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Legal Implications Access and Benefit-Sharing of Genetic Resources to Supporting the SDGs

Susi Susanti[1], Hieronymus Soerjatisnanta[2], Ria Wierma Putri[3].
[1]Magister Ilmu Hukum, Universitas Lampung, susisuanti1032@gmail.com.
[2]Magister Ilmu Hukum, Universitas Lampung, s.nymus@yahoo.co.id.
[3]Magister Ilmu Hukum, Universitas Lampung, ria.wierma@fh.unila.ac.id.

Corresponding Author: susisuanti1032@gmail.com[1]

Abstract: The protection of genetic resources is fundamental for achieving the Sustainable Development Goals (SDGs), especially in supporting food security, conserving biodiversity, and fostering global partnerships. As Indonesia possesses vast biodiversity, including high-value genetic resources, their preservation has become increasingly important. The Access and Benefit-Sharing (ABS) mechanism, regulated under the Nagoya Protocol, provides a legal framework that balances access to genetic resources with fair and equitable benefit-sharing. ABS directly supports SDG 2 (Zero Hunger) by enhancing food resilience, SDG 15 (Life on Land) by preserving ecosystems, and SDG 17 (Partnerships for the Goals) by fostering international cooperation. However, the implementation of ABS in Indonesia faces significant challenges, such as fragmented national policies, complex inter-ministerial coordination, and the lack of a unified regulatory system. These challenges necessitate strategic recommendations to strengthen ABS, including improving national policies, enhancing coordination, and promoting international partnerships. Strengthening ABS frameworks can better safeguard genetic resources from exploitation, ensure fair benefit distribution to local communities, and promote sustainable innovation and environmental practices. This study analyses the relationship between genetic resource protection, food security, and the critical role of ABS in achieving SDGs. It concludes that addressing legal, institutional, and policy gaps in ABS implementation is essential for harnessing the full potential of genetic resources in supporting the 2030 SDGs. Recommendations include developing comprehensive national legislation, fostering collaboration, and strengthening enforcement to ensure long-term sustainability and global equity in genetic resource management.

Keyword: Access and Benefit Sharing (ABS), Food Security, Genetic Resources, Law, Sustainable Development Goals (SDGs).

INTRODUCTION

Genetic resources are of critical importance for sustainable development and biodiversity conservation. These resources, encompassing the genetic diversity found in plants, animals, and microorganisms, form the foundation for various sectors such as agriculture,

forestry, and fisheries. This genetic diversity is indispensable for the development of crop and livestock varieties that are more resilient to diseases, climate change, and environmental stressors, thereby enhancing agricultural productivity. Moreover, genetic resources are vital to innovation in biotechnology and pharmaceuticals, which contribute significantly to both human health and environmental preservation. The sustainable management and legal protection of genetic resources are thus essential to ensure the continued availability of these biological assets for future generations in a sustainable manner.(Supplement, 2012)

The relationship between genetic resources and the Sustainable Development Goals (SDGs) is particularly pronounced with regard to SDG 2 (Zero Hunger), SDG 15 (Life on Land), and SDG 17 (Partnerships for the Goals). SDG 2 aims to eliminate hunger by ensuring access to sufficient, safe, and nutritious food. In this context, genetic diversity plays a crucial role in bolstering sustainable food systems, providing the genetic basis for breeding improved varieties of crops and livestock that can adapt to varying environmental conditions and mitigate the impacts of climate change.(UNDP, 2017) Meanwhile, SDG 15 underscores the necessity of protecting, restoring, and promoting the sustainable use of terrestrial ecosystems, which are heavily reliant on the preservation of genetic diversity. SDG 17 emphasizes the need for robust international partnerships, particularly in the equitable management and access to genetic resources, as reflected in frameworks such as the Access and Benefit Sharing (ABS) mechanism.(Camp, 2020)

The legal challenges surrounding the protection of genetic resources are intricately linked to global food security. Ensuring food security involves not only the quantitative availability of food but also its quality and the sustainability of its supply chains. Genetic resources are integral to the development of high-performing crops and livestock that are resistant to diseases and adaptable to climate change. However, access to genetic resources is often inequitable, particularly for developing countries that may lack the technological capabilities and scientific expertise to maximize the potential of these resources. Furthermore, the absence of robust legal frameworks for the protection of genetic resources, especially in terms of safeguarding the rights of local and indigenous communities, raises significant concerns about the fair and equitable distribution of benefits derived from the use of these resources.(Frison et al., 2012)

In this regard, the Access and Benefit Sharing (ABS) mechanism established under the Nagoya Protocol seeks to balance the equitable access to genetic resources with the fair sharing of benefits derived from their utilization. The ABS framework aims to prevent the exploitation of genetic resources by unauthorized entities while ensuring that the benefits—whether economic or in the form of scientific knowledge—are shared equitably with the countries or communities that provide these resources. Effective implementation of the ABS mechanism has the potential to significantly contribute to the achievement of the SDGs by ensuring the sustainable use of genetic resources and promoting equity in the distribution of the benefits derived from their exploitation.(Ministers, 2023)

Despite the ABS mechanism's promise in supporting the SDGs, its implementation continues to face numerous obstacles. Legal and institutional challenges, insufficient technical capacity in developing countries, and the lack of alignment between international and national regulatory frameworks frequently impede efforts to protect genetic resources effectively. Without a comprehensive legal framework and coordinated collaboration among stakeholders at both national and international levels, the ABS mechanism is unlikely to fulfilled its objectives. These challenges highlight the need for more concerted efforts to strengthen the ABS mechanism and its role in supporting biodiversity conservation and global food security, both of which are essential to achieving the SDGs.(Pilling et al., 2020)

In light of these complexities, this research seeks to critically examine the relationship between the legal protection of genetic resources and global food security, while also assessing how the ABS mechanism can be leveraged to support the achievement of the SDGs by 2030.

The study will identify the primary legal and practical challenges to the effective implementation of the ABS mechanism and offer policy recommendations to optimize its contribution to the SDGs. By addressing these issues, the research aims to advance the development of a more coherent legal framework that better protects genetic resources and promotes sustainable development in the long term.

METHOD

This research employs a normative legal method, focusing on the analysis of national and international legal frameworks governing Access and Benefit-Sharing (ABS) of genetic resources in relation to the achievement of the Sustainable Development Goals (SDGs). It involves a conceptual and statute approach by critically examining relevant international agreements such as the Nagoya Protocol, the Convention on Biological Diversity (CBD), and the TRIPS Agreement, as well as Indonesia's national regulations. Legal materials, including international treaties, national laws, policy documents, and scholarly literature, are systematically analyzed to identify existing gaps, challenges, and potential improvements in the legal protection of genetic resources. Through doctrinal research, this study aims to construct legal arguments and offer policy recommendations for strengthening ABS mechanisms in support of biodiversity conservation, food security, and sustainable development.

RESULTS AND DISCUSSION

The Legal Relationship Between the Protection of Genetic Resources and Food Security

Genetic resources are pivotal in enhancing global food security, particularly through the genetic diversity that underpins advancements in agricultural productivity. Genetic diversity serves as the foundation for plant breeding, enabling the development of superior crop varieties that are more productive and resistant to pests and diseases. This is particularly crucial for tropical nations such as Indonesia, which, despite possessing high biodiversity, face significant agricultural challenges, including climate change and environmental degradation.(FAO, 2015) The utilization of genetic diversity allows farmers to cultivate crops that are more resilient to extreme environmental conditions, such as droughts and floods, thereby safeguarding food availability and security over the long term.

Moreover, genetic resources present substantial potential for innovation within the fields of biotechnology and agricultural improvement. Biotechnological advancements facilitate the identification and manipulation of specific genes that can enhance both agricultural yields and the nutritional value of crops. For instance, genetic engineering permits the incorporation of disease-resistant genes into food crops, thereby reducing dependency on pesticides and promoting more sustainable agricultural practices.(Ann Thrupp, 2000) By developing high-performing crop varieties through such technologies, it is anticipated that food production systems will become more efficient, stable, and environmentally sustainable.

Legal frameworks governing the protection of genetic resources exist at both the international and national levels, designed to ensure that the countries and indigenous communities from which these resources originate are accorded fair and equitable benefits. Internationally, the Nagoya Protocol, an adjunct to the Convention on Biological Diversity (CBD), governs the access to and equitable sharing of benefits arising from the utilization of genetic resources.(Lubis, 2020) At the national level, various jurisdictions have enacted laws and policies regulating access to genetic resources and recognizing the rights of local and indigenous communities who are the traditional custodians of these resources.

The Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement also plays a significant role in the legal protection of genetic resources, particularly in the context of intellectual property rights. Under the TRIPS framework, member states are obligated to safeguard innovations involving genetic resources while ensuring that local communities and farmers retain equitable access.(Barizah, 2019) For instance, the "farmers' rights" principle,

enshrined in various international agreements, permits farmers to save, use, exchange, and sell their seeds and harvested crops without compromising their access to genetically modified or patented varieties. This form of legal protection is crucial in ensuring that the benefits derived from genetic resources are not monopolized by large corporations but are also enjoyed by the farmers and communities that have traditionally conserved these resources.

Robust legal protection of genetic resources is essential to promoting sustainable food systems, as it ensures that access to and utilization of these resources occur in a manner that is equitable, transparent, and responsible. Through the establishment of clear regulatory frameworks and strong enforcement mechanisms, the use of genetic resources can be directed towards supporting long-term food security objectives while simultaneously preserving biodiversity and ecosystem integrity. Moreover, comprehensive legal regulations facilitate the efficient management of genetic resources, ensuring that access is granted to stakeholders in need, under fair and transparent conditions.(Ario Tranggono Chandra Wirman Any Sulistiowati Teten Avianto & The, 2019)

However, the challenge of harmonizing legal protections for genetic resources with global food security objectives remains a significant obstacle at the international level. Divergences in regulatory frameworks between biodiversity-rich countries and technologically advanced nations that exploit these resources create imbalances in access and benefit-sharing arrangements. Such disparities often result in inequitable benefit distribution, particularly affecting the resource-providing countries, which are predominantly developing nations.(David Laborde, Elsa Olivetti, Valeria Piñeiro, 2024) Hence, it is imperative to pursue international policy harmonization efforts to establish a fair and balanced global framework for managing genetic resources, thereby supporting food security and contributing to the achievement of the Sustainable Development Goals (SDGs).

Access and Benefit-Sharing (ABS) Mechanism in Achieving the SDGs

Access and Benefit-Sharing (ABS) is a legal mechanism enshrined in the Nagoya Protocol, an integral part of the Convention on Biological Diversity (CBD). ABS aims to ensure that countries rich in genetic resources, along with local communities, receive fair benefits from the utilization of these resources by external entities.(Emmy Latifa, 2015) The core principles of ABS are equitable access to genetic resources, balanced benefit-sharing, and respect for the rights of indigenous and local communities. Under these principles, external entities wishing to utilize genetic resources must first obtain permission from the resource owners and agree on mutually beneficial terms for sharing the profits derived from such utilization.(Emmy Latifa, 2015)

The ABS mechanism, as outlined in the Nagoya Protocol, consists of several essential stages. One of these is Prior Informed Consent (PIC), whereby the consent of the resource owners is obtained after they have been provided with sufficient information. Another key element is Mutually Agreed Terms (MAT), which establishes the conditions for benefit-sharing between the genetic resource owners and users. These mechanisms ensure that genetic resources are accessed in a fair manner, with equitable benefit-sharing, whether in the form of financial rewards or other benefits, such as technological support or training.(Environment, 2020)

The implementation of ABS in the international context highlights several best practices that can serve as models for other countries. One notable example is India, where the government has established a system that ensures benefits from the use of genetic resources are shared with indigenous communities that traditionally own these resources. Similarly, countries like South Africa have developed ABS policies that reinforce the rights of local communities and ensure fair benefits for genetic resource holders.(Tvedt & Fauchald, 2011)These cases underscore the importance of integrating ABS into national policies to safeguard traditional rights and promote equity for local communities.

The contribution of ABS to the protection of traditional rights, particularly those of indigenous and local communities, is significant. This mechanism fosters the recognition of traditional knowledge and the rights of local communities over genetic resources. ABS provides a safeguard against unjust exploitation and promotes the fair utilization of genetic resources, taking into account the well-being of local communities. Furthermore, ABS supports the economic development of local communities by ensuring that they benefit from the use of the resources they possess.(Edition et al., 2014) In this sense, ABS plays a crucial role in protecting the cultural and traditional rights of indigenous and local communities.

ABS also directly contributes to achieving several Sustainable Development Goals (SDGs) outlined for 2030. In the context of SDG 2 (Zero Hunger), ABS supports food security by facilitating access to genetic resources necessary for developing more productive and climate-resilient crops. For SDG 15 (Life on Land), ABS promotes the protection of ecosystems and biodiversity by providing economic incentives for countries to conserve their genetic resources.(Prip & Rosendal, 2015) Moreover, in relation to SDG 17 (Partnerships for the Goals), ABS fosters international cooperation and partnerships between genetic resource provider countries and user countries, thereby strengthening global collaborative networks.

ABS has broader implications for promoting green innovation and the achievement of sustainable environmental targets. By encouraging the responsible utilization of genetic resources, ABS contributes to the development of environmentally friendly technologies and innovations, such as biotechnology that harnesses natural resources. These innovations not only enhance environmental resilience but also promote a sustainable green economy by encouraging the prudent use of resources.(NIJAR, 2017) In this regard, ABS serves as the foundation for various initiatives focused on green innovation and sustainability.

Despite its many advantages, the implementation of ABS faces several challenges, including coordination issues among the various stakeholders involved. At the national level, coordination between ministries or agencies responsible for genetic resource protection is often inefficient, while at the international level, countries frequently encounter policy discrepancies that hinder ABS implementation. Moreover, monitoring and enforcement of ABS provisions, especially to prevent unauthorized exploitation, remains a significant challenge.(Mardiastuti, 2019)

One policy recommendation for strengthening ABS implementation is the development of clear and integrated regulations that facilitate coordination among different stakeholders. At the national level, there is a need for a dedicated institution responsible for ABS that can oversee the effective implementation of ABS mechanisms. At the international level, there should be agreed-upon standards to facilitate cooperation between countries for the fair and equitable utilization of genetic resources. (Rourke, 2018)

Additionally, enhancing the capacity of local stakeholders through training and education on ABS and the rights of local communities is essential. This education will empower indigenous peoples to understand their rights concerning genetic resources, enabling them to participate actively in the ABS process.(Nijar, 2011) With these recommendations, ABS is expected to function more optimally in supporting the achievement of the SDGs while safeguarding the rights and welfare of local communities.

CONCLUSION

The protection of genetic resources is essential for improving food security, as these resources provide the genetic material needed to develop crop varieties that can withstand challenges like climate change, pests, and extreme environmental conditions. Strengthening food security directly supports the achievement of the Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger). By using genetic resources responsibly, countries can boost sustainable food production, enhance agricultural resilience, and support the livelihoods of local communities that depend on these resources.

The Access and Benefit-Sharing (ABS) mechanism, established under the Nagoya Protocol, is crucial for ensuring the fair and sustainable use of genetic resources. ABS not only protects the rights of indigenous and local communities but also ensures that benefits from the use of these resources are shared fairly. Through ABS, countries can work together to preserve genetic resources and form beneficial partnerships, which are particularly important for achieving the SDGs, such as SDG 15 (Life on Land) and SDG 17 (Partnerships for the Goals). ABS also promotes green innovation and environmentally friendly technologies, which help meet sustainability goals.

To further strengthen the contribution of ABS toward achieving the SDGs, more intensive international collaboration is required in the management of genetic resources. Nations need to develop strategies that facilitate cross-border coordination and cooperation, while also integrating ABS principles into their national policies. Strengthening legal mechanisms and the effective implementation of ABS must be prioritized to ensure that regulations related to access and benefit-sharing are effectively enforced at both national and local levels. By adopting this approach, the protection and utilization of genetic resources can be sustainably managed to support food security, social equity, and environmental well-being, in alignment with global sustainable development goals.

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