Challenges and possibilities for Satoyama and Satoumi in Japan and around the world

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Abstract

Each region has its unique natural environment, which provides humans with various ecosystem services. These gifts have aided in preventing natural disasters, mitigating climate change, and providing food and cultural diversity. In developing countries, the construction of large-scale gray infrastructures, the conversion to agricultural land from forests or wetlands, and the increased demand for natural resources are due to population growth. On the other hand, in Japan, they are in a difficult situation, with a declining population, an aging population, and a shortage of workers. The area of abandoned land is increasing yearly, causing social problems such as the decline of the local social economy. In this study, I collected good practices on challenges by locals from websites, Moocs[1], and interviews. In addition. I introduce some tools and activities for human coexistence with nature and clarify their potential and possibilities.

Keywords: Nature, Ecosystem-services, Climate Change, Eco-DRR, Developing Countries, REDD+, Sayoyama, Satoumi, International Cooperation, Rural Development, Social Business, Harmony with Nature

1. Background

Each region has its unique natural environment, which provides humans with various ecosystem services. These gifts have aided in preventing natural disasters, mitigating climate change, and providing food and cultural diversity. However, global environmental issues have many negative impacts on human cultures that live in harmony with nature.

In developing countries, people's livelihoods and identities have also been negatively affected by forest timber development, the construction of large-scale gray infrastructures, the conversion to agricultural land from forests or wetlands, and the increased demand for natural resources due to population growth. Rural areas in Japan, for instance, Satoyama and Satoumi account for approximately 70% of the country's land area. Although their population is only approximately 10%of the total population, they have an essential role in agricultural production.

However, they are in a difficult situation, with a declining population, an aging population, and a shortage of workers. The area of abandoned land is increasing yearly, causing social problems such as the decline of the local social economy. In addition, the COVID-19 pandemic has substantial negative impacts on agriculture and tourism, vital industries in these rural areas. People must develop the area sustainably using ecosystem services and re-activate each region.

2. Method and Objective

In this study, I collected good practices on challenges by locals from websites, reports, symposiums, Moocs interviews, etc. In addition, I introduce international initiatives, tools, and activities for human coexistence with nature and clarify their potentials, challenges, and possibilities. Local stakeholders can replicate and localise to their regions from those showcases.

3. The global potential of Satoyama and Satoumi

To rehabilitate the natural environment, it is essential to restore not only the primary natural environment but also the secondary environment in which people can sustainably use natural resources and maintain their livelihoods. This section introduces those international initiatives

[1] Massive Open Online Courses

that are promoting effortsto achieve it.

Table 1: The International Initiatives

Initiative	Organization	Launched year
UNESCO Biosphere Reserves (BR)	UNESCO	1976
[Objective] UNESCO Man and the Biosphere (MAB) Programme is a joint intergovernmental programme launched in 1971. The aim is scientific research into the sustainable use and conservation of nature and natural resources. As of October 2020, there are 714 areas in 129 countries, 10 of which are in Japan[2] (*1).		
Ramsar site	UNESCO	1975
[Objective] A Ramsar site is a wetland site designated to be of international importance under the Ramsar Convention（The Convention on Wetlands), an intergovernmental environmental treaty established in 1971 by UNESCO. It provides for national action, international cooperation regarding wetlands conservation, and sustainable wise use of their resources.[3]		
Globally Important Agricultural Heritage Systems (GIAHS)	FAO	2002
[Objective] To pass on to the next generation by certifying traditional agriculture, forestry, fisheries, land use, technology, cultural customs, etc[4].		
Global Geoparks	UNESCO	2004
[Objective] To protect geological heritage sites from using them for research, and to develop them as fields for understanding the relationship between nature and human beings. There are two types of Geoparks: the high-quality "Global Geoparks," recognized according to the criteria set by UNESCO, and the "Japanese Geoparks," recognized by the Japanese Geoparks Committee; since 2015, they have been an official programme of UNESCO. As of July 2020, there are 161 UNESCO Global Geoparks in 44 countries, 9 of which are in Japan[5].		
Satoyama Initiative	IPSI(MOEJ and UNU-IAS)	2010
[Objective] In Japan, there are traditional systems, such as Satoyama and Satoumi, where the natural environment and human activities such as agriculture, forestry, and fisheries have been maintained for many years. The Ministry of the Environment Japan (MOEJ) proposed the Satoyama Initiative at the 10th of the Conference of the Parties to the Convention on Biological Diversity (CBD) as an initiative to promote sustainable management and use of natural resources, with those according to the potential of the environment in regions outside Japan, and to realize a society in harmony with nature. To promote these activities, the international partnership "International Partnership for the Satoyama Initiative" was established with the participation of various actors, including national and local governments, research institutes, international organizations, NGOs and private companies[6].		

(1) Some showcases in Satoyama and Satoumi around the world

This paragraph introduces some ODA projects in developing countries to live in harmony between people and nature and re-activate rural areas.

[2] Retrieved 2021.12.8 from https://en.unesco.org/biosphere
[3] Retrieved 2021.12.8 from https://www.ramsar.org/
[4] Retrieved 2021.12.8 from https://www.maff.go.jp/e/policies/rural_dev/giahs/index.html
[5] Retrieved 2022.2.8 from https://geopark.jp/en/
[6] Retrieved 2021.12.8 from https://satoyama-initiative.org/

1) International cooperation through JICA schemes

The Japan International Cooperation Agency (JICA) has some schemes under which local governments, universities and companies can propose ODA projects, such as Grassroots Technical Cooperation and SME/SDGs Business Support Projects. Examples of such assistance to developing countries are presented.

i) Rice Terraces in the Philippine Cordillera (Grassroots Technical Cooperation)

In the Philippines Cordillera, there are many mountains with altitudes of over 1,000 meters and six ingenious tribes (Benguet, Kalinga, Mountain, Abra, Apayao and Ifugao) whose culture was based on nature worship. The terraced rice fields of the Cordillera, such as those of Banawe, Badat and Bontoc, were inscribed on the World Heritage List in 1995 and triggered Japan's terraced rice field conservation policy.

However, a shortage of labor due to the exodus of young people to the cities has increased abandoned fields and the construction of unregulated buildings, making it a challenge to maintain the landscape. In 2001, the area was inscribed as a World Heritage Site in Danger by UNESCO. Kanazawa University, with the support of JICA, has implemented a grassroots technical cooperation project since 2014, "Support for establishing a human resource development program for the sustainable development of GIAHS "Ifugao Rice Terraces.

The project also sought to transfer the know-how of capacity development and the founding of organizations and maintenance gained through the Noto Satoyamaand Satoumi Meister Programme[7] (*5).

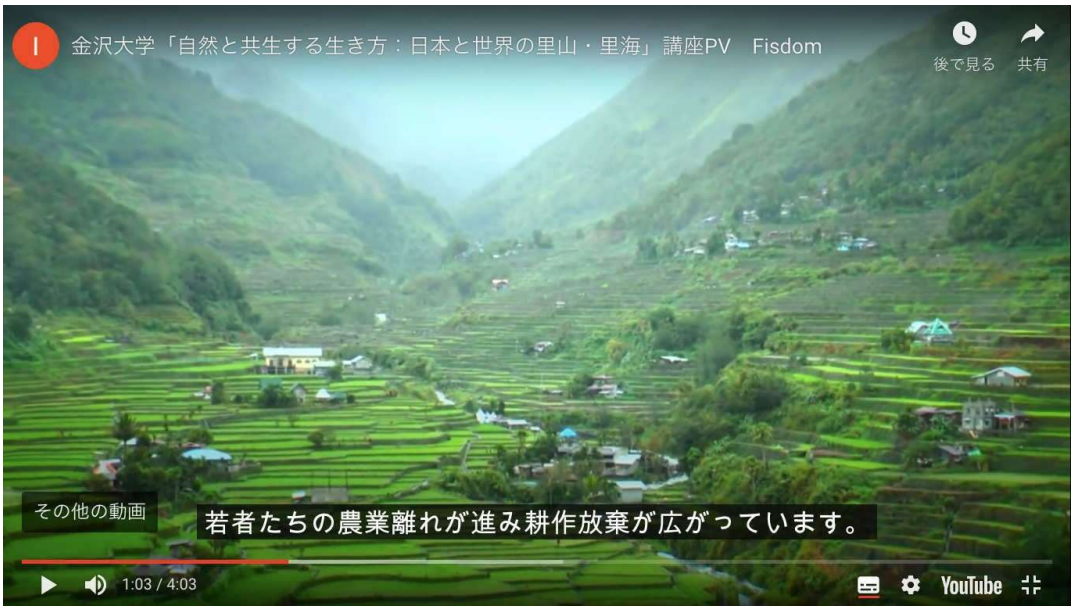

Figure 1 Screenshot of MOOC by Kanazawa University

ii) Rạn Biển Biosphere Reserves in VietNam (Technical Cooperation Project)

Bidoup Nui Ba National Park, the core area of the Rạn Biển Biosphere Reserves, has 1,933 plant species, including 96 endemic species and 42 animal species, including 32 endangered species.

Inside and outside the park, ethnic people such as the Coho, Nung and Bahnar make their living through small-scale coffee cultivation. However, they havebeen cultivating coffee plantations for many years because it is inappropriatefor the potential vegetation. They have been using inappropriate chemical fertilizers, which has led to a sharp decline in production and left small-scale

[7] Retrieved 2021.12.28 from https://www.youtube.com/watch?v=vfWw61T2xfQ

farmers in poverty.

Since 2010, the JICA has been implementing the “Bidoup Nui Ba National Park Management Capacity Enhancement Project” to conserve biodiversity and improve the livelihoods of ethnic people and has provided technical guidance on ecotourism and low-pesticide coffee cultivation. In 2017, the core area of Bidoup Nui Ba National Park was registered by UNESCO as the Rạn Biển Biosphere Reserve.

Currently, the JICA is implementing the successor project; “Sustainable Natural Resource Management Project,” but issues such as improving the livelihoods of thelocal people remain.

When we conducted a field survey in May 2018, we found that the pine forest around the coffee plantation had been cut down and that the natural forest had almost disappeared. In addition, due to soil degradation, nutrients in the surface soil are depleted, and the natural enemies of aphids and beetles are abnormally high, increasing the cost of fertilizer for farmers and putting pressure on their livelihoods.

Vietnam’s MAB Planning Committee and Bidoup Nui Ba National Park Office have expressed a wish to introduce biodiversity-based products, which impose an obligation to consider biodiversity and to train Satoyama and Satoumi Meisters. Several private companies are considering providing support through JICA’s private sector cooperation scheme[8].

Figure 2 Bidoup Nui Ba National Park in Vietnam

iii) Papua New Guinea (private partnership project)

Papua New Guinea’s forest area has decreased significantly from 33,627,000 hectares in 1990 to 33,559,000 hectares in 2015, while the area of primary forest has decreased from 31,329,000 hectares in 1990 to 17,599,000 hectares.

Papua New Guinea’s land is guaranteed to the indigenous people who inhabit it through customary tenure, which covers 97% of the country. For development projects such as timber harvesting and palm oil plantations, the government selects development companies through a bidding process and grants concessions after receiving a 50-year transfer of forest management rights from indigenous people who own the land. Because of concessions, the expansion of mobile slash-and-burn farming and the development of natural resources, the forest area has decreased, and the population of wild pigs, wild boar and deer, which are essential protein sources for indigenous people, has declined. The indigenous people who are no longer able to sustain their livelihoods have moved to settlements, squatter settlements in urban areas, where they make a living by picking up

[8] Retrieved 2021.12.29 from https://libopac.jica.go.jp/images/report/12175717.pdf

rubbish.

In 2005, the Government of Papua New Guinea joined the Government of Costa Rica in advocating REDD at the 11th Conference of the Parties to the United Nations Framework Convention on Climate Change. The JICA has been implementing technical cooperation projects on the forest, biodiversity conservation, and waste management at the request of the Papua New Guinea government[9].

2) Activities in Satoyama and Satoumi by collaborating between local governments and other stakeholders in Japan

This paragraph introduces some activities and challenges in Japan for people to achieve living with nature.

i) By using international initiatives

Ishikawa Prefecture has various traditional cultures based on its rich natural environment. The Noto area is registered as GIAHS, the Hakusan area as a Hakusan Biosphere Reserve and a Japanese Geopark, and the Kaga area as a Ramsar wetland (Katano Kamoike). Currently, Ishikawa Prefecture is mobilizing funds such as the Satoyama Promotion Fund and the Ishikawa Agricultural Support Fund, developing human resources, interacting with university students, and collaborating with the private sector, and international organizations. Because of these efforts, the prefecture is gradually achieving results not only in reducing abandoned land but also in the revival and promotion of traditional industries, organic farming, ecotourism, migration and settlement of young people, and the rise of local brands, which are spreading to other industries such as the Toyota Smart Project. Ishikawa's efforts have also attracted attention overseas. Many of JICA's project counterparts have participated in JICA's training programs, visiting Hakusan and Noto to learn about the prefecture's efforts to balance Satoyama conservation and regional development.

Figure 3 Traditional house in Hakusan Biosphere Reserves

[9] Retrieved 2021.12 30 from https://www2.jica.go.jp/ja/oda/index.php?area1=%E5%A4%A7%E6%B4%8B%E5%B7%9E&country1=%E3%83%91%E3%83%97%E3%82%A2%E3%83%8B%E3%83%A5%E3%83%BC%E3%82%AE%E3%83%8B%E3%82%A2&search=%E6%A4%9C%E7%B4%A2

ii) Branding of agricultural products and regions

Many species of traditional farming methods and vegetables, symbols of GHIAS, are endangered. If traditional agricultural products become extinct, their cultivation techniques and cooking and preservation methods will disappear. The future challenge is recognizing and preserving local vegetables while linking the region to the product and regional development, such as tourism. Japan has many traditional vegetables, but the country needs to catch up in branding. We propose incorporating traditional vegetables into the main certification systems, such as GI, GAP and Organic-JAS, to see how they can be adapted to the overall distribution flow. Establishing a value chain for local agricultural products, from production to processing and sales, as well as the packaging and layout of sales outlets, are also essential for the high added value of products. There are examples of successful branding by fully reflecting local people's daily life, living things, views on nature and cultural elements in design and product development in Japan. The key to marketing is establishing a system of mutual support, such as a direct marketing partnership. For example, a primary producer outsources production to a secondary producer and sales to a tertiary producer. The prices are too high for the average consumer to buy at the major
supermarkets, so the products are targeted and sold at direct sales points or antenna shops. We will set up our own restaurants selling local produce and differentiate ourselves using handmade products. In addition to developing and marketing products from the consumer's perspective, it can reduce costs for retailers by designing stylish packaging that can be used and reused. One way to compete with cheaper produce produced on plantations is to promote the quality of the product and the importance of appealing biodiversity-based products. For example, there are examples of local authorities supporting small farmers by encouraging them to stop using pesticides, conducting surveys of the habitat of living organisms, and selling rice grown in rice fields that meet specific criteria. In particular, there are innovative examples of the use of ICT, such as rice field traceability, where the history of each rice field can be viewed on websites.

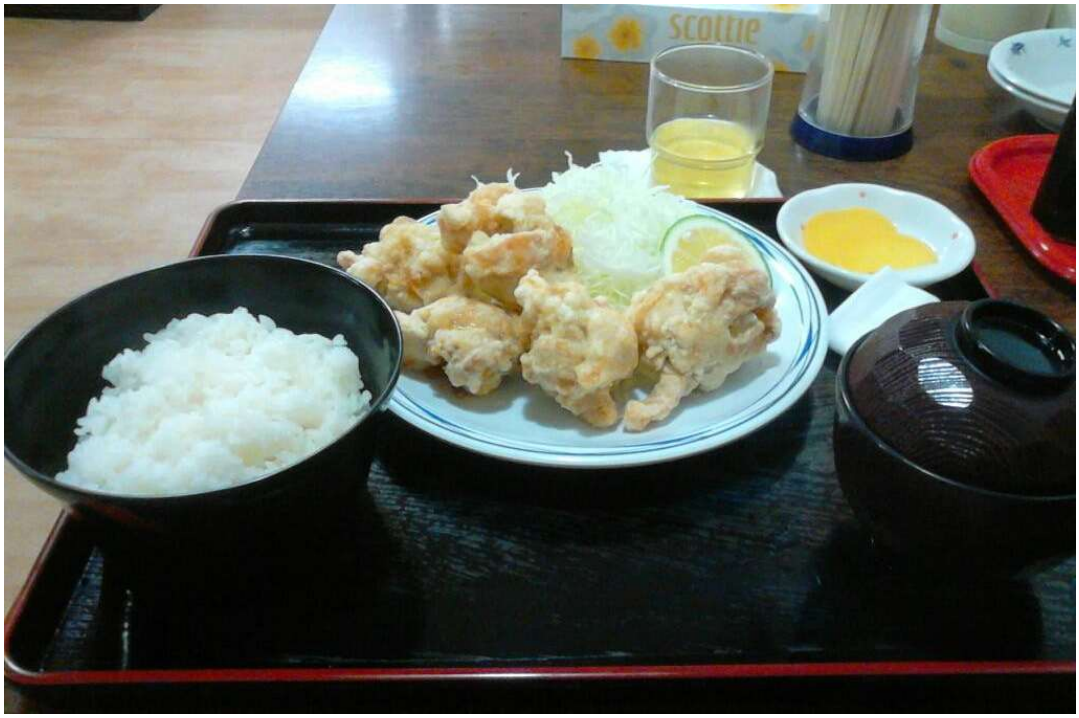

Figure 4 Traditional Food in Sobo, Katamuki and Okue Biophre Reserves

iii) Social Business

The potential of Satoyama and Satoumi can be turned into a business to solve their issues. To show both to Japan and around the world what the Satoyama and Satoumi areas should be like, to make the most of their nature and traditional culture, and to revitalize the local economy based on Satoyama and Satoumi, it must be able to generate recurring income on its own, without relying on funds from ministries, local authorities or corporate CSR.

Furthermore, to turn the potential of Satoyama and Umi into a business, it is necessary to have funds for entrepreneurship. There are several ways for businesses to raise funds to start a project: (1) own funds, (2) loans from financial institutions, (3) allocation to third parties such as issuing shares or bonds, and (4) subsidies. However, these methods involve complicated procedures, the need for collateral such as real estate, and other hurdles suchas screening and credit.

A lower hurdle than the above methods and a way for anyone to raise money to start a business of their size with a small amount is crowdfunding. Crowdfunding is a term coined from the combination of crowd and funding, where an unspecified number of people provide funding to an individual or organization.

Since crowdfunding is now mainly done via the internet, it can become a powerful tool for solving social/regional issues by (1) spreading sympathy and creating a new solidarity, people and community by calling for investment through SNSs, etc., and (2) spreading sympathy. (3) Attracting potential customers by providing attractive returns and obtaining data for marketing. (4) The development of returns can lead to competitive advantage and branding for businesses and communities.

There are two types of crowdfunding: (1) “Purchase type crowdfunding,” in which goods and services are provided as returns, and (2) “Loan type crowdfunding,” in which financial returns and goods and services are provided.

5) Hometown Tax in Japan

Hometown tax payment is one of the donation tax systems in Japan. Although the name is “tax payment,” the actual situation in the system is “donation.” These donations will be deducted from income tax and residence tax. Some local governments in Japan use their income from Home Town Tax for their initiatives and activities for human coexistence with nature[10].

4. Discussion and Conclusion

Conservation on biodiversity in the Satoyama and Satoumi areas is also about protecting the interests of companies and people. However, since rapid economic growth and globalization, biodiversity has decreased, and the flow of ecosystem services has also reduced. Nevertheless, the separation of people’s lives from nature has not resulted in people saying that they are troubled by the decline in biodiversity and ecosystem services. Some people say that it has become more convenient.

The globalization of the economy and society has progressed rapidly, and society has left the Satoyama and Satoumi regions behind. The concentration of the population in cities and unsustainable development have increased the risk of natural disasters, global environmental issues and the COVID-19 pandemic. Sustainable urban development and decentralization of the people to rural areas are needed to solve these issues. It will require a change in values and lifestyles. These changes in values and lifestyles must be planned and implemented in accordance with each region's natural and social environment.

The relationship between nature and people is unique to each region. When considering how to rebuild this relationship and re-activate each area, the three keys of “natural resources,” “harmonization and methods of conservation and use,” and “traditional agriculture, forestry and fisheries” create local assets such as agricultural products, traditional crafts, the formation of

[10] Retrieved 2021.12.31 from https://www.soumu.go.jp/main_sosiki/jichi_zeisei/czaisei/czaisei_seido/furusato/about/

landscapes and the transmission of culture, which form the basis of the identity of the local population. To restore the relationship between people and nature, we will also collaborate with researchers and the government, form networks with other regions and consider the use of international initiatives. In addition, cross-border cooperation is possible to find a solution. For that, it is also necessary to accurately understand the current situation and the challenges and then to take action with a view to future scenarios. It is predicted that the unique land use, local resources and traditional ecological knowledge of a particular area will diffuse with the disappearance of the community. It has become clear that the biodiversity crisis (the second crisis) caused by depopulation, aging and the exodus of human resources will cause even information about ecosystem services (natural resource use techniques) to disappear [11] (*8). To prevent the disappearance of this information and technology, priority areas need to be zoned, measures need to be devised, and cooperation with other areas is necessary. Above all the regions inhabitants must rediscover that what they take for granted is what they treasure. It will contribute to rural areas to cultivate their attraction.
The achievement of harm to nature will help solve both global issues and the COVID-19 pandemic, as well as bring transformative change across economic, social, political and technological boundaries and the new normal.

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Conflict of Interest
I declare that I have no conflicts of interest.

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