Regulate Traditional Medicine



Sumber: WHO, 2019 [12]

G. Regulations on Intellectual Property Rights

The legislations in this field relating to genetic resources are: a) Act Nr. 28 of 2014 on Copyright; b) Act Nr. 13 of 2016 on Patents; and c) Act Nr. 20 of 2016 on Marks and Geographical Indications and its Implementing Regulations. Apart from these three regulations, the Indonesian Government realizes the importance of protecting communal intellectual property (CIP) so it has issued Government Regulation no. 56 of 2022 concerning Communal Intellectual Property. Previously, the government only issued a ministerial regulation, namely Minister of Law and Human Rights Regulation Number 13 of 2017. This Ministerial Regulation is a legal product to protect genetic resources and traditional knowledge in Indonesia while waiting for the issuance of higher regulations. Based on existing regulations, the Government carries out data collection or inventory of communal intellectual property in Indonesia, including data on genetic resources, potential geographical indications, traditional knowledge, traditional cultural expressions, and indications of origin.

H. Research Sector Regulations

Legislation in this field does not directly regulate the protection of genetic resources, but regulates research licensing, including for foreign researchers. Provisions regarding research permits can be seen in Government Regulation no. 41 of 2006. This regulation was issued as a mandate from Article 17 paragraph (5) of Law no. 18 of 2002. This regulation requires supports from other fields including the environment, agriculture, fisheries, intellectual property, trade and tourism. Genetic resources are not regulated in the field of trade and tourism but these two fields could be entry points in avoiding research licensing for foreign parties to make researches on genetic resources. These two fields make the foreign parties easier to utilize and trade the genetic resources. This is an assignment for the State, including regulations on biotechnology development.

To anticipate technological developments including biotechnology, the President of Indonesia issued Presidential Regulation no. 78 of 2021 which combines all research institutions in one institution, namely the National Research and Innovation Agency (BRIN). Initially these institutions were established independently, namely the Indonesian Institute of Sciences (LIPI), the Agency for the Assessment and Application of Technology (BPPT), the National Nuclear Energy Agency (BATAN) and the National Aeronautics and Space Agency (LAPAN). The results of research on genetic resources carried out by LIPI and BPPT are important in utilizing genetic resources for people's welfare. BRIN continues to develop research on microorganisms conducted before. Preceded the founding of BRIN, on the initiation of LIPI, Government issued the Presidential Regulation Nr. 1 of 2021 on Microorganisms Management as a Quick Step in Protecting Genetic Resources in the Form of Microorganisms

I. Legislations on Regional Government and Village Government

Legislations in this field can be seen in Act Nr. 23 of 2014 on Regional Government in it Attachment letter K. The attachment states that in governmental job division of the environmental sectors, particularly in biodiversity sub-sector, the central, provincial and district/city governments have the authority in biodiversity management. This regulation is contrary to Article 63 of UUPPLH. In the author's opinion Act Nr. 23 of 2014 is more appropriate because the protection of genetic resources cannot be carried out only by the central government but it should involve regional and local governments, especially in monitoring and enforcing the law, including in implementing the Nagoya Protocol in terms of profit sharing of genetic resources utilization.

Likewise, Act Nr. 6 of 2014 on Village Government does not specifically mention genetic resources but it mentions natural resources instead. It would be better if regulation making about genetic resources starting from village level because the government and the communities of the villages are much more aware of their own resources. They will be able and ready to provide comprehensive and responsible protection and at the same time they become the entry point of the data collection on local regional genetic resources. This will be useful in implementing the profit sharing regulation as stipulated in the Nagoya Protocol.

As one of the provinces in Indonesia, Central Java can be said as a pioneer in protecting genetic resources as seen in the Governor's Regulation Nr. 74 of 2017. This regulation was issued on the initiative of the Central Java Provincial Environmental Service together with the Central Java Regional Genetic Resources Commission. This activity did not only stop at the provincial level but was continued by conducting pilots at the district and city government levels. The district and city governments then provided assistance to several villages to create village regulations regarding environmental conservation which contained norms or regulations regarding genetic resources and the distribution of profits from the use of genetic resources under the coordination of the Provincial Government. However, the regulations made by the Central Java provincial government and the villages will not be fully effective if the central government does not make a regulation providing guidance to the province and villages.

V. THE MAKING OF COMPREHENSIVE REGULATIONS

A. *A Doughnut that is not completely round*

Seeing the description of legislations distribution governing genetic resources in various fields, it can be concluded that the regulations of the genetic resources protection are not balanced. Regulations in the agricultural field are the most relatively complete and quite progressive in protecting genetic resources. The environmental fields, which is expected to be an umbrella for all fields, does not even have a comprehensive legal regulation that will be able to cover all fields so there appears to be a gap, especially in the trade and tourism fields which have the potential to protect genetic resources. Likewise, what the Central Java Provincial Government, together with the Central Java Regional Commission for Genetic Resources and several district and village governments, has done in their efforts to protect genetic resources will not provide complete protection without guidance from the Central Government, especially the Ministry of the Environment.

This can be seen on the website of the Ministry of Environment which does not yet have a blueprint for regulating the protection of genetic resources. However, if it is linked to Article 160 of the Minister of Environment and Forestry Regulation No. 15 of 2021, it is clear that the Directorate of Conservation of Genetic Species and Biodiversity has the task of carrying out the formulation and implementation of policies in the field of diversity, conservation and species. biology and genetics.

Legislation is one tool to protect Indonesia's genetic resources. If it is like a doughnut, then the outermost circle must be occupied by environmental regulations which provide comprehensive and complete regulations to serve as guidelines in all fields. The middle part of the doughnut consists of several parts from each sector, namely agriculture, fisheries, education, tourism, trade and government, licensing and so on. In the deepest part, in the form of a small hole in the middle of the doughnut, is a place where genetic resources are protected. So if you want to take genetic resources you have to go through environmental regulations first, then to enter the trade sector you have to go through trade regulations and so on in each sector. If Indonesia implements these comprehensive regulations, genetic resources will remain protected but can be utilized and community welfare will also be achieved in a sustainable manner.

Therefore, the Indonesian Government needs to be serious in evaluating the existing legislations on the genetic resources protection. Current conditions will be easy for the Ministry of the Environment carrying out the President's duties in the environmental affairs and the Ministry of Law and Human Rights carrying out the President's duties in the formation and evaluation of legislations together with the legislators (DPR/Parliament) to make an evaluations and then formulate an integrated and comprehensive legislation, to direct policies and to make a blueprint of genetic resources protection in all fields and all levels of the government hierarchy. The provision of the legislation making as regulated in the Act Nr. 13 of 2022 which is the second amendment of the Act Nr. 12 of 2011 on the Legislation Making will greatly support the regulation of the omnibus bill technique in formulating legislations so that it will overcome the obstacles of uncontrolled and uncoordinated legislation distribution in the genetic resources protection.

B. *Stalled Legislation Draft (RUU)*

Based on the National Legislation Programs for 2020-2024 as listed by Website the following bills will be found:

- 1) *Bill on Amendments to the Act on the Conservation of Living Natural Resources and Their Ecosystems in sequence number 168 as the initiative of the Parliament (DPR) and Regional Representative Council (DPD); at the discussion stage;*
- 2) *Bill on Preservation of Genetic Resources in sequence number 242;*
- 3) *Bill on Natural Resources Management Systems in sequence number 259;*
- 4) *Bill on Customary Law Communities in sequence number 160; currently at harmonization stage; and*
- 5) *Bill on the Protection and Preservation of Traditional Culture of Nusantara Kingdom in sequence number 253.*

By omnibus bill technique the existing bills could be combined. For example, the bill regulating natural resources could be combined with the bill on Customary Law Communities and the bill on *Nusantara* Kingdom. In all of the bills it is needed to contain regulations on genetic resources protection. The bill on Customary Law Communities and the bill on the Protection and Preservation of Traditional Culture of *Nusantara* Kingdom could be the basis for customary community legal product making as part of the Indonesian legislation so that the genetic resources protection will be comprehensive in all areas.

VI. CONCLUSION

Based on the discussion it can be concluded that the regulation of genetic resource protection in Indonesia is still spread across several fields and is not yet comprehensive. It is like a "doughnut with a hole in the middle" because there are several fields that do not have legislations, especially in the fields of trade, tourism, village government and research field (biotechnology) so that it will possibly bring a potential impact on bioprospecting and biopiracy practices which will endanger genetic resources in Indonesia and the welfare of the communities.

Therefore, the Ministry of the Environment and the Ministry of Law and Human Rights together with the legislators (DPR/Parliament) should have a cooperation and make a comprehensive evaluation in order to decide policy direction, to make a blueprint, and to formulate a legislation on the genetic resources protection that will become a guide for all fields in protecting the resources.

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