
RESEARCH ARTICLE

The Impacts of Eco-Tourism and Agrotourism Based on Plant Variety Protection to Sustain Biological Diversity and Green Economic Growth in Indonesia

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ABSTRACT

Ecotourism and agrotourism have contributed to green economic development as well as to the development of plant variety protection. Agrotourism is a form of commercial enterprise that links agricultural production and/or processing with tourism to attract visitors to a farm or other agricultural businesses for recreation, entertainment, or education for visitors and to generate income for the farm or the business owner. Ecotourism encompasses nature-based activities that increase visitor appreciation and understanding of natural and cultural values. In order to encourage the community and business owners to participate in eco-tourism and agrotourism, it is imperative to protect plant variety as one of the regimes of intellectual property rights. The aim of the research is to analyze the impacts of ecotourism and agrotourism based on plant variety protection contributing to the sustainability of biodiversity and green economic growth in Indonesia comprehensively. This research is normative juridical research by employing conceptual and statutory approaches. The result of the research found that enhancing ecotourism and agrotourism based on plant variety protection can sustain and enrich biodiversity achieving green economic growth in Indonesia. However, there are some achievements and challenges that have to be addressed, such as the harmonization of the regulations, encouragement of the community and business owner participation in ecotourism and agrotourism by creating a new variety of plants to enhance biodiversity to achieve green economy development in Indonesia.

KEYWORDS

Ecotourism, agrotourism, plant variety protection, biodiversity, and green economy

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1. Introduction

As the largest archipelagic state in the world¹ and one of mega biodiversity, Indonesia is rich in biodiversity and other natural resources as well as cultural heritages. However, Indonesia has serious problems with housing, water, and food shortages, as well as massive natural disasters and loss of biodiversity due to over-exploitation, land conversion and climate change. Hence, Indonesia

¹Kementerian Lingkungan Hidup dan Kehutanan Indonesia. (2021). Indonesia's Updated NDCs For A Climate Resilient Future. Accessed on 10 October 2022 from <http://greengrowth.bappenas.go.id/en/indonesias-updated-ndc-for-a-climate-resilient-future/>.

has developed a five-year development plan that will serve as the country's first low-carbon development initiative. The government expects that the plan will keep future development projects within the limits of the country's ecological "carrying capacity" of rapidly depleting natural resources.² Accordingly, Indonesia has changed its economic policy, which was previously not environmentally sound, into a green economy policy.

The five-year green development plan also aims to attract green investment, which is critical if the country is to meet its stated goal of reducing greenhouse gas emissions by 29 percent from business-as-usual levels by 2030.³ In 2011, the United Nations Environment Program (UNEP) defined a "green economy as one that results in improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities".⁴ In other words, the green economy is low-carbon, resource-efficient, and socially inclusive. In a green economy, public and private investments reduce carbon emissions and pollution. It improves energy and resource efficiency and the prevention of the loss of biodiversity and ecosystem services.⁵

Ecotourism and agrotourism can be used as tools to materialize green economy growth in Indonesia as well as to implement protection of plant variety. Ecotourism and agrotourism can encourage public participation to achieve green economic growth and sustain Indonesian biological diversity. The green economy integrates sustainable development principles⁶ in policy and implementation. Sustainable development has three pillars, namely economic development, protection of the environment and social development and which have to be coherently implemented. Thus, a green economy entails devoting legal and financial resources to developing a technology policy that addresses adaptation and environmentally sound energy innovation.⁷ Ecotourism and agrotourism need to manage the sustainable uses of natural resources and biodiversity by utilizing innovation, environmentally sound technology and renewable energy.

The development of ecotourism and agrotourism in Indonesia aimed to support green economic growth. One of the approaches that have been carried out to materialize green economic growth is a greening economy with agriculture (GEA). The GEA can be achieved by applying an ecosystem approach to agriculture, forestry, and fisheries management in a way that addresses a wide range of societal needs and desires while not jeopardizing future generations' ability to benefit from the full range of goods and services provided by terrestrial, aquatic, and marine ecosystems.⁸

However, the key to success for the development of ecotourism and agrotourism, which are based on the rural tourism concept, needs a community-based approach and community participation. The absence of community participation will cause serious impacts on ecotourism and agrotourism since community participation is one aspect of ecotourism and agrotourism. It is in accordance with the development of tourism at the international level, which has the root of rural tourism. Rural tourism encompasses a variety of activities and concepts, such as agrotourism, ecotourism, green tourism, and nature tourism.⁹

In order to encourage more public participation both from the community and business owners in the development of ecotourism and agrotourism, it is necessary to provide an economic incentive to the member of the community who has a direct contribution to enhance biodiversity in the form of creating a new variety of plant. It is obvious that the loss of biodiversity in the places that have resulted from tourism¹⁰. The ecotourism or agrotourism sites needs to be conserved besides increasing the biodiversity by

² Hans Nicholas Jong. (19 June 2018). Facing Resource Crisis, Indonesia Charts A 'Green Development' Course. Accessed on 8 October 2022, from <https://news.mongabay.com/2018/06/facing-resource-crisis-indonesia-charts-a-green-development-course/>.

³ *Ibid.*

⁴ Global Green Growth Institute. (2014). Green Growth Concepts and Definitions. At 6. Working Paper October 2014. Accessed on 10 October 2022 from <http://greengrowth.bappenas.go.id/wp-content/uploads/2018/05/Green-Growth-Concept-Definitions-Paper.pdf>.

⁵ Andika Raka Dianjaya and Pretti Epira. (2020). Indonesia Green Economy Implementation Readiness of Greenhouse Gas Emissions Reduction. *Journal of Contemporary Governance and Public Policy*. 1(1), 28-29.

⁶ Rio Declaration on Environment and Development principle 8 writes sustainable development. "To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies". <https://www.cbd.int/doc/ref/rio-declaration.shtml>.

⁷ Elizabeth Burleson. (Fall, 2011). From Coase to Collaborative Property Decision-Making: Green Economy Innovation. *Tulane Journal of Technology and Intellectual Property*.14, 80.

⁸ FAO. (2012). Greening Economy with Agriculture. At 4. Accessed on 8 October 2022 from. <https://www.fao.org/nr/sustainability/greening-the-economy-with-agriculture-gea/en/>

⁹ Zakia. (2021). Ecotourism in Indonesia: Local Community Involvement and The Affecting Factors *Journal of Governance and Public Policy* 8 (2) https://www.researchgate.net/publication/352820724_Ecotourism_in_Indonesia_Local_Community_Involvement_and_The_Affecting_Factors

¹⁰ The Plant Variety Protection (PVP) system started in 1998 in Korea with 27 species. Later in 2008 the forest sector joined to the PVP with 15 species of chestnut, oak mushroom. In 2012, PVP extended to all plant species in 2012 having 20~30 new varieties registered each year. With the direct help of consulting and promotion of the PVP by the designated government entity, individual breeders and the seed industry has increased. Increased visit to the local community is also linked to the accreditation of biodiversity in Korea.

creating a new variety of plant using the plants or genetic resources which are available only in those areas, not others. If a new variety of plants fulfills the requirement to be protected by Plant Variety Protection (PVP), namely, new(novelty), unique(distinctness), uniform(uniformity), stable(stability), name (denomination) having 5 elements satisfied, a new variety of plant can be protected by PVP.

Article 27(3) Trade-Related Aspects of Intellectual Property (TRIPs) Agreement¹¹ states that: "... However, members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof...". Indonesia became a Member of the World Trade Organization (WTO) in 1994. One of the covered agreements under the WTO is the TRIPs Agreement. It aims to improve international intellectual property protection in order to boost global trade. TRIPs also aims to promote rapid international economic development, which will almost certainly result in a virtual technological transformation of human society and possibly much of the natural world. Consequently, Indonesia has to implement the TRIPs Agreement at the national level. In 2001 Indonesia issued Law number 29 the Year 2000 concerning Plant Variety Protection.

Based on consideration of Law Number 29, the Year 2000 states " that in order to further increase the interest and role of an individual or corporate body to conduct cultivation activities in producing new and superior varieties, plant breeders or the Plant Variety Protection rights owner are given certain rights and legal protection".¹² The legal protection of plant variety will contribute to the creation of new varieties and support the ecotourism and agrotourism that practicing in Indonesia. However, it should bear in mind that the protection of plant variety may cause negative impacts on the biodiversity and environment if it is not managed properly by causing only the hybrid variety which exists while the other variety will not be planted anymore, making the result of those kinds of varieties becomes extinct which will reduce the biodiversity which is promoted by the Convention of Biological Diversity.

The aim of the paper is to analyse the impacts of ecotourism and agrotourism based on plant variety protection to sustain biological diversity and green economic growth in Indonesia comprehensively. This paper consists of four parts, including an introduction and a conclusion. It is structured as follows. Part one is an introduction; Part two discusses the research method; Part three discusses the results of the paper, which consists of the development of ecotourism in Indonesia, the development of Agrotourism in Indonesia, The relationship between the protection of Plant Variety and Biological Diversity; The Relationship between Protection of Plant Variety and Green Economic Growth; The challenges of Eco-Tourism, Agrotourism and Plant Protection to Sustain Biodiversity and Achieve Green Economic Growth in Indonesia; The Achievements and Opportunities of Eco-Tourism, Agrotourism and Plant Protection to Sustain Biodiversity and Achieve Green Economic Growth in Indonesia.¹³ Finally, the paper is completed with a conclusion.

This research is normative juridical research. According to Soerjono Soekanto,¹⁴ a normative juridical approach is a legal research conducted by examining library materials or secondary data as the basic material for research by conducting a search on regulations and literature related to the problem under the study. Normative juridical research is conducted by examining and interpreting theoretical matters relating to principles, conceptions, doctrines and legal norms related to ecotourism, agrotourism and protection of plant variety as well as the impacts the green economic growth and sustainable uses of biodiversity. While the approaches employed in this research are statutory and conceptual approaches.

2. The Development of Ecotourism in Indonesia

Throughout the 1980s and 1990s, ecotourism gained international recognition when the United Nations declared the International Year of Ecotourism in 2002.¹⁵ A series of conferences and panels held around the world celebrated tourism while also advocating for environmentally sound industry planning and practices. The theory of ecotourism integrated sustainable development and technological innovation while conserving natural resources and balances. However, a key concept in the ecotourism industry is the maintenance of cultural balance while increasing tourism activities and limiting negative consequences. It can be argued that

¹¹ The Full text of Article 27 (3) TRIPs Agreement as followed "Members may also exclude from patentability: (a) diagnostic, therapeutic and surgical methods for the treatment of humans or animals; (b) plants and animals other than micro-organisms, and essentially biological processes to produce plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.

¹² The General Elucidation of Act Number 21 Year 2000 Concerning Protection of Plant Variety.

¹³ The International Ecotourism Society. (2019). What is Ecotourism?. Accessed on 6 Oktober 2022 from <https://ecotourism.org/what-is-ecotourism/>

¹⁴ Soerjono Soekanto & Sri Mamudji, *Penelitian Hukum Normatif (Suatu Tinjauan Singkat)*, (Jakarta: Rajawali Pers, 2001), p. 13–14.

¹⁵ Jim Butcher. (2006). The United Nations International Year of Ecotourism: a critical analysis of development implications. *Progress in Development Studies* 6, 2 (2006) p 147. (146–156)

ecotourism provides a source of livelihood for local people, which encourages and empowers them to preserve the biodiversity of their local area.¹⁶

Indonesia is rich in biodiversity and cultural heritage. The beauty of Indonesian landscape and scenery are very famous. Many tourists from all over the world visit Indonesia. Indeed, tourism has positive and negative impacts on the environment and culture. Thus, it is necessary to determine what kinds of tourism will be developed in Indonesia. Tourism policy should be directed towards a way to support green economy development and the welfare of society, as well as to protect and preserve the environment in Indonesia. Tourism policy can boost the goal of green economy development with the help of the Protection of plant variety program. The government of Indonesia has already made a policy to develop ecotourism in Indonesia. Ecotourism was first conceptualized in the early 1980s¹⁷ as a type of travel for people who wanted to learn about different and exotic environments without causing the environmental harm or damage associated with other forms of tourism.

The definition of ecotourism was introduced by The International Ecotourism Society (IES), which states, "Ecotourism is about uniting conservation, communities, and sustainable travel".¹⁸ It also states an important principle by stating "all stakeholders who participate and conduct ecotourism activities should adopt the following ecotourism principles, such as :

- a. Minimize physical, social, behavioural, and psychological impacts.
- b. Build environmental and cultural awareness and respect.
- c. Provide positive experiences for both visitors and hosts.
- d. Provide direct financial benefits for conservation.
- e. Generate financial benefits for both local people and private industry.
- f. Deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates.
- g. Design, construct and operate low-impact facilities.
- h. Recognize the rights and spiritual beliefs of the Indigenous People in your community and work in partnership with them to create empowerment"¹⁹.

Thus, it can be characterized that ecotourism is a form of tourism that is responsible for preserving natural areas, creating economic benefits and maintaining the cultural integrity of local communities, which is also a form of special tourism interest. Ecotourism is a type of sustainable tourism that has a positive impact on environmental sustainability and community welfare because the tourism industry has many significant advantages of spill-over to other industries. At the same time, programs for preserving its natural resources and sustainable tourism must be developed. Along with the concept of sustainable development, the concept of sustainable tourism development is evolving. Nature, education, and sustainability are some of the characteristics of ecotourism. Ecotourism is a combination of environmental, social, and economic interests.²⁰

As a result, ecotourism development takes into account ecological factors and conducts selection in areas that will be used as tourism objects. Ecotourism is a type of alternative tourism that uses natural resources to empower people. Ecotourism is also developed through cultural tourism activities²¹ in order to be consistent with ecotourism development, which is based on the uniqueness and condition of existing areas through development by empowering communities to develop socially and improve social status in society. Furthermore, ecotourism is in accordance with the sustainable development principle.

The challenges in the development of ecotourism are community participation and a lack of supporting facilities. For the time being, ecotourism development is sufficient and is dependent on natural dimensions because it has a high attraction value.

¹⁶ Dolma Foundation. (2018). Ecotourism as a tool for Sustainable Community Development. Accessed on 11 October 2022. From <https://www.linkedin.com/pulse/ecotourism-tool-sustainable-community-development-dolma-eco-tourism>

¹⁷ Dimitrios Diamantis . (2010) The Concept of Ecotourism: Evolution and Trends. Les Roches Management School, Tourism Research Centre, CH-3975, Bluche, Switzerland, 93 Accessed on 11 October 2022 from https://www.researchgate.net/publication/261641090_The_Concept_of_Ecotourism_Evolution_and_Trends

¹⁸ The International Ecotourism Society. (2019). What is Ecotourism?. Accessed on 6 October 2022 from <https://ecotourism.org/what-is-ecotourism/>

¹⁹ *Ibid.*

²⁰ Syora Alya Eka Putri. (2018, 18 September). The Development of Ecotourism as a Sustainable Tourism. Accessed on 6 September 2022, from <https://alyadjunas19.medium.com/pengembangan-ekowisata-sebagai-pariwisata-berkelanjutan-serta-dampaknya-bagi-keberlanjutan-d916fee005d6>

²¹ Violante Martínez Quintana. (September,2020). Eco-Cultural Tourism: Sustainable Development and Promotion of Natural and Cultural Heritage. DOI: 10.5772/intechopen.93897. Accessed on 11 October 2022 from <https://www.intechopen.com/chapters/7337>

However, the natural environment must then be preserved through ongoing education. Ecotourism areas must be developed to increase promotional activities and provide additional facilities to support ecotourism activities. Proper management of the natural environment is also required in the development of ecotourism areas to ensure the survival of ecological functions. In Indonesia, there are numerous tourist destinations that can be developed for ecotourism. Nonetheless, the development of potential tourism destinations has received little attention. As a solution, the development of a creative economy can help to build ecotourism.²²

The Minister of Home Affairs Regulation Number 33 of 2009 concerning Guidelines for Ecotourism Development states the goal saying, "ecotourism development must empower the local community.". Ecotourism Development regulations have well-adopted ecotourism principles by including the active role of the surrounding community in planning, exploiting, and controlling ecotourism activities with respect for ecotourism, socio-cultural, and religious values of the community.²³

3. The Development of Agrotourism in Indonesia

Indonesia is located between Asia and the Australian continent, as well as between the Pacific and Indian oceans. Biogeographically, the western part of Indonesia (Sumatra, Kalimantan, Java, and Bali) is Asian, whereas the eastern part, Maluku and Irian Jaya (Papua), is Australian. Sulawesi and Nusa Tenggara, on the other hand, have distinct characteristics. Furthermore, the diversity of ecosystems reflects the diversity of the country's flora and fauna. As a result, the diversity of flora, fauna, and their ecosystems, as well as the diversity of culture, are prime candidates for development as ecotourism and agrotourism destinations.²⁴

Agriculture tourism has a lot of potential in Indonesia because the agriculture sector and the government have a positive attitude toward tourists and tourism. In addition to agricultural tourism, Indonesia has other resources such as rivers, mountains, and the natural environment. In terms of agricultural tourism implementation in Indonesia, non-governmental organizations (NGOs) have sway over government tourism policies. Agrotourism is a collaboration of two sectors that is tourism and agriculture. Visitors travel as tourists to enjoy, relax and spend time and money for enjoyment and happiness while visiting agricultural areas and participating in agricultural activities such as harvesting, planting, and fishing.²⁵

Developing a new tourism model of agrotourism itself contributes to tourism. Information about the contributions made by agrotourism in many destinations is still scarce. The primary goal of agrotourism development is to create novel tourist attractions while preserving the ecosystem through a sustainable tour program. Furthermore, it serves a variety of functions, including media promotion of agricultural products, increases in foreign exchange and farmer earnings. Agrotourism as a new tourism attraction model should not be measured separately in the tourism product concept because the total package of tourism products is actually found in the interaction and interconnection among transportation, lodging, and food and beverage sectors.²⁶

When we develop land, in general, after the landscape development concept planning is done, more specific concepts are formulated. One of them is the green/vegetation/plant concept. The basic green concept of the agrotourism landscape is the composition and placement of plants that contribute to developing an interesting and satisfying, environmentally friendly and profitable agrotourism area under an organic management system. Indeed, a strategy for sustainable rural development has included tourism as one of the tools to support rural development. Rural tourism is a viable tool to support rural development under many limitations of development.²⁷

²² Utin Nina Hermina. (2022). Development Of Ecotourism Through Tourist Village Marketing Strategies To Increase The Visit Of Tourists In Kapuas Hulu Regency. *Jurnal Mantik*, 6, No. (2), at 2296 .

²³ Inez Cara Alexander Phoek, et.al (2021). Analysis of Ecotourism, Culture and Local Community Empowerment: Case Study of Wasur National Park – Indonesia. DOI: [10.30564/mmpp.v3i2.3414](https://doi.org/10.30564/mmpp.v3i2.3414). Accessed on 11 October 2022. From [researchgate.net/publication/353642327_Analysis_of_Ecotourism_Culture_and_Local_Community_Empowerment_Case_Study_of_Wasur_National_Park_-_Indonesia](https://www.researchgate.net/publication/353642327_Analysis_of_Ecotourism_Culture_and_Local_Community_Empowerment_Case_Study_of_Wasur_National_Park_-_Indonesia)

²⁴ I Gusti Bagus Rai Utama. (2021). Agrotourism as an Alternative Form of Tourism in Bali Indonesia. At 28. Dissertation. [Download citation of Agrotourism as an Alternative Form of Tourism in Bali Indonesia \(researchgate.net\)](https://www.researchgate.net/publication/353642327)

²⁵ *Ibid.*

²⁶ Indonesia National Committee. (2022). Fun to Tour and Fun to Farm with Agrotourism. Accessed on 11 October 2022. From <https://iaas.or.id/fun-to-tour-and-fun-to-farm-with-agrotourism/>

²⁷ Luchman Hakim, et.al. (2019). Fostering Coffee Agroforestry For Agrotourism Development In Degraded Land In A Buffer Zone of A National Park: A Case Study From Poncokusumo, Malang, Indonesia. *Eur Asian Journal of Bio Sciences Eurasia Biosci* 13, (2019). Page 1614. Accessed on 6 October 2022 from [epository.unisma.ac.id/bitstream/handle/123456789/2338/fostering-coffee-agroforestry-for-agrotourism-development-in-degraded-land-in-a-buffer-zone-of-a-7313.pdf?sequence=1](https://www.ejournal.unisma.ac.id/bitstream/handle/123456789/2338/fostering-coffee-agroforestry-for-agrotourism-development-in-degraded-land-in-a-buffer-zone-of-a-7313.pdf?sequence=1).

4. The Plant Variety Protection: Overview

The essential goal of protecting plant varieties program is protecting plant breeders. Sometimes plant breeders or cultivators encounter problems when they deliver varietal seeds to buyers, which allow the buyer to produce varieties without giving the plant breeders the opportunity to resupply seeds. This is due to the character of the plant that can be reproduced or propagated by the plant itself. In Indonesia, the regulation of plant variety protection refers to Law No. 29 of 2000 concerning the protection of plant varieties, known as UUPVT. The purpose of this regulation is to provide adequate legal protection for new high-yielding plant varieties, which accelerates Indonesia's agricultural development. Prior to the issuance of this Law, all forms of invention related to plant varieties were protected by patent law.

Article 1 point 3 of Law Number 29 of 2000 concerning Protection of Plant Varieties (PVP) defines plant variety as a group of plants of a type or species characterized by plant shape, plant growth, leaves, flowers, fruits, seeds, and characteristic expressions, genotype or combination of genotypes that can differentiate from the same type or species by at least one defining trait and when reproduced, does not change. Referring to this normative definition, the resulting plant varieties must show differences in both form and characteristics from other plant varieties.²⁸ While the term plant breeding is a series of research and testing activities or activities of discovery and development of a variety according to standard methods to produce new varieties and maintain the purity of the seeds of the varieties produced.

Plant Variety Protection (PVT) is basically *sui generis* (self-regulating) which means that the protection of this plant variety is regulated based on its own rules. A Plant variety cannot be included in the Patent system because the nature of the plant is categorized as one of the living things. TRIPS-WTO provisions address the same context. Plant Variety Protection (PVT) is defined as special protection provided by the state. In the case of plant variety, it is represented by the government and its implementation is carried out by the Office of Plant Variety Protection. Plant breeders produce plant varieties through plant breeding activities.

In the development of new plant varieties, it is known that two practical ways are generally used for plant breeding, namely: a. through classical plant breeding b. through modern biotechnology, where genetic engineering and tissue culture techniques (often referred to as "biotechnology") allow the transfer of useful features between plant species and even between plants and animals.²⁹

A plant variety can be granted plant variety protection when it meets the requirements. The plant variety has the following criteria:³⁰

1. Novelty, i.e., a plant variety, is considered new if the seeds or seeds of the plant variety have never been traded/distributed in Indonesia prior to the delivery of Plant Variety Protection (PVP) registration. The grace period of a plant variety is still considered new for an application for Plant Variety Protection (PVP) if: a. Has been traded in Indonesia for not more than: 12 months for one-season crops or 24 months for annual crops; b. It has been traded abroad for no more than: 48 months for one-season crops or 72 months for annual crops.
2. Unique, i.e., a plant variety, is considered unique if the variety can be clearly distinguished from other varieties based on one or more features that are already known to the public and have been widely distributed when the PVP application is registered.
3. Uniform, i.e., a plant variety, is considered uniform if its main features have been shown to be uniform, although it may vary in cultivation methods and the environment.
4. Stable, i.e., a plant variety, is considered stable if its genetic features do not change after being cultivated several times, and for those produced through a special reproductive cycle, it does not change at the end of the cycle.
5. Named, namely plants that have met the protection requirements, are given a name. The naming is done based on the rules that apply in the biological sciences, agriculture, or forestry.

Plant varieties that are excluded from PVP are those that violate applicable laws and regulations, public order and morals, religion, health, and the environment. To obtain PVP, plant varieties must be registered with an institution designated by the Plant Variety Protection Act (UU NO. 29 of 200), namely the Plant Variety Protection Office of the Ministry of Agriculture. The coverage of the protected area is per country; that is, if the application is submitted in Indonesia, then it is only protected in Indonesia.

PVP rights holders are breeders, individuals or legal entities, or other persons who further receive PVP rights from PVP rights holders. If a variety is found in an employment relationship, the party providing the work is the holder of the PVP rights unless

²⁸ Tim Lindsey, at, al. (2006). *Hak Kekayaan Intelektual Suatu Pengantar*. Bandung: Alumni, p. 231.

²⁹ Helianti Hilman dan Ahdiar Romadoni. (2001). *Pengelolaan dan Perlindungan Aset Kekayaan Intelektual Panduan Bagi Peneliti Bioteknologi*. Jakarta: The British Council, p. 120.

³⁰ Ni Ketut Supasti Dharmawan, at.al. (2016). *Hak Kekayaan Intelektual: Buku Ajar*. DIY: Deepublish Publisher, p. 162.

otherwise agreed between the two parties without prejudice to the rights of the breeder. If a variety is found based on an order, the party who gave the order becomes the holder of the PVP rights unless agreed otherwise by both parties and does not reduce the rights of the breeder.

Specific rights in using plant varieties granted to PVP rights holders include the following activities: - seed reproduction - preparation of seed reproduction - selling or trading - advertising - exporting - importing - creating reserves for reproductive purposes, preparing seed reproduction, selling, or trading, advertising and export. In addition to these rights, PVP rights holders are also required to: - carry out PVP in Indonesia - pay an annual PVP fee - show and show samples of plant varieties that have been given PVP in Indonesia.

The obligation to carry out PVP in Indonesia is waived if it is technologically or economically impossible to implement in Indonesia. The party releasing this obligation can be given PVP only if it sends a request accompanied by reasons and evidence by the competent authority. Activities that are excluded from PVP violations are: - the use of several seeds produced from protected PVP for personal and non-commercial purposes - the use of protected plant varieties for research or assembling new varieties - the use of PVP protected by the government if the government uses a decree The President deals with the procurement of food and medicine.

As with most other branches of intellectual property rights, registration of Plant Variety Protection is absolutely mandatory to protect the right. The only difference from other branches is that the registration application process is not carried out by the Intellectual Property Rights office but by the Plant Variety Protection Office of the Ministry of Agriculture. The application for registration is submitted in writing in the Indonesian language which contains: - the date, month, and year of the application letter; - the full name and address of the applicant; - the name, full address, nationality of the breeder and the name of the appointed heir; the name of the variety; - a description of the variety; and - the images and/or photos mentioned in the description.

PVP rights can only be applied for one variety. The application can be made by breeders, individuals or legal entities that employ breeders or order varieties from breeders, heirs, or PVP consultants. PVP rights applications submitted by applicants who do not reside or are permanently domiciled in the territory of Indonesia must go through a PVP consultant in Indonesia as the proxy.

The period of protection varies, depending on the type of plant. The period of protection is divided into 2, namely: a. for seasonal plant species, the protection is 20 years, b. for its annual protection for 25 years. The PVP protection period is calculated from the Filing date of a PVP application. However, temporary protection is given to the applicant since the complete application is submitted to the Plant Variety Protection Office.

In Law Number 29 of 2000 concerning the Protection of Plant Varieties, the transfer of PVP rights is regulated in Articles 40 to 55. PVP rights can be transferred or can be transferred by way of inheritance, grants, wills, agreements in the form of a notarial deed, or other reasons permitted by law.

A. *The Relationship between the Protection of Plant Variety and Biological Diversity*

Intellectual property rights (IPRs) do not provide plant patents until the twentieth century. Plant genetic resources (PGR) for food and agriculture were considered part of the "common heritage of mankind"³¹ and, as such, were not subject to individual ownership. Indeed, some argue that subjecting organic material to IPRs leads to the "devaluation of life." In any case, assigning IPRs to this new domain constituted an intrinsic shift in the way the world approached what could be owned. Extending IPRs to PGR effectively takes PGR out of nature, turning it into a commodity that can be owned. For most of history, farmers not only planted and harvested but also bred and improved their own crops. Farmers saved seeds from plants with desirable characteristics, leading over time to the production of plant varieties adapted to local conditions. As a "common heritage" good, PGR was freely exchanged within and between farming communities as individual growers sought to improve the PGR they depended on for their own subsistence.³²

The commercialization of the crop breeding and improvement processes set the stage for the development of IPRs in PGR. In practice, farmers are preferable to abandon plant breeding responsibility to independent seed producers for the convenience of buying seed from dealers because creating new plant varieties requires a lot of work. It can take up to ten years and a good deal

³¹ Lauren Winter. (January,2010). Cultivating Farmers' Rights: Reconciling Food Security, Indigenous Agriculture, And Trips. *Vanderbilt Journal of Transnational Law*. 43, 226-227.

³² *Ibid*.

of labour to create a new plant variety. Plants must be bred and cross-bred over several seasons in order to produce a new plant variety with a desirable characteristic, such as drought tolerance, and as many as fifty parental lines may be used to create one new variety of plants.³³

In the creation of a new variety of plants, the breeders utilize the existing plants or genetic resources which are available in nature. The existing plants and genetic resources are the elements of biodiversity. Before the adoption of the biological diversity Convention, genetic resources were assumed as a common heritage of mankind, and every state had the right to utilize the genetic resource without any obligation to give a reward to the state where the plant and the genetic resources were located. It is not fair for the states where the genetic resources or plants are located. Finally, the United Nations Conference on Environment and Development (UNCED), also known as the 'Earth Summit', was held in Rio de Janeiro, Brazil, from 3-14 June 1992 and adopted the Biodiversity Convention.³⁴

The Biodiversity Convention was the first global treaty to take a comprehensive, eco-system-based approach to the protection of biodiversity. The Biodiversity Convention created Intellectual Property Rights (IPR) for biodiversity, giving member nations the right to restrict access to biodiversity and the right to compensation for the use of this biodiversity. The objective of the Convention is stipulated in Article 1 of the Convention states:

The objective of this Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity. The sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding

Based on the objective of the Convention, it can be submitted that biodiversity can be utilized to the extent that the utilisation of the biodiversity should be in a sustainable manner. There is no prohibition of utilising biodiversity for the development of a new variety of plants protected by the Intellectual Property Rights Law. However, the utilisation of biodiversity should not damage or pollute biodiversity, such as the creation of genetically modified plants may jeopardize and pollute biological diversity when there is a gen mutation that is not able to be controlled and spread out to other species of plants.

On the other hand, the UPOV Convention and Trade-related Aspects of Intellectual Property Rights (TRIPs) Agreement provides a *sui generis* form of Intellectual Property protection for the process of plant breeding and is developed to encourage breeders to develop new varieties of plants based on the existing biodiversity. The Protection of plant variety will encourage breeders to create new varieties of plants that may contribute to enhancing biodiversity because the right holders of the protection of plant variety (PVT) will have an exclusive right to the plant created by the breeders. Related to Ecotourism and agrotourism activities, the protection of plant variety (PVT) will encourage the breeders in agrotourism as part of ecotourism to create new varieties of plants.³⁵

The new varieties of plants that are developed from the genetic resources in a certain community will have a unique character that may not be found in other locations, such as the creation of various kinds of flowers which is different from the original flowers, which have bigger form and more colour in one plant or the fruits that may have combination taste, such as mango taste apple. Those kinds of flowers and fruits may have more attraction to the tourist to come to this location. In order to qualify for plant variety rights, a new variety must undergo official tests to determine whether it is distinct, uniform, and stable (DUS). For most crop species, these independent tests take two years.

It can be argued that the development of a new variety of plants by utilizing the existing biological diversity may cause positive and negative impacts on biodiversity, such as the creation of a new variety of plants that use the existing biodiversity to enhance the quality of the plants concerning the ability of the plant itself to be planted in the dry area which is originally the plant needs enough water to live and to grow well. Of course, the creation of the plant cannot be developed conventionally, but it needs the use of biotechnology. In this matter, the creation of a new variety of plants is one of the efforts to solve the problem when conventional plants cannot live in the dry area,

³³ A. Max Jarvie. (2016). Productivity And Diversity in Research and Agriculture: Improving the IPR Landscape for Food Security. *William and Mary Environmental Law and Policy Review*. 40, 867-868.

³⁴ Rachelle Adam. (2010). Missing The 2010 Biodiversity Target: A Wake-Up Call for The Convention on Biodiversity? *Colorado Journal of International Environmental Law and Policy*, 21, 135.

³⁵ Amy Nelson. (2005). Is There an International Solution To Intellectual Property Protection For Plants? *George Washington International Law Review*, 37, 1008-1009.

On the other hand, the creation of a new variety of plants may cause a negative impact on biodiversity, such as the development of transgenic corn, which kills its own pest. It may be good in the short run if it is accompanied by a good policy. For example, the government issuing policy that introduces guideline which includes transgenic plant should not eradicate the conventional corn to be planted. In this case, it is imperative to educate the farmers that in utilizing the seeds which are genetically engineered must be careful and not eradicate the existing plant which exists naturally.³⁶ The bad thing may occur when all farmers do not want to cultivate conventional plants, and so demand for the transgenic plant may cause decreasing biodiversity.

5. The Relationship between the Protection of Plant Variety and Green Economic Growth in Indonesia

In general, there is still debate regarding the relationship between IPR protection and economic growth. However, the authors believe that there is a positive effect of IPR protection in general on economic growth and welfare improvement. This is in line with the opinion of Bostyn (2013), which states that: 'Intellectual property systems do not live in a vacuum, but are instruments of economic regulation, and influence economic behavior.'³⁷ indicated by the following findings:³⁸

"A study on Vietnam estimated the impact on the country's Gross Domestic Product (GDP) at around USD 5 billion per year, which is more than 2.5% of its national GDP. The Kenya Plant Health Inspectorate Service (KEPHIS) explained how the UPOV system enabled Kenya to develop a USD 500 million cut-flower industry that employs 500 000 Kenyans. In Australia, 95% of wheat breeding programs were funded by the public sector before accession to the UPOV 1991 Act; following UPOV membership, wheat breeding is completely funded by the private sector due to the income generated by End Point Royalties. In Canada, the ratification of the UPOV 1991 Act has resulted in new investments from the private sector in wheat breeding, foreign-domestic partnership in cereal breeding, the development of a public-private-producer breeding consortium to fund Canadian Prairie Spring Red Wheat (CPSR) and an increased number of new plant variety rights applications."

The practice of these countries shows that there is a positive relationship between the protection of plant varieties and economic growth. In addition, empirical studies in the European Union show that there is an economic contribution in the European Union of the CPVR system specifically related to the European Commission's Green Deal objectives, namely: Climate Neutral Europe, Ecosystems & biodiversity, to address the protection of the environment and to contribute to halting the loss of biodiversity; Farm to Fork strategy, to ensure the production of sustainable, safe, nutritious and high-quality food along the whole value chain while ensuring food security by seed security; R&D and innovation in climate-friendly technologies.³⁹ Thus, it can be said that the protection of plant varieties also encourages green economic growth. UNEP defines a green economy as one that results in "improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities."⁴⁰ It can simply be described that the parameters of the green economy are low-carbon, resource-efficient, and socially inclusive. In a green economy, growth in income and employment are driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services.⁴¹

However, an empirical test of the relationship between the protection of plant varieties and green economic growth in Indonesia has not been all positive. Even though learning from the practice of other countries, it is believed that in the future, the Indonesian government can accelerate green economic growth triggered by the protection of plant varieties. However, a study of ecotourism relating to the impact on the development of the local economic dimension has proven positive. The result of the study on ecotourism development impacts on plant diversity in a cultural park of Setu Babakan, Jakarta, Indonesia, proves a positive impact.⁴² Furthermore, A case study in an agro-tourism landscape in Tampusu, North Sulawesi, Indonesia, also shows that the

³⁶ A. Max Jarvie. (Spring, 2016). Productivity And Diversity In Research And Agriculture: Improving The Ipr Landscape For Food Security. *WilliamSpring, and Mary Environmental Law and Policy Review*. 40, 877-888.

³⁷ Community Plant Variety Office. (2022). *Impact of The Community Plant Variety Rights System on The EU Economy and The Environment*. Geneva: European Union Intellectual Property Office, p. 57.

³⁸ *Ibid*, p. 46.

³⁹ *Ibid*, p. 8.

⁴⁰ UNEP. (2010). *Green Economy Developing Countries Success Stories*. Geneva: UNEP.

⁴¹ UNEP. (2011). *Introduction Setting the Stage for a Green Economy transition: Toward Green Economy*. Geneva: United Nations Environment Programme, p. 16.

⁴² Kristiyanto. (2019). Ecotourism development impacts on plant diversity in a cultural park of Setu Babakan, Jakarta Indonesia. *IOP Conference Series: Earth and Environmental Science*, 399 (012108).

application of the green concept in landscape planning can help to translate plant diversity and conservation into management actions, especially in agro-tourism landscape.⁴³

6. The challenges of Eco Tourism, Agrotourism and Plant Protection to Sustain Biodiversity and Achieve Green Economic Growth in Indonesia

Tourism has boomed in Indonesia in recent years, and it is one of the main sources of foreign currency earnings. In 2017, the contribution of tourism to GDP amounted to IDR 536.8 trillion, 4.1% of Indonesia's total GDP. In the same year, tourism provided 12.7 million jobs, representing 10.5% of total employment. Tourism receipts totalled IDR 200 billion, and the sector outperformed the general growth of the Indonesian economy. In 2018, international arrivals reached 15.8 million, an increase of 12.6% compared to the previous year. China was the country's main international source market (16% of tourists), followed by Singapore (13.2%), Malaysia (10.6%) and Australia (9.7%). The average length of stay was 8.6 days. In 2017, domestic tourism reached 270.8 million trips growing 2.4% over the previous year. In 2018, these numbers increased to 303.4 million trips, growing a significant 12%.⁴⁴

In the context of achieving green economic growth, some countries have attained high levels of human development, but often at the expense of their natural resource base, the quality of their environment, and high greenhouse gas (GHG) emissions. The challenge for these countries is to reduce their per capita ecological footprint without impairing their quality of life. Other countries still maintain relatively low per capita ecological footprints but need to deliver improved levels of services and material well-being to their citizens. Their challenge is to do this without drastically increasing their ecological footprint.⁴⁵

When we talk about ecotourism and achieving green economics, this cannot be separated from the discussion related to agricultural and green growth. There is a table of factor interaction in the context of green growth as follows:

	Economic Contribution of Agriculture to Green Growth	Environmental Contribution of Agriculture to Green Growth	Social Contribution of Agriculture to Green Growth
Economic Contribution of Green Growth to Agriculture	Agriculture is the basis of economic development while Green Growth can improve agricultural performance (+)	Green labels and eco-services can contribute to economic returns in agriculture (+)	Green jobs and activities can diversify and contribute to rural development (+)
Environmental Contribution of Green Growth to Agriculture	Environmental measures may slow agricultural growth in the short-term (-)	Green Growth will yield environmental co-benefits in agriculture through resource conservation and carbon sequestration (+)	Reform of supports to relieve environmental stress can promote more equitable farm incomes (+)
Social Contribution of Green Growth to Agriculture	Green Growth may detract from efforts to improve food security in the short-term (-)	Green Growth will necessitate structural adjustment measures in transition periods (-)	Food security, poverty reduction, and rural development will be enhanced through Green Growth (+)

Source: Candice Stevens, Agriculture and Green Growth, accessed from <https://www.oecd.org/greengrowth/sustainable-agriculture/48289829.pdf>

The table above gives the main message that green growth is supported by the economic, environmental, and social sectors to realize sustainable growth. This is seen as the main challenge in eco tourism, agrotourism and plant protection, which is encouraged to support green economic growth, namely ensuring the implementation of a balance between these economic and social environmental factors can run in a sustainable manner. More specifically, an overview of the challenges and their potential implications can be seen in the following figure:

⁴³ Fabiola B. Saroinsong. (2020). Supporting plant diversity and conservation through landscape planning: A case study in an agro-tourism landscape in Tampusu, North Sulawesi, Indonesia. *Biodiversitas*, 21(4): 1518-1526.

⁴⁴ OECD Tourism Trends and Policies 2020, accessed from <https://www.oecd-ilibrary.org/sites/6c4fc1cd-en/index.html?itemId=/content/component/6c4fc1cd-en>.

⁴⁵ UNEP, op., cit., p. 46.

Concerns over tourism	Potential implications for communities
Tourism development creates 'islands of affluence' in the midst of poverty	Local communities cut off from potential linkages to the tourism industry; possible resentment; migration may occur to communities near tourism sites for employment altering community structure; unequal sharing of benefits
Scarce national resources used for the enjoyment of wealthy foreign tourists	Loss of local resources taken for tourists such as water, land; communities may need to adjust to new resource availability
Impact of the demonstration effect on the local population	Some members of the community may adopt tourists' behaviour patterns, turning them away from traditional patterns of behaviour; local community traditions may be under threat
Economic multipliers, the main tool for measuring economic impacts, are controversial and unreliable	Economic benefits may not be as large as first expected; distribution of financial gains may not benefit entire community
Commercialization of culture and lifestyles	Community change to focus on high consumption lifestyle; culture and cultural artefacts are turned into commodities for sale; may revitalize culture
Benefits are probably going to foreign companies or local élite	Communities are controlled by local élites or foreign companies; few benefits to the local communities; challenges for communities to benefit from the industry
Control of international tourism is external to the destination and defined by transnational tourism corporations	Loss of control; limited opportunities for communities to participate in the tourism planning and development process; if controlled locally community-based tourism still has to interact with the international corporations who supply tourists

Source: David J. Telfer and Richard Sharpley. (2008). *Tourism and Development in the Developing World*. New York: Routledge.

Ecotourism continues to receive attention since, theoretically, it represents a win-win scenario through environmental protection and improved local livelihoods. For many developing countries, it is promoted as a means of reconciling economic growth and environmentally sustainable development. It is promoted as a means for poorer communities to generate income, and for many communities living adjacent to national parks or reserves, it is presented as a beneficial return 'for relinquishing rights over using the plant and animal resources within those reserves for subsistence purposes.'⁴⁶ The purposes of ecotourism are set for several things: (1) It contributes actively to the conservation of natural and cultural heritage; (2) It includes local and indigenous communities in its planning, development and operation and contributes to their well-being; it interprets the natural and cultural heritage of the destination for visitors; it lends itself better to independent travelers, as well as to organized tours for small groups.⁴⁷

Biodiversity, such as genetic resources, species and ecosystems, is a very valuable natural capital. Biodiversity has made a very important contribution to humankind, providing important inputs for economic development and regulating environmental systems so that they are comfortable and safe for life. Therefore, natural resources such as forests, lakes, seas, coasts, rivers, and others are very valuable sources of biodiversity. Investments to maintain the condition of natural capital so that it remains prime or improve it for those who are already severe are long-term investments that will not be in vain. Therefore, the green economy pays attention to efforts to preserve and restore biodiversity resources. UNEP estimates (2011) to start a green economy, an

⁴⁶ David J. Telfer and Richard Sharpley. (2008). *Tourism and Development in the Developing World*. New York: Routledge, p. 105.

⁴⁷ Ibid.

investment of 2% of the total global GDP (around US\$ 1300 billion) is required, of which 0.5% is used to start efforts to preserve and restore natural capital conditions such as forests, agriculture, freshwater, and fisheries. The main investment programs in the natural capital sector include efforts to reduce deforestation rates, develop greening agriculture and restore water resources and fisheries.⁴⁸

7. Conclusion

The impacts of Ecotourism and agrotourism based on plant variety protection to sustain biological diversity and green economic growth in Indonesia depends on the state policy and also the regulations which are applicable to ecotourism and agrotourism in Indonesia. It is a new trend in developing countries that ecotourism and agrotourism become a form of commercial enterprise that links agricultural production and/or processing with tourism to attract visitors to a farm or other agricultural businesses for the purpose of recreation, entertainment, or education for visitors, and to generate income for the farm or the business owner. While ecotourism encompasses nature-based activities that increase visitor appreciation and understanding of natural and cultural values. On the other hand, the protection of plant variety is the legal instrument to provide protection to breeders and companies in creating a new variety of plants to support ecotourism and agrotourism in Indonesia.

The result of the research finds that enhancing ecotourism and agrotourism based on plant variety protection can sustain and enhance biodiversity and green economic growth in Indonesia. However, the research found that there are some successful achievements and challenges that must be addressed, such as the harmonisation of the regulations and encouragement of the community and business authors to participate in ecotourism and agrotourism by creating a new variety of plants to enhance biodiversity to achieve green economy development in Indonesia. Even though the limitation of this study is in examining the specific regulation related to plant variety protection other than Law Number 29 of 2000 concerning the Protection of Plant Varieties, therefore, it is suggested to investigate whether the existing rules in protecting plant variety become the only factors affecting the economic sustainability or it also requires the legal structure as well as a legal culture related to the plant varieties protection for future research.

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