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The Potential and Contradictions of Geographical Indication and Patrimonization for the Sustainability of Indigenous Communities: A Case of Cordillera Heirloom Rice in the Philippines

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Abstract: In the Montane areas of Cordillera, the Philippines, the IP (indigenous people) have cultivated native rice for generations on their rice terraces, which were designated a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Cultural Heritage site in 1995 and a Food and Agriculture Organization (FAO) World Agricultural Heritage site, Globally Important Agricultural Heritage System (GIAHS) in 2011. This heirloom rice was registered as a collective trademark in 2018 and will be registered as a sui generis geographical indication (GI) in the coming years. Based on the author's interviews with the stakeholders in heirloom rice production conducted in the Philippines in 2019, this article aims to analyze whether GI and patrimonization contribute to the sustainability of the IP communities in Cordillera. This paper demonstrates that GI and patrimonization exhibit both potential and contradictions in ecological, socio-cultural, and economic dimensions of sustainability in the communities, and the compatibility of these dimensions is challenged. The paper concludes that public policies need to pay particular attention to accompanying IP communities when GI and patrimonization are designed to protect them from over-development of the designated area and over-commodification of their certified agri-food products.

Keywords: heirloom rice; sustainability; geographical indication; patrimonization; rice terraces; indigenous communities; modernization; commodification; Cordillera; Philippines

1. Introduction

Heirloom rice produced in the CAR (Cordillera Administrative Region) in the Philippines receives international recognition thanks to the designation of the rice terraces in the region as a UNESCO (United Nations Educational, Scientific and Cultural Organization) World Cultural Heritage site and GIAHS (Globally Important Agricultural Heritage Systems) by the UN FAO (United Nations Food and Agriculture Organization). The CAR is in the Northern mountainous region of Luzon Island and is known as the home of IP (indigenous people) such as the Ifugao. The heirloom rice varieties grown on their rice terraces have been passed down from one generation to another for several centuries, together with traditional knowledge well adapted to the local ecosystem. In recent decades, however, this traditional agricultural system has been threatened by climate change, the overuse of local natural resources, the modernization of IP communities, and the lack of successors. To revitalize the heirloom rice production, associated traditional knowledge, the endemic ecosystem, and indigenous culture, GI (geographical indication) is viewed as a promising solution by regional, national, and international institutions. However, these positive effects of GI are not automatically guaranteed.

Based on qualitative analysis of information collected during the author's interviews in 2019 in the CAR, Philippines, the objective of this article is to analyze whether GI "Cordillera Heirloom Rice" and patrimonization, such as GIAHS and UNESCO World Heritage designations, of rice terraces and the associated culture and ecosystem, contribute

to ecological, socio-cultural, and economic sustainability of and/or cause contradictions in the IP communities. The relevance of this case study is situated in the fact that it is related to UNESCO World Heritage, GIAHS, and GI, which significantly influences the sustainability of the designated IP communities.

The structure of this article is as follows: in Section 2, the literature on GI, patrimonization, and IP is reviewed in relation to sustainability, and the main research question on the contradiction between sustainability and modernization and commodification is presented. In Section 3, the method employed in the field surveys carried out in the Philippines is explained. In Section 4, the case of heirloom rice in the CAR is illustrated based on secondary data and documents. In Section 5, results of the field surveys on the links between heirloom rice and the IP communities, the impacts of patrimonization, and those of GI projects are demonstrated. In Section 6, the author discusses the potential and the contradictions of GI and patrimonization with regard to the ecological, socio-cultural, and economic sustainability of IP communities based on the empirical case study. Finally, Section 7 presents the conclusion that while GI and patrimonization have increased the economic opportunities available to farmers from heirloom rice and the rice terraces in their inherited ecosystem and culture, these schemes have caused significant changes in ecological, social, and economic patterns in the communities. It draws implications for public policies to pay particular attention to accompanying IP communities when GI and patrimonization are designed and mobilizing integrated policies that control over-development of the designated area and over-commodification of their certified agri-food products.

2. Literature Review, Perspective, and Objective

2.1. Geographical Indications

The history of GI for origin products dates to the BCE era [1]. During the Middle Ages, the seals of European guilds were considered to be an indicator of the quality of local foods. The expansion of international agri-food trade in the 19th century led to the signing of the 1883 Paris Convention for the Protection of Industrial Property, an agreement which gave effect to the first international GI accord [1–6]. In 1995, subsequent to international agreements such as the 1891 Madrid Agreement and the 1958 Lisbon Agreement, TRIPS (Agreement on Trade-Related Aspects of Intellectual Property Rights), which protects GIs registered under a trademark and/or sui generis laws as intellectual property, came into effect between WTO (World Trade Organization) member states. The WIPO (World Intellectual Property Organization) defines GI as “a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin” [7]. Champagne in France, Prosciutto di Parma in Italy, and Kobe Beef in Japan are among the most cited examples of GI products in the world.

Not only considered a means for marketing, branding, or avoiding fraud, GI is also understood as an innovative tool to revitalize rural economies while supporting small family farmers and artisanal food processors, promoting tourism, and mitigating the negative impacts of globalized and industrialized agri-food systems [1–6,8–10]. In other words, it is expected to connect small family farmers, including IPs, with “sustainable value chains” and deliver socially, economically, and ecologically desirable alternatives to the conventional market system [2–6,8–15]. GI is envisioned as a tool for agri-food producers and their allies to communicate and educate consumers about the linkage between quality agri-food products, the producers with traditional knowledge and know-how, and the territories with endemic climate, soil, and biodiversity [10]. The growing consumer awareness and demand for provenance, “food from somewhere”, which entails food grown in a defined territory with traditional, fair, and environmentally friendly methods, boosts the market for origin products protected by GI and other territorial agri-food labels such as Slow Food Presidia which is governed by Slow Food International, an NGO based in Italy [15,16]. The objective of these territorial labels is to distinguish the agri-food products rooted in the local historical, ecological, and socio-cultural heritages

from industrial “food from nowhere”, which typically has higher market competitiveness secured through economies of scale, cost reduction, and mass commercialization [6].

As such, GI is often considered one of the effective policy tools that salvage quality agri-food products made by small-scale farmers, IPs, and artisans, and related traditions, local knowledges, biodiversity, natural resources, ecosystems, and rural communities in danger of extinction or degradation under globalization, capital concentration, industrialization of the agri-food sector, and climate change, and create more desirable alternatives. This position is supported by several empirical case studies around the world [4,9,10]. However, at the same time, other studies demonstrate that the very process of the establishment and implementation of GI may diminish diverse heterogeneity of quality and production processes of GI products through a standardization and homogenization process, and cause overuse of local natural resources, labor exploitation, uneven redistribution of benefits, and conflicts among stakeholders [17–21]. At best, the expectations for GI, such as safeguarding bio-cultural diversity, democratizing the existing agri-food systems, and emancipating the subordinated groups, fall short [22]. Often, these unwanted outcomes of GI implementation are rooted in the adoption of modern technologies and the commodification of agri-food products, which were formerly consumed as subsistence crops and traded within the territory.

Employing the case of GI Sorana Bean produced by small family farmers, often engaged in other occupations, in the montane area in Tuscany, Italy, Belletti et al. [23] demonstrate that traditional farming systems in a marginal territory can benefit from GI through restricting the misuse of product names, avoiding severe price competition with conventional products on the market, fostering rural development, and regulating over exploitation of natural resources based on the written code of practice agreed among farmers and authorized by the EC (European Commission). At the same time, they also point out that this GI production system is not immune from modernization pressures from larger professional farmers. Lotti [24] sharply criticizes the limits of certification schemes in protecting heritage food and biodiversity based on her study on Kintoa Basque Pig, certified as a Slow Food Presidium. She argues that Slow Food selects products related to their geographical origin under its criteria, and this process may result in leaving rejected products and associated biodiversity in danger of extinction. Employing a case of the heirloom rice produced in the CAR, Philippines, Glover and Stone [25] also contend that commodification of selected native rice cultivated as a subsistence crop under the label of “heirloom” necessarily entails alteration of the existing farmers’ portfolio of cultivars in IP’s agricultural system, and therefore of the endemic ecosystem, subsistence livelihood, culture, and values in their communities.

2.2. Patrimonization: GIAHS and UNESCO World Heritage

While GI and Presidia certify agri-food products from specific territories, GIAHS and UNESCO World Heritage designate the whole landscape and associated traditional agricultural systems embedded in the endemic ecosystems and livelihoods in rural areas as patrimonies to pass down to future generations. Patrimonization, which means designation of patrimony such as GIAHS and UNESCO World Heritage, is expected to contribute to the protection of heritage foods and their associated ecosystems, farming systems, native varieties, traditional knowledge, cultures, rural communities, and small family farmers that are vulnerable to globalization, urbanization, and climate calamities.

GIAHS is defined as “remarkable land use systems and landscapes which are rich in globally significant biological diversity evolving from the co-adaptation of a community with its environment and its needs and aspirations for sustainable development” [26]. Since the launch of the initiative by FAO in 2002, FAO has designated 62 GIAHS in 22 countries as of March 2021 [27]. The responsible agency for GIAHS in the UN member countries, which is frequently the agriculture or environment ministry, nominates a candidate site in the country as a NIAHS (Nationally Important Agricultural Heritage System), and then proposes the NIAHS to FAO for designation as a GIAHS, with an action plan for conserva-

tion [28]. FAO's scientific advisory group evaluates the proposed GIAHS site based on the following five criteria: (1) food and livelihood security, (2) agro-biodiversity, (3) local and traditional knowledge systems, (4) cultures, value systems, and social organizations, and (5) landscapes and seascapes features. The territorial organizations, such as associations of stakeholders including local governments, are expected to implement the action plans to conserve the designated systems.

As it emphasizes the idea of “dynamic conservation” of living heritages, GIAHS differs from the UNESCO Cultural World Heritage designation which, based on the 1972 World Heritage Convention, is designated to protect the historical and aesthetic monuments and/or landscapes without any transition or improvement [29]. This means that GIAHS allows innovative agricultural practices in the designated areas [30]. As of March 2021, there are 1,121 designated UNESCO World Heritage sites, including 869 cultural, 213 natural, and 39 mixed World Heritage sites [31]. Although most Cultural World Heritage sites are monuments such as the Egyptian pyramids, the rice terraces in the CAR of the Philippines are protected by their designation as a UNESCO World Cultural Heritage site [29].

The agri-food products produced in GIAHS-designated areas are often promoted with the GIAHS label. This system aims to increase local, national, and international awareness of the values of the designated systems and valorize their products in the markets to guarantee reproduction through creating or supporting economic opportunities for the stakeholders. However, neither the official GIAHS-FAO logo nor the UNESCO logo can be used as a label on product packaging or for the marketing of commercial products [15]. In addition, while agri-food producers in GIAHS-designated areas do use these patrimonies to promote their products, appreciation of the connection between the qualities of agri-food products and the designated area by the average consumer trends to be rather limited [32,33]. Therefore, GI and other territorial labels such as Presidia are employed to promote agri-food products produced in the patrimony areas. For example, the salt produced in the Agricultural System of Valle Salado de Añana, Spain, a GIAHS, is sold with the Presidia label, while sake, alcohol made from rice, Hakusan Kikusake in the Noto's Satoyama and Satoumi, a GIAHS in Ishikawa Prefecture, Japan, is registered as a GI [15,32].

While the stakeholders of patrimony, UNESCO World Heritage and FAO GIAHS, often expect economic opportunities to be created by the designations such as tourism and sales of local products with the UN patrimony label, there are also negative effects of patrimonization reported. In south-east Asian countries, Cambodia, Vietnam, and Laos, the uncontrolled rapid growth of tourism and related commodification and the pressure of integration undermine both the tangible and intangible aspects of sustainability of designated UNESCO World Heritage sites [34]. This study highlights the risks to the sustainability of designated communities, especially in third world countries, posed by prioritizing short term economic goals over long term sociocultural goals. Similar to GI, patrimonization can also be a policy tool to promote modernization of the designated society and commodification of local subsistence crops [25,34]. As the number of designated GIAHS and UNESCO World Heritage sites dedicated to agricultural areas is relatively limited, studies on the synergy between GI and patrimonization are still at the nascent stage.

2.3. Indigenous Peoples

GI and patrimonization are sometimes concerned with IPs as they are inheritors and practitioners of unique and traditional cultures and a way of life closely related to the environment through farming, gathering, hunting, fishery, and animal husbandry [35,36]. IPs belong to several ethno-linguistic groups and are distinct from the dominant societies in term of culture, language, history, values, and sometimes religions. Some IP groups establish their communities in the montane areas to avoid conflict with new settlers and/or invaders that dominate the lowland areas. The rationality of mobilizing these policies for IP rests on the fact that they are considered the most vulnerable population facing environmental degradation, globalization, urbanization, and in some countries, they are

even the victims of human rights violations in the process of economic development and social integration led by the states and/or powerful corporations. To address these problems in the international arena, the United Nations Declaration on the Rights of Indigenous Peoples was adopted by the UN General Assembly in 2007 [35]. Today, there are approximately 476 million IPs in over 90 countries [37].

GI and patrimonization are recognized as potential tools to reinforce the sustainability of IP's agricultural systems, heritage foods, traditional knowledge, biodiversity, ecosystem, culture, identity, and communities through the valorization and protection of their agri-food products, related education and training programs, and sound governance [5,30,38,39]. For example, Hani Rice Terraces in Yunnan Province, China, a GIAHS, are maintained by the Hani and other minority ethnic groups [27]. While being small-scale farmers and often living in poverty, IPs have the potential to provide their knowledge to alter the dominant industrial agri-food systems towards ecologically, socio-culturally, and economically more sustainable ones [40]. At the same time, though, the creation of UNESCO World Heritage sites, GIAHS sites, and GI-designated areas may leave IP communities vulnerable to the modernization and commodification of subsistence products [25].

2.4. Perspective and Objective of This Study

Since one of the main objectives of GI and patrimonization is to conserve the traditional agri-food products or the landscapes and related agricultural systems, traditional knowledge, agrobiodiversity, natural resources, and so on, these schemes are expected to restrict the transition of these elements towards modernization to a certain degree. In this case, modernization refers to the adaptation of a series of new technologies such as mechanization, automatization, agro-chemicals, improved varieties, the construction of concreted buildings, and so on. These modern technologies are considered to undermine the unique quality of GI products and/or singularity of heritage landscapes as they may destroy endemic ecosystems, socio-cultural identities, and traditional economic activities. Therefore, the process of modernization should be subject to control in these schemes.

However, in practice, there is room for partial modernization within these schemes. For instance, while UNESCO prohibits the construction of residences with modern materials in the designated areas, it does not control the modernization of the lifestyle of residents, e.g., using smart phones, and rather promotes the new economic opportunities, e.g., tourism, created by the designation that further change the local traditional way of life [34]. GIAHS tolerates more flexibility in the conservation of its designated sites than UNESCO World Heritage as it permits "dynamic conservation" with innovation [30]. While accentuating the respect for traditional farming systems, GIAHS does not prohibit the use of new technologies such as agro-chemicals and machinery if it is requested by the local communities. For instance, in a GIAHS, the Nishi-Awa Steep Slope Land Agriculture System in Tokushima Prefecture, Japan, local farmers are expected to protect the traditional way of using the wild grasses to improve the soil, but they can also use synthetic fertilizers as well as pesticides and herbicides [41].

In GI systems that have greater diversity among countries and among trademark systems and sui generis GI systems, the ways of conserving traditional methods and knowledge are, therefore, left in the hands of the local associations that manage GIs and the authorities that register GIs. Basically, collective trademark systems permit the designated associations to revise the codes of practice whenever needed without approval by the authorities, which allows the adoption of modern technologies in search of higher competitiveness and cost effectiveness [18,42]. Even sui generis GI systems may accept mechanization and food additives for GI products if these components are not considered to undermine the overall quality of these products. For instance, Hatcho Miso, a GI product designated in 2017 by the Japanese government, can be produced with imported ingredients, under a fermentation process with temperature control, and with food additives, while those who produce it in the traditional way protest against this GI registration as of March 2021 [21,43]. To be sure, if GI stakeholders agree on a code of practice prioritizing

local ingredients, natural fermentation processes, and avoiding food additives, the GI can be oriented to the conservation of traditional methods of production. The problem lies in that the decision is left in the hands of local associations and the authorities.

To capture another contradiction that may occur in the implementation of GI and patrimonization in traditional society, especially IP societies, it is essential to consider the process of commodification of products registered as GIs or produced in the patrimony-designated areas. Commodification refers to the process by which an object gains a value to be exchanged at a certain price in local, national, and international levels of market. In this process, the product made for home consumption that has “value to be used”, is transformed into a commodity that has “value to be exchanged”. When the crops grown by IPs are originally grown for their subsistence, the establishment of GIs and the registration of their communities as patrimony inevitably push IPs to commodify their products and their cultures in the market economy. While commodification of their products and culture is often appreciated as new economic opportunities that support IPs to maintain their traditional life and remain in their communities, by IPs themselves and other domestic and international institutions, the very process of commodification may profoundly transform their values and societies as a whole in long term [25,39].

Sustainability, which refers to an ability to make a process last for a long time or an unlimited period, is often understood to consist of three inter-related dimensions: ecological, socio-cultural, and economic dimensions. Sometimes, the dimension of governance is considered to be the fourth dimension of sustainability. In search of sustainability, these dimensions are inter-related and can be a trade-off and/or synergy [44]. In this context, for instance, the ecological dimension of sustainability is expected to conserve local natural resources such as clean water and soil for the next generations, which will ensure their economic activities in future. In addition, the distribution of these resources is expected to be democratic and fair, which is a part of social dimension of sustainability. As modern technologies, agro-chemicals, for instance, are considered to threaten biodiversity and therefore contradict ecological sustainability; the traditional knowledge to evade harmful insects for crops is appreciated for the ecological sustainability and issues to be conserved. To be sure, while GI and patrimonization are expected to conserve tradition to protect natural and human resources and their inter-connections for the future generations in designated areas, they are not expected to conserve all traditional components of IP communities, such as patriarchy. Rather, these schemes may lead to crucial changes in the designated communities depending on the ways in which these schemes are implemented on the ground. However, the impact of these schemes on IP communities remains relatively less studied. Based on these perspectives and employing a case of the heirloom rice produced in IP communities in the CAR, Philippines, the main objective of this study is to analyze whether the implementation of GI and patrimonization contribute to the ecological, socio-cultural, and economical sustainability of IP communities or not, and in which conditions the three dimensions of sustainability can be sought in this process. To address this objective, the following sections reveal the way in which heirloom rice in the CAR is embedded in the given territory and IP communities, and whether GI and patrimonization reinforce the process of modernization and commodification of the heirloom rice in the CAR or protect it from modernization and commodification.

3. Methods

To address the above-mentioned objective, the author reviewed the literature and administrative documents on GI and patrimonization and conducted a series of in-person interviews with semi-structured questionnaires with open-ended questions to key informants in the Philippines in 2019. Some personal communication and follow-up online interviews were also conducted in the same year. This study is based on qualitative analysis of information extracted from these interviews.

The key informants were selected if they met the criteria based on participation in the two projects related to the heirloom rice production in the CAR, CHRP (Cordillera

Heirloom Rice Project) from 2005 and HRP (Heirloom Rice Project) from 2014. Both projects include the rice production areas designated as a UNESCO World Heritage site in 1995 and FAO GIAHS in 2011, as well as being registered for collective trademark “Cordillera Heirloom Rice Philippines” by IPOPHIL (Intellectual Property Office of the Philippines) in 2018. The groups investigated and the main questions asked in the interviews are as follows.

First, the RTFC (Rice Terrace Farmers’ Cooperative) in Banaue Municipality in Ifugao Province is the local consolidator of the CHRP and a participant of the HRP. An in-person interview with the manager of the RTFC using a semi-structured open-ended questionnaire was conducted for two and a half hours. Based on this questionnaire, the interview mainly consisted of the following: the history and the evolution of the CHRP, the production methods, yield, yearly calendar, mechanization, number of consolidated farmers, export and domestic sales, prices from farmgate to retail, certifications such as organic and GAP (Good Agricultural Practice), etc., HRP, trademark, the impacts of UNESCO World Heritage and GIAHS, the perception of local farmers of heirloom rice, and the diversification of crops.

Second, the IRRI (International Rice Research Institute), the DA-CAR (Department of Agriculture in the Cordillera Administrative Region), and the DA-BAR (Department of Agriculture, Bureau of Agricultural Research) are the leading institutions of the HRP. The project officers at each institution were interviewed in person with semi-structured open-ended questionnaires from 1.5 h to 2.5 h each. One or two officers of each institution participated in the interviews. The interviews consisted of the following points: the history and evolution of the HRP, the features and history of the project sites including social context (poverty level and aging society, etc.), the characteristics, names, yields, genetical analyses, prices from farmgate to retail of the heirloom rice, the way to cooperate with IP communities, the way to restore the selected seeds, collective trademark and GI projects for the heirloom rice in the CAR, the way to establish the code of practice for GIs, marketing of the heirloom rice by local cooperatives, the packages and logo of the heirloom rice, the impacts of UNESCO World Heritage and GIAHS, and other crop diversification programs.

Third, the LGU (Local Government Unit) Hungduan in Ifugao Province and HRPMP (Heirloom Rice Producers’ Multi-Purpose Cooperative), which are the local-level participants in HRP were also interviewed with semi-structured open-ended questionnaires for 1 h for each representative. The interviews consisted of the following points: the traditions of IP communities, heirloom rice production methods, its characteristics, sales, prices, number of farmers, seed exchange system, impact of climate change, social change, the perception of local farmers to GI, UNESCO World Heritage and GIAHS, and the way to protect local ecosystem.

Fourth, the selected seven IP heirloom rice producers, including a tribal spiritual leader (shaman), in the municipality of Banaue, Ifugao Province were individually interviewed in person with semi-structured open-ended questionnaires for 30 min to 1.5 h for each. Out of the seven producers interviewed, four are male and three are female in their thirties and eighties. Four of them were the HRP participants and interviewed after a HRP seminar coordinated by DA-CAR. Three others were interviewed during the observation visit of the rice terraces and an IP community in Banaue municipality, Ifugao Province. The interview focused mainly on the tradition and social structure, social and ecological transition in the IP communities, the impacts and perception of HRP, UNESCO World Heritage, GIAHS, and GI, the way of production, mechanization, yields, subsistence, farmers’ organizations, sales, prices of the heirloom rice, and crop diversification.

Fifth, an officer of FAO Country Office in the Philippines was interviewed with a semi-structured open-ended questionnaire for 1 h. Though this institution is not a participant of CHRP nor HRP, the interview was carried out as it supports the GIAHS coordination at the national level together with the Philippine agencies such as DENR (the Department of Environment and Natural Resources). The following points were mainly covered: the idea of dynamic conservation in the national and local context, the situation of the GIAHS site in

the CAR, and the advantages of the heirloom rice and other agri-food products produced in the site.

These interviewees were informed about the interview objectives and gave their consent to respond to the interviews in written and/or verbal form. As this study is not a clinical test, the need for consent was waived by the IRB. Most of the interviews were recorded with the interviewees' consent and transcribed before qualitative analysis and cross-checking with the social context and existing literature based on the methodology of qualitative approaches [45]. The interviews were mostly carried out in English, with the exception of the two interviews with IP farmers who do not speak English. In this case, an interpreter translated the local IP language into English and vice versa. The total number of interviews was fourteen. The interviewees were not remunerated for the interviews except in the case of a farmer who is a tribal spiritual leader and educates visitors as a source of income.

4. The Case of the Heirloom Rice in the CAR

4.1. Brief History of the CAR and the IP's Livelihood

Protected by steep mountains and their remote location from populated cities such as Manila, more than ten indigenous tribes and sub-tribes living in the Cordillera region, such as the Ifugao, Benguet, Kalinga, and Apayao, etc., were able to maintain their autonomy from the authority of other regions and countries for centuries, even during the era of Spanish colonization from the 16th to the 19th century [25,36]. It was only in the early 20th century that armed Americans invaded the ancestral territories of these IPs. At the end of the Second World War, the region was a battleground that was heavily fought over by the US and Japanese militaries, causing a vast number of casualties among the IP communities. In the aftermath of the war, IP communities in the region were Christianized beginning in the 1950s, and influenced by the Communist Party of the Philippines and its NPA (New People Army) which operated from bases in the montane area in the Northern Luzon Island from the end of the 1960s to the mid-1980s. From the 1960s, the migration of inhabitants in search of economic opportunities in the lowlands started and caused relative depopulation and aging in the region [46]. After the dictatorship of the Marcos administration, the CAR, consisting of six provinces, Ifugao, Benguet, Kalinga, Mountain, Abra, and Apayao, was established in 1987 under the Aquino administration.

In the CAR highlands, the IP communities are engaged in a variety of subsistence activities that include rice farming, swidden farming, foraging livestock including native chickens, pigs, and carabaos, hunting wildlife, fishing, gathering in the forests, and making traditional crafts: weaving for females and wood carving for males, both for themselves and for trade with lowland communities [25,36,46–48] (Scheme 1 left). The rice terraces located between 800 and 1500 m above sea level have been mostly manually (partially with carabaos) constructed and maintained through generations with sophisticated technologies applied to building stone and mud walls and pond terraces with irrigation systems that distribute the water and soil nutrients from forests, called *Muyung*, in watershed mountains to each parcel (Scheme 1 right). Under these watershed forests, there are communal forests, called *Ala*, that provide wood for the construction of houses, carving, food, firewood, medical plants, and beds for a diversified biome.



Scheme 1. (Left) The wood carving and skulls of carabao on the wall of a native house of Ifugao. (Right) The rice terraces in Ifugao Province, the Cordillera Administrative Region (CAR), and watershed forests. Source: Photographs by the author in 2019.

4.2. Patrimonization in the CAR

Prior to the patrimonization of the rice terraces in Ifugao Province by UNESCO and FAO, the government of the Philippines nominated the site as a National Landmark because of its exceptional cultural value and as a Country's Irreplaceable Treasure in 1973 [46,48]. In 1995, UNESCO designated five clusters of the rice terraces in four barangays, the smallest administrative unit, in two municipalities, Banaue and Kiangian, among eleven municipalities in Ifugao Province as "Rice Terraces of the Philippine Cordillera" as a World Cultural Heritage site based on the 1972 World Heritage Convention (Table 1). It recognizes the rice terraces as a "living cultural landscape" and "the absolute blending of the physical, socio-cultural, economic, religious, and political environment" [48]₁. UNESCO notes that the designated site is a dramatic testimony to the sustainable and communal system of rice production of small-scale farmers who have created a landscape of great aesthetic beauty based on a sustainable use of natural resources and harmonious interaction between people and its environment [48]. In recent decades, the socio-economic context, climate calamities, and earthquakes, however, have caused physical and ecological degradation of rice terraces, making them difficult to be appropriately restored and maintained. Therefore, the heritage site was listed as a "World Heritage in Danger" in 2001 (Table 1). Receiving administrative and financial support from international, domestic, and regional institutions as well as private corporations, it was removed from the list in 2012 (Table 1).

Table 1. Chronology of events concerning the rice terraces and heirloom rice in the CAR and key institutions.

Years	Events	Areas	Key Institutions
1995	"Rice Terraces of the Philippine Cordillera" was designated as a World Cultural Heritage.	Ifugao Province (2 municipalities)	UNESCO/NCCA *
2001	"Rice Terraces of the Philippine Cordillera" was listed as a World Heritage in Danger.	Ifugao Province (2 municipalities)	UNESCO/NCCA
2005 (2006)	CHRP (Cordillera Heirloom Rice Project) started (the export of the heirloom rice started).	Ifugao, Benguet, Kalinga	Eighth Wonder, RICE, RTFC
2011	"Ifugao Rice Terraces, Philippines" was designated as a GIAHS.	Ifugao Province (11 municipalities)	FAO/DENR **
2012	"Rice Terraces of the Philippine Cordillera" was removed from the list of World Heritage in Danger.	Ifugao Province (2 municipalities)	UNESCO/NCCA
2014	HRP (Heirloom Rice Project) started.	Ifugao, Benguet, Kalinga, Mountain Provinces	IRRI, DA, LGUs
2017	GI "Cordillera Heirloom Rice Philippines" project started.	Ifugao, Benguet, Kalinga, Mountain Provinces	IPOPHL *** IRRI, DA, LGUs
2018	Registration of Collective Trademark "Cordillera Heirloom Rice Philippines".	Ifugao, Benguet, Kalinga, Mountain Provinces	IPOPHL IRRI, DA, LGUs

Sources: Interviews with the informants and [47,48]. Notes: * National Committee of Culture and Arts, ** Department of Environment and Natural Resources, *** Intellectual Property Office of the Philippines.

Following the patrimonization of the site by UNESCO, FAO designated the rice terraces in Ifugao Province as a GIAHS in 2011 (Table 1). The registered area is far more extensive than that of UNESCO heritage, and includes all the rice terraces in eleven municipalities in Ifugao Province. It illustrates the conceptual difference between UNESCO's and FAO's heritage registration systems. While the former means to preserve only the traditional rice terraces without distraction such as residential constructions, the latter aims to conserve dynamic agricultural systems that sustain biodiversity, traditional knowledge, rural livelihoods, cultures, and remarkable landscapes. As of the registration in 2011, there were 17,138 ha of the registered rice terraces where the population of 161,623 engages in the designated agricultural system [47].

The designation of Ifugao Province as a UNESCO World Heritage site has evidently boosted the international recognition of the site and raised awareness of the importance and value of rice terraces not only in the country but also in other rice-producing countries

in Asia, such as Japan and China [36]. At the same time, it has created massive economic opportunities in the Ifugao Province in the tourism industry (hotels, restaurants, guides, shops, souvenir crafting, etc.) and related occupations (transportation such as tricycle, Jimny, taxi, rent-a-car, etc.). The IP's heirloom rice that had been considered "poor people's food" in the restaurants in Manila in the past became highly appreciated by restaurant chefs in recent years [25]. This alteration of the image of the landrace rice in the CAR even encouraged an American social entrepreneur and her associates in Manila and the Ifugao Province to consolidate heirloom rice production in the region to export to the North American market from 2005 [46]. The designation also mobilized the local, municipal, provincial, regional, and national governments, international organizations, and corporations from the Philippines as well as Japan and China to provide financial and administrative institutional support to restore the damaged rice terraces and to train farmers [48].


Cooperating with UNESCO's programs, FAO's designation of the site as a GIAHS in 2011 further promoted the dynamic conservation of rice terraces and related agricultural systems together with the new initiatives in the country. The Republic Act 10533 "Enhanced Basic Education Act of 2013" provides the IP Education Program that ensures the education of IP in indigenous knowledge systems and practices, the community history, indigenous languages, the indigenous learning system, and community lifecycle-based curriculum and assessment [29]. Furthermore, the Executive Order No. 39 of 2016 was issued to establish the Ifugao Rice Terraces Rehabilitation and Development Council, and the Executive Order No. 29 Series of 2017 (renewed in 2019) was issued to establish the GIAHS Sustainable Development Committee, inviting the Ifugao Provincial Governor as the chair of the Council and the Committee. Despite the relatively conspicuous recognition of GIAHS designation among local dwellers, these inter-agency mechanisms have evolved to conserve the agricultural system in the rice terraces. Recently, various other conservation projects such as the Forestland Management Project have also been emerging in the region.

Contrary to these efforts to conserve the natural and human resources in the designated sites, there are new concerns under the pressure of tourism and the modernization of the dwellers' lifestyle. To respond to the increased energy demand in the designation area, especially electricity, the Ifugao Province issued the Mini-Hydro Electric Power Plant Development Program Ordinance No. 2007-045 in 2007 [49]. GSEP (Global Sustainable Electricity Partnership), established by major electric corporations in G8 countries in 2010, constructed a hydropower plant of 200 kW in the Ifugao Province while ensuring a part of the benefit goes to the RTCF (Rice Terraces Conservation Fund). Under this partnership initiative, one of these G8 countries, Japan, funded an ODA (Official Development Assistance) project to construct two mini-hydropower plants of 820 kW, designed by TEPCO (Tokyo Electric Power Company), in the montane area in the Ifugao Province in 2013. As of 2021, there is another project to construct a much larger hydropower complex, namely the Alimit Hydropower Complex, including a dam, 140 MW powerhouses, a tunnel, and 20 km of transmission line in Ifugao province, proposed by a Norwegian hydro electric corporation, SN Power [50].

4.3. The Cordillera Heirloom Rice Project in the CAR

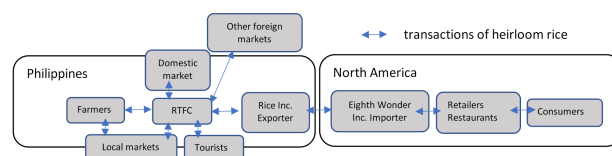
More than ten years before the GI registration of the Cordillera Heirloom Rice as a collective trademark in 2018, there was a project to revitalize heirloom rice production and restore the rice terraces, namely the CHPR that started in 2005 (Table 1). This was an initiative of a social entrepreneur, RICE (the Revitalize Indigenous Cordillera Entrepreneurs Inc.), in Manila and its marketing arm, Eighth Wonder Inc. in the State of Montana, the US, established in the same year. Receiving assistance from UNESCO, PhilRice (the Philippine Rice Research Institute), the National Food Authority, and the LGUs, these corporations and their local partner, the RTFC (Rice Terraces Farmers' Cooperative) established in Ifugao Province in 2006, successfully consolidated 1,358 farmers in 18 municipalities from Ifugao, Kalinga, and Mountain Provinces by 2008 (Table 2).

Table 2. The operations of RTFC (Rice Terraces Farmers' Cooperative), CHRP (Cordillera Heirloom Rice Project), and HRP (Heirloom Rice Producers' Multi-Purpose Cooperative) (2016–2018).

	CHRP/RTFC	HRP	HRPMC
Provinces	Ifugao, Kalinga, Mountain (18 municipalities)	Ifugao, Benguet, Kalinga, Mountain	Ifugao (8 municipalities)
Starting year	2005/2006	2014	2018
No. of farmers	746	8438	75
Acreage (ha)	-	5838	-
Volume (MT)	20	16,522	-
Markets	Export Local, Manila	-	Ifugao and Mountain Provinces
Logos of Brand/ Collective Trademark			

Sources: The author's interviews with RTFC, CHRP, and HRMC in 2019. Photographs by the author in 2019. Note: The information on RTFC is about 2016, that on CHRP and HRMC is about 2018.

It was essentially the first trial to export the heirloom rice that had been produced for subsistence in the IP communities and only occasionally traded in lowland markets. Since the CHRP was launched, RTFC in the CAR has consolidated local farmers and shipped their heirloom rice to RICE in Manila, which exports it to Eighth Wonder in the US which markets it in the US and Canada (Figure 1). RTFC also developed other marketing channels for heirloom rice such as other foreign markets such as EU and Dubai, domestic markets in the CAR and Manila, as well as sales for tourists visiting the rice terraces in the CAR. In addition to the impact on the socio-cultural and symbolic meanings of the heirloom rice in these communities, the redistribution of the benefit from this business along its commodity chain caused feelings of dissatisfaction among farmers against RTFC and CHRP [46]. As of 2008, the farmgate price was 1 USD (50 P)/kg (1P = 0.02 USD) while the retail price in the North American markets (the US and Canada) was 12.50 USD (625 P)/kg. This meant that the farmers received only 8% of the margin compared to the final consumer price. Although it is higher than the farmers' margin in conventional commodity chains in general, the farmgate price was perceived by the farmers to be unfair and subject to be increased.

**Figure 1.** The commodity chain of the heirloom rice in CHRP and RTFC. Source: Interview with RTFC and [45].

5. Results

5.1. Cordillera Heirloom Rice in the IP Communities

The heirloom rice cultivated in the IP communities in the CAR has unique value in the territory not only as the staple food of the dwellers but also as a socio-cultural symbol that ties IP and endemic ecosystems. This feature of the heirloom rice shows high potential to be recognized as GIs and simultaneously the risk related to the commodification of subsistence and IP spiritually symbolic crops. The results of the field surveys on the features of heirloom rice and its relations to the IP communities are the following.

While the improved rice cultivars produced in lowland areas (and partially in highlands) have a shorter production period of 3 months that allows farmers to harvest twice or thrice a year, the native rice cultivars need a much longer production period of 6–8 months that permit farmers to harvest only once a year (interview with IRRI). One of the heirloom rice varieties umbrella name *Tinawon* that groups several cultivars means “once a year” in the local language. Another difference between them rests on the fact that the improved cultivars, the so-called Green Revolution varieties, are dependent on chemical fertilizers and pesticides, while native cultivars can be grown with organic fertilizers and insecticides₂.

The average yield of rice landrace is quite low, around 2.5 t/ha/year, which is less than half of the yield of improved varieties. Given the low yield and a farmland structure that is characterized by quite limited acreage per family, which is 0.20–0.25 ha (interview with IRRI), families frequently find it barely possible to meet the needs of their members and therefore they are engaged in several subsistence crop systems, such as yam and taro.

When matured, the ears of rice are harvested at the length of 30 cm and tightly bundled, dried under sunshine, and stored in traditional thatched stilt granaries (Scheme 2 left). Before cooking, the grains are detached from the ears, pounded in a millstone (Scheme 2 right) with a wooden mallet, and winnowed manually. The grain looks “coarser-grained” and larger than other varieties. According to the IRRI’s genetic analyses, the heirloom rice in the CAR includes several groups such as Japonica and Indica (interview with IRRI). It requires more water and 5–10 min longer to cook compared to improved cultivars (interview with DA-BAR). In terms of taste, the heirloom rice has a characteristic of “chewiness” or “hardness” in the mouth and takes a longer time to digest. Certain varieties are glutinous, colored, and/or aromatic, and others not (interview with IRRI). Rice wine made from the heirloom rice is served for the farmers’ consumption and plays important roles in the periodical rituals (interview with farmers).



Scheme 2. (Left) A traditional thatched stilt granary in an Ifugao community. (Right) The heirloom rice in a millstone in an Ifugao community. Source: Photographs by the author in 2019.

In the IP communities, most households produce rice as well as other crops and livestock for their own consumption, respecting the lunar cycle, tribal traditional rules, and rituals [48,51] (interview with rice farmers and a tribal spiritual leader). According to their myths, the gods in the sky instructed them how to construct terraces and cultivate rice, and since then, the astonishing landscape of the rice terraces called “the Stairs to Heaven” has been crafted.

Those who occupy ample rice terraces, namely local elite families, invite the tribe’s spiritual leaders to implement the religious rituals six times a year according to the stages of rice cultivation while others less favored can partially or cannot afford it (interview with the tribe spiritual leader). Some elite families own 150 parcels of rice terraces though others have only trees or nothing (interview with the tribe spiritual leader and HRPMP). These wealthy families employ landless farmers and those who have limited farmland, who are classified in a lower social stratification in their society, to cultivate and harvest labor intensive crops, rice (interview with farmers). Some of these families employ 20–30 people while those who can employ 40–50 people are quite rare, which indicates that the economic gaps between the top and the bottom of their social class is relatively smaller than the

countries with a modernized economic system. For instance, the richest 2153 billionaires in the world possess more wealth than 4.6 billion people, which indicates more than two million times of income inequality [52].

Today, these agricultural labors are remunerated with harvested rice and/or cash and invited to feasts associated with their spiritual rituals after harvesting. Adapting to each economic capacity, elite families offer their livestock, smaller or larger such as chicken, pig, or carabao, as sacrifices for the rituals and then cook and serve the meats together with cooked rice to the poor, landless, and small farmers. The skulls of sacrificed livestock are proudly displayed on the walls of their traditional thatched stilt native houses (Scheme 1 left).

This long-standing custom of “those who can, offer; those who need, receive” has been established in relation to their belief that misfortunes are caused out of the feeling of envy and jealousy [51], and has certainly functioned to alleviate poverty, moderate economic gaps among different social classes, avoid conflicts, and sustain their communities. Despite their sophisticated culture and traditions, most of the IPs in the CAR today are statistically classed as “living in poverty”³ and receive subsidies from the state for the development of IP communities, including budgets for mechanization, marketing, training in the agricultural sector, and food procurement (interview with DA-CAR).

5.2. Patrimonization: UNESCO World Heritage and GIAHS

The patrimonization of the rice terraces in the CAR led significant changes in ecological, socio-cultural, and economic conditions of IP communities. While it brought important economic opportunities, especially in the tourism sector, the side-effects of patrimonization also mobilized the dwellers toward modernization that caused socio-cultural transformation and ecological burdens.

After the designation of rice terraces in Ifugao Province as a UNESCO World Cultural Heritage site in 1995, the CAR, especially Ifugao Province, was altered and became a destination for domestic and international tourists, despite it taking 10 h by car to get there from the capital. This designation has further pushed local dwellers towards modernization and engagement in the cash economy, and resulted in changes to their traditional mode of life and values. Despite new economic opportunities with tourism, economic pressures in general have led to an exodus of the young generation from the region, and especially from the farming sector, accelerating depopulation and aging of the IP communities. As a result, the average age of farmers in the CAR increased to 58 years old, while that of the country is 56 years old (interview with DA-CAR).

While the long-term evaluation of the impacts of the rehabilitation projects under initiatives related to UNESCO World Heritage and FAO GIAHS of the rice terraces and irrigation systems, local traditional knowledge, and ecosystems will have to be carried out in the coming decades, there are still significant portions of rice terraces that are abandoned following typhoons and landslides. For instance, in a barangay in Ifugao province, more than 20% of rice terraces were abandoned as of 2019 (interview with a rice farmer). Despite the given fact that the young generation in IP communities is less and less interested in subsistence rice farming, most farmers hope to restore the destroyed and/or abandoned rice terraces. However, the rehabilitation of rice terraces and irrigation systems does not always mean maintaining the original components of the rice terraces such as stone and mud, but sometimes it implies reconstruction with modern technology, adopting concrete. Although the replacement of natural materials with concrete undoubtedly results in depriving wildlife of a habitat, the new technology that frees farmers from periodic maintenance work is highly appreciated by them (interview with farmers and DA-CAR). The exodus from the montane area to lowland cities or foreign countries and the labor shortage in the farming sector that has been a salient trend in the region for decades has also motivated farmers to partially give up manual work in rice farming and adopt small handy-sized tillers (machinery) imported from the secondhand market in Japan.

5.3. Geographical Indications and the Heirloom Rice Project

The GI registration projects for the heirloom rice evolved in recent years in the CAR with institutional support. These processes resulted in the increase of farmgate prices of the heirloom rice and the margins for farmers in the value chain. In addition, the newly established cooperatives are expected to improve the transparency of pricing and quality standardization. While the overall expectation for GI in the territory is high, the symbolic meanings of the heirloom rice in the IP communities undergoes a radical change in the process of commodification and modernization.

Along with the patrimonization of the rice terraces and the associated elements by the United Nations, the CHRP (Cordillera Heirloom Rice Project) led by American and Filipino social entrepreneurs and their allied local cooperative in the CAR attempted to export the heirloom rice to the North American market from 2005 (Table 1). In 2014, a multi-stakeholder project, the HRP (Heirloom Rice Project), was established and led by IRRI and DA. In 2017, the HRP initiated a new sub-project to support the registration of some heirloom rice varieties produced in the CAR as a GI and were successful in registering “Cordillera Heirloom Rice Philippines” as a collective trademark in 2018. As of 2019, the HRP supports the local stakeholders in preparing additional proposals to register GIs for several varieties of heirloom rice as *sui generis* GIs for the near future.

The heirloom rice cultivars produced in the rice terraces include a huge agro-biodiversity, counting around 300 varieties₄ among 5500 rice varieties grown in the country (interview with FAO Philippines and RTFC), which shows the richness of agro-biodiversity and genetic resources in the IP communities in the CAR. The cultivars have been selected by and exchanged among farmers in these communities for more than two millennia, sometimes adopting new cultivars from outside of the communities, and adopted to the endemic climate, geography, especially high elevation, and agro-ecosystem with human interventions [25,47].

After the HRP started in 2014, the farmgate price of the aromatic heirloom rice increased to 90 P (1.80 USD)/kg (interview with DA-CAR). In 2019, the margin that farmers received was 47.5% in the value chain of CHRP and RTFC as the farmgate price rose to 95 P (1.90 USD)/kg and the export retail price decreased to 200 P (4.00 USD)/kg for aromatic heirloom rice (Table 3). However, the information about the prices provided by RTFC seems to be the average of several varieties and several export retail prices, which are varied in North America, Europe, and Dubai (interview with RTFC and farmers). If we calculate with the prices of the heirloom rice sold at the price of 10.00 USD (500 P)/kg in the US or 8.00 euros (472P, 9.44USD)/kg (1 P = 0.017 Euro) in Europe, the margin of farmers become less than 20% (calculated from interview with RTFC). As the production cost of the heirloom rice in the CAR is 50–60 P (1–1.2 USD)/kg, the farmers can benefit from the heirloom rice sales (Table 4). While the average price of rice, which is mostly improved hybrid rice, at farmgate, wholesale, and retail stages in the Philippines has been decreasing in recent years, the increasing and higher prices of the Cordillera heirloom rice allow farmers to cover their production cost and retain some cash income. However, despite the appreciation of the farmgate price, the number of farmers engaged in the project decreased to 746 in 2019 (Table 2). This is certainly the result of the Eighth Wonder’s decision to suddenly stop importing the heirloom rice from RTFC in 2017, that led RTFC to wholesale all the heirloom rice in local and domestic markets (interview with RTFC).

Table 3. The prices of heirloom rice in the Ifugao Province.

Cooperatives	Varieties/Margins	Farmgate	Wholesale	Retail
RTFC	aromatic/glutinous (P/kg, USD/kg)	95 (1.90)	125 (2.50)	200 (4.00)
	margins (%)	47.5	15.0	37.5
	nonaromatic (P/kg, USD/kg)	65 (1.30)	100 (2.00)	150 (3.00)
	margins (%)	43.3	23.3	33.3
HRPMC	Aromatic/glutinous (P/kg, USD/kg)	100 (2.00)	100 (2.00)	120 (2.40)
	margins (%)	83.3	0.0	16.7
	nonaromatic (P/kg, USD/kg)	80 (1.60)	90 (1.80)	110 (2.20)
	margins (%)	72.7	9.1	18.2

Sources: Interviews with RTFC and HRPMC in 2019. Note: The retail prices of RTFC value chain is about the year of 2016 in foreign market while that of HRPMC is about the year of 2018 in local market. The prices are average prices of several varieties. The parenthetic prices are USD.

Table 4. A comparison of production cost, margin, and prices of the heirloom and improved (hybrid) rice varieties.

Varieties	Farmers			Wholesalers		Retailers	
	Production Costs	Farmers' Gross Profit	Farmgate Prices	Wholesale Gross Profit	Wholesale Prices	Retail Gross Profit	Retail Prices
Cordillera Heirloom Rice (aromatic) (P/kg, USD/kg)	50–60 (1.00–1.20)	35–50 (0.70–1.00)	95–100 (1.90–2.00)	5–35 (0.10–0.70)	100–125 (2.00–2.50)	20–100 (0.40–2.00)	120–200 (2.40–4.00)
Improved rice (hybrids) (P/kg, USD/kg)	12 (0.24)	2–3 (0.04–0.06)	14–15 (0.28–0.30)	25–26 (0.50–0.52)	40 (0.80)	5 (0.10)	45 (0.90)

Sources: Interviews with DA-CAR, DA-BAR, RTFC, and HRPMC. Note: The prices are average prices of several varieties. The parenthetic prices are USD.

According to the interview with RTFC, it exclusively marketed the consolidated heirloom rice to the export market via RICE and Eighth Wonder from 2006 to 2009. Then, it started to wholesale it to local markets, tourists, and Manila from 2010. The percentage of rice exported in total volume rose from 50.3% to 77.8% in the case of Ifugao between 2010 and 2016 (calculated based on the interview with RTFC). The manager of RTFC confessed that selling the heirloom rice in bags of small portions in local markets or to tourists for souvenirs is more profitable than exporting it in bulk. In addition, export markets also require the payment of inspection costs and the conducting of a large amount of documentation work. His testimony is consistent with the heirloom rice value chain analyses conducted by the Heirloom Rice Project (HRP) in 2017 (interview with DA-CAR). In the CHRP, while the heirloom rice, packaged with its logo of two indigenous farmers pounding it in a stone mill (Table 2), was marketed in the high-end food retail stores and restaurants with images of UNESCO World Heritage and the singularity of IP culture at premium prices, there was no code of practice or heirloom rice quality standard agreed on between the farmers and the CHRP/RTFC [46]. As this situation left the farmers in the position of passively having to accept the prices decided upon by the CHRP/RTFC, and the quality standards formed by consumers in foreign markets, these factors probably contributed to the feelings of exclusion and dissatisfaction.

In 2014, the first phase of the HRP (2014–2016) was initiated by a multi-stakeholder consortium led by IRRI, DA-CAR, PhilRice, LGUs, the four provincial Universities (Ifugao, Benguet, Kalinga, and Mountain), local cooperatives such as RTFC, a community seed bank, NGOs, and some private corporations such as Eighth Wonder, RICE, and Kellogg's, an American agri-food TNC (transnational corporation) (interview with IRRI). As of 2019, the HRP was in its second phase (2017–2020) with the project title “Conserving and Increasing Productivity and Value of Heirloom Rice in the Cordillera”. Its objectives were to increase farmers' incomes and sustain the heritage and food security in the rice terraces of the

region. In 2018, the project covered 5838 ha of rice terraces managed by 8438 farmers and producing 16,522 MT of heirloom rice in the four provinces of Ifugao, Benguet, Kalinga, and Mountain (Table 2). To meet these objectives, IRRI signed on a MOA (Memorandum of Agreement) with the IP communities to carefully conserve and genetically analyze the grain of their heirloom rice varieties in its research center in Los Baños, Philippines. Together with the analyzed characteristics, the HRP promotes a community registry of heirloom rice varieties and selects some promising varieties in the markets, while supporting farmers' efforts to increase their productivity and the quality of their product.

As part of the HRP, IRRI and DA-CAR persuaded the stakeholders to register a collective trademark "Cordillera Heirloom Rice Philippines", which, together with its logo (Table 2), was recognized by the IPOPHL (Intellectual Property Office of the Philippines) in 2018. The applicants of the collective trademark were the newly established four cooperatives in the four provinces (Table 5). In these four provinces, the heirloom rice varieties analyzed by IRRI and selected by the HRP were registered in their communities (Table 5). The HRP also prepared four codes of practice for these selected varieties (interview with IRRI and DA-CAR). As of 2020, the law for sui generis GI is under the process of preparation with assistance from the Embassy of France in the Philippines and DA [53]. For the future enforcement of the sui generis GI law, the HRP is preparing the codes of practice for the potential GI heirloom rice varieties through a participative and consultative process in the four provinces in the CAR (interview with IRRI and DA-CAR). While the codes of practice under preparation are still confidential, they contain information on the characteristics of the heirloom varieties, history, geographical and climatic characteristics, conditions of soil and sunlight, quality, etc. The notion of *terroir*, a French word that means the decisive natural and human factors that form the quality of GI products and is often untranslatable into other major languages, can be translated into the languages of the IP communities: *mumpayo* in Tawali and *manpoyu* in Yattuka (interview with HRP). That signifies that the IP themselves are aware of the explicit relation between the products' quality and natural and human resources.

Table 5. The cooperatives and community registered heirloom rice varieties in the four provinces in the CAR.

Provinces	Ifugao	Benguet	Kalinga	Mountain
Cooperatives	Heirloom Rice Producers' Multi-Purpose Cooperative (HRPMC)	Benguet Heirloom Rice Farmers Agriculture Cooperative	Kalinga Rice Terraces Farmers Agriculture Cooperative	Mountain Province Heirloom Rice Farmers Agriculture Cooperative
Heirloom varieties	Innawi	Lasbakan	Chong-ak	Ominio

Source: Interview with IRRI and DA-CAR in 2019.

The registration of the collective trademark, however, caused friction between the HRP and the CHRP (interview with RTFC). The stakeholders in the CHRP, Eighth Wonder, RICE, and RTFC, found that the registered collective trademark "Cordillera Heirloom Rice Philippines" and its logo were too similar to their brand name "Cordillera Heirloom Rice" and the logo (Table 2). Another reason for their distrust of the CHRP lies in the establishment of four new cooperatives for marketing the heirloom rice, which are perceived as the competitors of the RTFC (interview with RTFC). The RTFC believes that this friction pushed Eighth Wonder into withdrawing from the heirloom rice business in the CAR. Losing the export market, its volume of sales in 2017 fell 40% compared to the previous year. Instead, the production site of the HRP expanded 70% from 2014 to 2017 (interview with LGU Hungduan). The HRP argues that the establishment of the four cooperatives was a decision made by the farmers themselves, prompted by their dissatisfaction with the pricing system, transparency, and management of the CHRP's business in the past (interview with DA-CAR). While the RTFC expects to become the umbrella cooperative of these four provincial cooperatives, this seemed unlikely to happen, at least as of 2019.

One of the four provincial cooperatives, HRP, established in 2018 in the Ifugao Province, started to consolidate 75 farmers between the ages of 40–75 as of 2019 (Table 2). While it is undecided whether it will export the heirloom rice or not, the cooperative favors direct sales in local markets of Baguio, a neighboring city, and Ifugao and Mountain Provinces. Being a “self-help organization” of farmers, its margins in the heirloom commodity chain are surprisingly limited and prioritizes the margins of farmers, which is 72.7–83.3% (Table 3). This redistribution of benefits may indicate that the cooperative was still in the test run period, but also its policy of affairs.

Under the initiative of collective trademark in HRP, the farmgate prices, farmers’ margins, and transparency of the value chain of heirloom rice has been improved. These impacts are expected to encourage the farmers, especially those in the young generation, to engage farming in the rice terraces. At the same time, though, the commodification of heirloom rice and degradation of its symbolic cultural status has happened among farmers. This can be seen in the case that some sell their heirloom rice and purchase improved hybrid rice which is less expensive than heirloom rice and therefore allows them to save cash (interview with RTFC). The formalization of the label of heirloom rice under the collective trademark and sui generis GI and higher recognition in the market may further promote this process of commodification of their subsistence crop.

6. Discussion

The experimental research on the case of the heirloom rice produced in the rice terraces in the CAR, Philippines demonstrates that the GI and the patrimonization led significant impacts in the IP communities. This section is dedicated to examining the impact of these schemes on the three dimensions of sustainability: ecological, socio-cultural, and economic.

6.1. The Ecological Dimension

On the one hand, the UNESCO World Heritage site and FAO GIAHS designation contributed tremendously to a raised awareness of the importance of the rice terraces and the related ecosystems, IP’s traditional knowledge, culture, and so on, at local, national, and international levels. It also mobilized a wide range of initiatives and financial/administrative support from the international institutions, public agencies, NGOs, and private sector, including TNCs. These initiatives were to restore and maintain the rice terraces, irrigation systems, watershed forests, and traditional knowledge that contribute to the conservation of the endemic ecosystem with remarkable biodiversity. On the other hand, however, it also imposed excessive ecological burdens on the communities. The growth of tourism accelerated the alteration of industrial structures and the modernization of life into one that requires more energy and electricity, disrupting a lifestyle that had historically been closely attached to the ecosystem. The planning of construction of hydropower plants, dams, and tunnels in the watershed areas affects the conservation of the ecosystem and rice farming on the terraces. The threat to the endemic ecosystem from exotic snails and rats has also been observed. This observation is compatible with the other cases of UNESCO World Heritage in other ASEAN countries where there is a controversial relationship between the sustainability of World Cultural Heritage sites and tourism [34].

The registration of a collective trademark “Cordillera Heirloom Rice Philippines” and the subsequent sui generis GIs led to high expectations of the stakeholders. These expectations emerged not only for economic reasons but also for the reason that these GIs may contribute to in situ conservation of the heirloom varieties which form the agro-biodiversity in the communities, and to the preservation of the local ecosystem thanks to the natural production methods registered in the codes of practice. This shows the similarity to the case of the Italian Sorana Beans, for which local small-scale farmers in montane area protect the local varieties under GI and the co-established code of practice that prohibit the use of agro-chemicals [23]. Being contradictory, however, it may also change farmers’ portfolios of cultivars as they would tend to favor the registered cultivars for commercial purposes while leaving others abandoned. In addition, the seed selection standards imposed in the

HRP and GI projects are based on the marketing values and high productivity, a fact which has the potential to profoundly transform the biodiversity and the quality of the heirloom rice in the long term. Like the case of Slow Food Presidium [24], GI has limitations in the protection of endemic ecosystems. This study confirms the early observation on the impact of commodification of heirloom rice in Ifugao Province [25]. Furthermore, modern technologies, such as mechanization and concreted irrigation systems, and the extension of the commodity chain abroad will increase the greenhouse gas emissions and/or demolish wildlife habitats.

6.2. The Socio-Cultural Dimension

The patrimonization entailed the appreciation in local, domestic, and international communities of the values and singularity of the IP's cultural heritage, outstanding traditional knowledge, the agro-ecosystem, and the history related to their religions and rituals. It mobilized the inter-agency initiatives and institutional supports to revive the education on their socio-cultural heritages and certainly contributed to a wider understanding and appreciation of the culture and traditions of the IPs. At the same time, the modernized lifestyle brought about by the patrimonization has significantly influenced thinking and values, particularly among the younger generations in the IP communities. Those engaged in the tourism industry, for instance, tend to lease their rice terraces inherited from the ancestors and buy staple rice from them or from markets (interview with a farmer and tourism guide). Those who have left the farming sector do not practice the rituals or participate in feasts after rice harvesting and lose their cultural practices and opportunities of social gatherings. This confirms the concerns about the cultural damages of the cash-cowing phenomenon reported in other South-East Asian countries such as Cambodia, Vietnam, and Laos [34].

The GI registration projects also have potential and contradictions in the socio-cultural dimension of sustainability in the IP communities. A GI and its agreed code of practice usually accentuate the significance of the product's value, not only the tangible values such as aroma, taste, and appearance, but also intangible values such as the singularity of its history, culture, knowledge, landscape, etc., and make it visible to stakeholders in the commodity chains, including consumers [10,14]. If this process works to increase transparency in the chain, and to make the contributions of farmers and agricultural labors visible and meaningful to consumers, it may partially function to the de-fetishization of the GI product. If this happens, arguably it will transform the relations between farmers/laborers and consumers from simply an economic one to a more nuanced socio-cultural one.

However, in most cases, GI is considered to be one of the marketing tools that differentiate and add value to the products on the market, and tends to standardize the quality of designated products [6,21,22]. Often, the process of a GI registration and co-construction of its code of practice is influenced by the pressures of modernization and economic efficiency at the expense of cultural values and traditional knowledge [21,43]. In the case of heirloom rice in the CAR, high productivity and quality that can be appreciated in the market are prioritized in the process of cultivar selections for GI registration. Furthermore, the commodification of subsistence staple heirloom rice varieties undoubtedly alters the perception of rice in IP communities from the culturally symbolic identity to an economically indispensable means. In other words, "the value to use" the heirloom rice will become "the value to exchange" [25]. Therefore, it undermines the socio-cultural tie between IP and their heirloom rice and further accelerates the socio-cultural transformation in IP communities. While the increased price of the heirloom rice can attract IP, including younger generations, to its production, it also allows them to sell their heirloom rice and buy less expensive improved hybrid rice for savings (interview with RTFC). Although most farmers still sell only their surplus to the market, which keeps the volume available for export at only 1–2% of the total production, for local and domestic markets 18–19%, and for subsistence still 80%, some IP have started to forget the value of subsistence as being "to be independent from the state" (interview with RTFC). Depending on the design of GI, it can transform the

position of farmers into one of dependence on the market system and cash income, with the attendant fluctuations in prices and vulnerability to pandemics such as COVID-19.

6.3. *The Economic Dimension*

The patrimonization and its associated restoration projects of the rice terraces, irrigation systems, and reforestation certainly contribute to the IP's agriculture and livelihoods, and therefore to their economic viability for the long term. In addition, the cash income generated from the patrimonization is not negligible, and it may potentially contribute to the alleviation of poverty in the IP communities. However, the unevenly distributed new economic opportunities and benefits from the patrimonization and the tourism industry, given the perceived unfavored economic status of the region, have not prevented the economic exodus of IP from their communities and abandoning rice terraces. Being exposed to values of other societies brought by domestic and foreign tourists, the economic integration of dwellers in the designated area can be accelerated [34].

The heirloom rice GI projects have the potential to increase transparency in the commodity chains and empower the farmers to organize themselves through the establishment of cooperatives and by participation in the drafting of the codes of practice. The higher farmgate prices and farmers' margin of heirloom rice compared to the lowland improved varieties and the short commodity chain reaching local markets are beneficial to the farmers' economic and livelihood security. If they continue to favor local markets over export markets, the economic uncertainty will be relatively suppressed. However, there are already tendencies for farmers to act to increase their income at the expense of their traditional subsistence livelihoods, and to improve their economic efficiency through reducing their production costs, mainly labor cost, by adopting machinery. This logic of modernization and economic efficiency that caught small family farmers in lowlands as well as the other rice producing countries such as Japan from the 1960s led them to increase their investment in larger and more expensive machinery, to consolidate the rice paddies to make larger parcels, and to finally decrease their economic margin and gross profit rate in the agri-food system. In addition, replacing labor by machinery will accelerate the depopulation of the IP communities and negatively impact social sustainability. These processes to seek economic rationality have already begun in the CAR.

6.4. *The Challenged Compatibility of Three Dimensions of Sustainability*

As discussed in the previous sub-sections, the GI and the patrimonization exhibit both potential and contradictions in the ecological, socio-cultural, and economic dimensions of sustainability of the IP communities that are inter-related and sometimes antinomic. While the GI and the patrimonization certainly increase the farmers' economic opportunities and public awareness of the values related to the heirloom rice and the rice terraces in their inherited ecosystem and culture, these schemes also accelerate the transformation of ecological, social, and economic patterns identified in the IP communities.

For the designation of the rice terraces as a UNESCO World Heritage site, the ICOMOS (International Council on Monuments and Sites) and the IUCN (International Union for Conservation of Nature and Natural Resources) reported that "they can function only [as] the direct result of the achievement of a delicate balance between a wide range of factors—climatic, geographical, ecological, agronomie, ethnographie, religious, social, economie, political etc. Once these are disturbed the whole system begins to collapse" [54]. In this sense, it is explicit that the heirloom rice production in the IP communities faces significant sustainability challenges.

7. Conclusions

Being aware of the above-mentioned potential and contradictions of the three dimensions of sustainability in GI and patrimonization processes, this final section questions in which conditions the three dimensions of sustainability can be achieved. To be sure, the contradictions inherent in the very processes of GI and patrimonization implementations

will be difficult to be completely overcome. Yet, if these schemes are considered to be viable policy options among stakeholders in the given social context, what lessons can be drawn from the case of heirloom rice in the CAR, Philippines?

It would be indispensable that the stakeholders in the GI and patrimonization projects be aware of the limitations of these schemes to realize the three dimensions of sustainability and their incompatibility. If they understand both the potential and the contradictions of these schemes, they can consciously control over development and its negative consequences on ecological, socio-cultural, and economic sustainability, and search for the synergy of multiple elements described in the ICOMOS and IUCN report. When IP communities are concerned, public authorities need to pay particular attention to avoid over-commodification of their subsistence crops and culture, and support these communities to establish the ensuring mechanisms incorporated into the codes of practices of GIs and the action plan of patrimony preservation. While these efforts will not substantially change the inherent contradictions of GI and patrimonization demonstrated in this study, they will contribute to the social legitimation of the implementation of these schemes.

8. Limitations of the Study and Future Project

This study is based on the surveys on the impact in the early stage of the collective trademark “Cordillera Heirloom Rice” registered in 2018 and the initiative of future sui generis GI registration. Therefore, it has a limitation in analyzing the long-term effects of GI registration that will be researched in the coming decades. Likewise, the long-term evaluation of the impacts of the rehabilitation projects of the rice terraces and irrigation systems, reforestation of watershed areas, and training programs for heritage conservation under initiatives related to UNESCO World Heritage and FAO GIAHS needs to be followed up in coming decades. In addition, readers are invited to read the survey results of this study with attention to the fact that it is based on qualitative analysis of the information collected from a limited number of samples, which is fourteen, but not on quantitative analysis of a large-sized sample.

9. Notes

1. Although there is no consensus reached among scientists about the exact period when the IPs started to build the rice terraces, some say it was 1000 BCE and others contend it was from 16th century, UNESCO decided to register the site with “two millennia” of history [25,48].
2. According to the farmers interviewed, they produce organic fertilizers from wild grasses, rice straw, and chicken manure, and protect rice by planting rosemary. The simultaneous rice planting also facilitates protecting the young plants from insects and diseases.
3. The situation in the CAR is relatively favorable compared to other regions in Visayas and Mindanao in the country where parts of the population, including IPs, cannot afford three meals a day (interview with DA-CAR).
4. It is noteworthy that the total number of rice varieties grown in Japan is around 300.

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