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Authors: Akira, Nagata, and Evonne, Yiu

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Ten Years of GIAHS Development in Japan

NAGATA Akira^{1,*}, YIU Evonne²

1. Institute for the Advanced Study of Sustainability, Operating Unit Ishikawa/Kanazawa, United Nations University, Ishikawa 920-0962, Japan;
2. Institute for the Advanced Study of Sustainability, United Nations University, Tokyo 150-8925, Japan

Abstract: Approximately ten years have passed since Globally Important Agricultural Heritage Systems (GIAHS) was introduced to Japan in 2011, with 11 GIAHS sites designated so far. The Japan Nationally Important Agricultural Heritage Systems (J-NIAHS), which considers resilience, multi-stakeholder participation and sixth industrialization, was subsequently established in 2016, and has designated 15 J-NIAHS sites. GIAHS sites can be classified into three major types: Landscape, farming method, and genetic resource conservation types, and most Japanese GIAHS sites are of the landscape type. Since there is almost no national subsidy for GIAHS or J-NIAHS, designated sites are expected to secure funding for conservation from their own efforts. For this reason, a voluntary network of the Japanese GIAHS sites has been active in promoting cooperation on GIAHS conservation. The priorities of the Japanese GIAHS have focused on raising public awareness about GIAHS and J-NIAHS, improving livelihoods, as well as fostering the international exchange of experience and knowledge regarding Agricultural Heritage Systems, especially among Japan, China and Korea.

Key words: GIAHS; agricultural heritage; traditional agriculture; sustainability; biodiversity; landscape

1 Introduction

In response to the global trends in the industrialization and mass production in agriculture, as well as other social-economic changes that undermine family farming and traditional agricultural systems, the Food and Agriculture Organization of the United Nations (FAO) launched a Global Partnership Initiative on conservation and adaptive management as the “Globally Important Agricultural Heritage Systems” (GIAHS) in 2002 at the World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa (FAO, 2017).

Approximately ten years have passed since the GIAHS was introduced to Japan. It was started in 2009 with encouragement from Professor Kazuhiko Takeuchi, then Vice-Rector of United Nations University (UNU). Since the first two GIAHS designations in 2011, approximately three GIAHS sites have been designated every two years, with a total 11 GIAHS sites being designated so far in Japan. On the other hand, the Japan Nationally Important Agricultural Heritage Systems (J-NIAHS) was subsequently established in 2016, which considers the resilience, multi-stakeholder

participation and sixth industrialization of potential sites, in addition to the five criteria of GIAHS. Eight sites were first designated as J-NIAHS in 2017 and another seven sites in 2019, for 15 designated J-NIAHS sites in total. In the development of GIAHS in Japan, the UNU in Tokyo has played a pivotal role in promoting understanding and interest in GIAHS (Yiu and Nagata, 2018).

This paper will trace the 10-year history of GIAHS development in Japan, and classify the types and analyze the characteristics of the Japanese GIAHS and their conservation. It will also discuss the unique voluntary GIAHS network among the GIAHS sites, policy perspectives such as support systems and subsidies from the national government, and issues related to the future development of GIAHS in Japan.

2 The development of Agricultural Heritage System designations in Japan

2.1 FAO Globally Important Agricultural Heritage Systems (GIAHS) designation in Japan

2.1.1 History of Japanese agriculture and its current situation
Cultivation of rice started approximately 3000 years ago in

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*Corresponding author: NAGATA Akira, E-mail: erahs.japan@gmail.com

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the Kyushu region in southern Japan, and from there paddy rice farming then extended to most parts of the country and laid the foundations of the Japanese agrarian societies and local economies (Kimura, 2010). Since then, agriculture has been developing along with the development of the Japanese economy and society. Especially during a period of approximately 100 years from the late 17th century, Japanese agriculture developed dramatically with the introduction of agricultural tools, fertilizer and commodity crops, and farmland expanded by land reclamation of new paddy fields. After World War II, Japanese agriculture has continued to develop further by small farmers, created by land reform, and so on. The Basic Law on Agriculture was enacted in 1961 and Japanese agriculture became modernized by introducing chemical fertilizers, chemical pesticides and agricultural machinery. While farmers' income has increased as a result, it is less lucrative than the opportunities of other rising sectors, which has caused income gaps. Moreover, rural areas have been suffering from depopulation, aging, shortage of successors, and so on. In 1999, the Basic Law on Food, Agriculture and Rural Areas replaced the Basic Law on Agriculture, and the new Law includes policies for securing a stable food supply, sustainable agricultural development, the development of rural areas and fulfillment of the multifunctional roles of agriculture and rural areas. Under these circumstances, GIAHS is recognized for its potential to contribute to revitalizing rural areas and fulfilling the multifunctional roles of agriculture and rural areas, such as conservation of national land, water resources, and the natural environment, as well as the creation of resilient landscapes and preservation of cultural traditions.

2.1.2 The beginning of GIAHS in Japan

GIAHS was mainly targeted at developing countries in its early years and drew little attention in developed countries. For this reason, very few people in Japan knew about GIAHS and interest in GIAHS was limited to individual research and activities before 2009.

In 2009, Professor Kazuhiko Takeuchi, then Vice-Rector of UNU, encouraged developed countries like Japan to explore GIAHS designations to inherit traditional agriculture systems. He suggested that Japan could apply to GIAHS based on the concept of "Satoyama", which is a traditional rural Japanese landscape where such human-influenced natural environments comprised of integrated ecosystems represent a balanced relationship between human beings and nature (Takeuchi, 2010). In 2010, Japan hosted the 10th Conference of the Parties to the Convention on Biological Diversity (CBD COP10) where many representative Satoyama in Japan were showcased to the world as case study sites of Satoyama, including the Noto Peninsula of Ishikawa Prefecture and Sado Island of Niigata Prefecture, which were subsequently designed as GIAHS. This increasing global attention from the CBD COP 10 has provided such

Satoyama communities with the opportunity to rediscover their traditional agriculture systems and regain confidence in their rural way of life. The introduction of GIAHS in Japan was thus proposed under such circumstances.

The first GIAHS-themed workshop in Japan was initiated by UNU and held in June 2010 in Kanazawa City, Ishikawa Prefecture. The workshop was attended by government officials and experts from UNU, the Ministry of Agriculture, Forestry and Fisheries (MAFF), Ishikawa Prefecture, Kanazawa University, etc., including Dr. Parviz Koochafkan, then GIAHS Global Coordinator of FAO. However, at that time, interest in GIAHS by MAFF and Ishikawa Prefecture was not so obvious, and subsequent activities were stagnant. For this reason, Ms. Anne McDonald, then Director of United Nations University Institute of Advanced Studies Operating Unit Ishikawa/Kanazawa (UNU-IAS OUIK) approached the officials of the Hokuriku Regional Agricultural Administration Office (HRAAO) of MAFF, and in August 2010, an internal meeting with UNU experts was held in the Director's office of HRAAO. In the meeting, it was agreed that Noto Peninsula of Ishikawa Prefecture and Sado Island of Niigata Prefecture under the jurisdiction of HRAAO would be Japan's first GIAHS applications.

At that time, few people in the national, prefectural and municipality governments or local communities knew about GIAHS, and it was impossible to apply for GIAHS designation by a bottom-up approach, so officials from HRAAO worked with the municipal mayors and UNU coordinated with the GIAHS Secretariat of FAO. Through such activities, not only the local municipalities but also MAFF headquarters (namely the Rural Environment Division, Rural Development Bureau) and the prefectural government gradually gained understanding.

2.1.3 First designation batch in 2011

In December 2010, Sado City of Niigata Prefecture and Noto Region of Ishikawa Prefecture submitted the first GIAHS proposal to FAO with the "cooperation" of MAFF. The titles of the two GIAHS proposals were "Sado's Satoyama in Harmony with Japanese Crested Ibis" in Sado City of Niigata Prefecture, and "Noto's Satoyama and Satoumi" in the Noto Region of Ishikawa Prefecture, with "Satoyama" as the keyword for both GIAHS proposals.

The FAO GIAHS International Forum was held in June 2011 in Beijing, China to designate the new GIAHS, and the GIAHS Steering Committee meeting was held to discuss the approval of GIAHS designations at the Forum. At that meeting, Dr. Parviz Koochafkan, then GIAHS Global Coordinator of FAO, asked the participants of the meeting whether the proposed "Sado's Satoyama in Harmony with Japanese Crested Ibis" and "Noto's Satoyama Satoumi" applications of GIAHS were worth designating as GIAHS and the meeting then approved them, along with 11 other sites. These first GIAHS designations of Japan marked a monumental milestone for Japan and other developed coun-

tries as subsequent events unfolded. Although GIAHS was rarely featured in the Japanese mass media, the first GIAHS designation in Japan was widely reported in the Japanese mass media.

2.1.4 Second designation batch in 2013

Inspired by the GIAHS designations of Sado and Noto, officials from Shizuoka Prefecture, a chef of an Italian restaurant from Kumamoto Prefecture, and officials from Oita Prefecture consulted with UNU about their interest in submitting GIAHS applications. On the technical advice of UNU, the respective GIAHS promotion associations prepared the GIAHS proposals for “Traditional Tea-grass Integrated System in Shizuoka”, “Managing Aso Grasslands for Sustainable Agriculture” and “Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System”. At that time, MAFF requested that UNU evaluate these GIAHS proposals from an academic perspective as experts, and so UNU prepared the evaluation reports.

After submitting the proposals to FAO with the “cooperation” of MAFF, an FAO team visited the GIAHS candidate sites for the field surveys coordinated by UNU. At that time, GIAHS was operated as one of FAO's projects with Global Environment Facility (GEF) funding, but FAO did not have funding for travel expenses for field surveys in developed countries such as Japan. The FAO GIAHS Secretariat thus had to be invited to Japan under research funds provided by Japanese institutions so as to receive them for their field surveys of the GIAHS candidate sites.

In May 2013, the “GIAHS International Conference” was held in Nanao City, Ishikawa Prefecture, which was the first GIAHS International Forum held in a GIAHS site. At this Conference, every candidate site gave presentations on their GIAHS proposals, and the presentations of the three Japanese candidate sites were given by the prefectural governors. Based on the presentations, the GIAHS applications were then evaluated by the GIAHS Scientific Committee. At this Conference, the above mentioned three candidate sites in Japan were successfully designated as GIAHS, along with four other sites.

Notably, a High-level Session hosted by MAFF was held during this Conference, in which Dr. Graziano da Silva, then Director-General of FAO, also graced the event as he was in Japan to attend the 5th Tokyo International Conference on African Development (TICAD V) in Yokohama City, Kanagawa Prefecture. His participation was significant because this was the first time that the GIAHS International Conference was attended by the Secretary-General of FAO, signifying and affirming the importance of GIAHS to FAO, which subsequently accelerated developments within FAO itself to upscale the GIAHS from a project to an FAO regular programme in 2016.

2.1.5 Third designation batch in 2015

In response to growing interest in GIAHS, MAFF established the Japan GIAHS Scientific Committee in March

2014 to evaluate GIAHS proposals and monitor post-designation activities. In fact, until then, MAFF was in a position to just cooperate with the application efforts of the local governments and relied on the UNU to provide technical support for Japanese GIAHS candidate sites and evaluate the GIAHS applications at the same time. To ensure transparency and fairness in future GIAHS applications in Japan, UNU persuaded MAFF to establish an independent Japan GIAHS Scientific Committee. UNU then decided not to be involved in the evaluation of GIAHS applications in Japan, but would only provide technical support and advice on GIAHS applications to candidate sites. Since then, UNU has continued to conduct research on the conservation and utilization of GIAHS, promoting knowledge and international cooperation on GIAHS.

Since 2014, the GIAHS candidate sites have been selected through the public recruitment by MAFF, which was started in April 2014. Seven sites applied and in October 2014, MAFF announced that “Ayu of the Nagara River System”, “Minabe-Tanabe Ume System” and “Takachi-hogo-Shiibayama Mountainous Agriculture and Forestry System” were selected as GIAHS candidate sites based on the evaluation results, including field surveys by the Japan GIAHS Scientific Committee.

In December 2015, the above-mentioned three GIAHS candidate sites in Japan were successfully designated as GIAHS along with one site from Bangladesh.

2.1.6 Fourth designation batch in 2017 and 2018

In April 2016, MAFF began public recruitment for the designation of J-NIAHS, among which several sites would be selected as GIAHS candidate sites. Nineteen sites applied, and in March 2017, MAFF decided on the designations of eight J-NIAHS sites and also on the selection of three GIAHS candidate sites based on the evaluation results, including field surveys by the Japan GIAHS/NIAHS Scientific Committee. The GIAHS candidates selected were “Osaki Kôdo’s Traditional Water Management System for Sustainable Paddy Agriculture”, “Traditional Wasabi Cultivation in Shizuoka” and “Nishi-Awa Steep Slope Land Agriculture System”.

After being field-surveyed by members of the GIAHS Scientific Advisory Group (SAG), Osaki Region was designated as a GIAHS in December 2017, after which Wasabi Cultivation Region and Nishi-Awa Region were also designated as GIAHS in March 2018. At this point and currently, Japan has a total of 11 GIAHS sites, second to just China with 15 GIAHS sites (Table 1).

2.1.7 Applications for the 5th designation batch

In January 2018, MAFF began a public recruitment regarding approval of GIAHS applications to FAO and designation of J-NIAHS. Twenty sites applied, and in February 2019, MAFF decided on the designation of seven J-NIAHS sites and also on the selection of three GIAHS candidate sites to submit applications to FAO based on the evaluation results,

Table 1 GIAHS designation in Japan

Title of GIAHS	Region	Prefecture	Year of designation
Sado's Satoyama in Harmony with Japanese Crested Ibis	Sado	Niigata	2011
Noto's Satoyama Satoumi	Noto	Ishikawa	2011
Traditional Tea-grass Integrated System in Shizuoka	Kakegawa	Shizuoka	2013
Managing Aso Grasslands for Sustainable Agriculture	Aso	Kumamoto	2013
Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System	Kunisaki Peninsula Usa	Oita	2013
Ayu of the Nagara River System	Nagara River	Gifu	2015
Minabe-Tanabe Ume System	Minabe-Tanabe	Wakayama	2015
Takachihogo-Shiibayama Mountainous Agriculture and Forestry System	Takachihogo-Shiibayama	Miyazaki	2015
Osaki Kôdo's Traditional Water Management System for Sustainable Paddy Agriculture	Osaki	Miyagi	2017
Traditional Wasabi Cultivation in Shizuoka	Wasabi Cultivation Region	Shizuoka	2018
Nishi-Awa Steep Slope Land Agriculture System	Nishi-Awa	Tokushima	2018

including field surveys by Japan GIAHS/NIAHS Scientific Committee. The GIAHS applications to FAO were approved for “Fruit Cultivation System in Kyoutou Region” (later changed to “The Alluvial Fan Fruit Cultivation System of the Kyoutou Region”), “Biwa Lake to Land Integrated System” and “Integrated Tajima Beef Production System”. These sites submitted GIAHS proposals to FAO in October 2019 which are currently being evaluated by the SAG of FAO.

2.2 Japanese Important Agricultural Heritage Systems (J-NIAHS)

2.2.1 Establishment of Japanese agricultural heritage

In April 2016, MAFF established the Japanese Important Agricultural Heritage Systems (J-NIAHS). J-NIAHS is a scheme in which MAFF designates agricultural systems that practice important and traditional agriculture, forestry and fisheries in Japan. The designation criteria for J-NIAHS include the five criteria of GIAHS and three original Japanese criteria: resilience to change, the participation of various actors and promotion of sixth industrialization. These three additional designation criteria are based on the results of a study entitled “Developing Comprehensive Assessment Method for Ingenious ‘Agri-Cultural’ Systems in Japan” (ACS) entrusted by the Policy Research Institute of MAFF that was jointly conducted by UNU and the University of Tokyo.

Regarding resilience to change, in Japan where there are frequent natural disasters, many agriculture, forestry and fisheries systems have repeatedly endured the impacts of natural disasters and responded to changes over their long history. To conserve agriculture, forestry and fisheries systems and pass them on to the next generation, it is important to maintain high resilience towards disasters, ecological changes, etc.

Regarding the participation of various actors, coping with the aging population, depopulation and social changes is important to maintain and revitalize the agriculture, forestry

and fisheries systems. The inheritance and conservation of such Agricultural Heritage Systems should not be the responsibility of the local residents, but they should be achieved through a new co-management system with the participation of various actors from within the community as well as external actors.

Regarding the promotion of sixth industrialization—the local integration of agricultural production as primary industry, processing as secondary industry and marketing as tertiary industry—it is vital to utilize the historical value of agriculture, forestry and fisheries systems, their products, traditional cultures, landscapes and seascapes, etc. Promoting the sixth industrialization of the GIAHS will entail finding new, innovative ways of marketing and business models, such as branding of agricultural products and promotion of tourism, to revitalize and conserve the agriculture, forestry and fisheries systems (MAFF, 2020).

2.2.2 First designation batch in 2017

Following the public recruitment in April 2016, MAFF announced the selected GIAHS candidate sites and designated eight J-NIAHS sites based on their evaluation by Japan GIAHS/NIAHS Scientific Committee in March 2017 (Table 2).

Among these eight designated J-NIAHS sites, three sites (Osaki Region, Wasabi Cultivation Region and Nishi Awa Region) were later designated as GIAHS in 2017 and 2018, and another site (Kyoutou Region) was selected as a candidate site for GIAHS designation.

2.2.3 Second designation batch in 2019

Following the public recruitment in January 2018, MAFF announced the designation of seven J-NIAHS sites in February 2019 (Table 3). Among these seven J-NIAHS sites, two sites (Lake Biwa Region and Hyogo Mikata Region) later applied for GIAHS designation. The number of J-NIAHS sites grew to 15 in total.

2.2.4 Recruitment of the third designation batch

From January to July 2020, MAFF conducted a public recruitment for GIAHS candidate sites and the designation of

Table 2 J-NIAHS designated sites (First batch in March 2017)

Title of J-NIAHS	Region	Prefecture	Year of GIAHS designation
Paddy agriculture system with ingenious water management in Osaki Kodo	Osaki	Miyagi	2017
Fallen leaf compost farming system in Musashino	Musashino	Saitama	–
Integrated fruit tree system in Yamanashi adapted to the basin	Kyoutou	Yamanashi	Still candidate
Traditional Wasabi Cultivation in Shizuoka	Wasabi	Shizuoka	2018
Rice farming and carp raising system utilizing blessings of snow	Chuetsu	Niigata	–
Toba-Shima Ama fishery and pearl culture-Satoumi system for sustainable fishery	Toba-Ise-Shima	Mie	–
Owase cypress forestry produced by steep terrain and Japan's leading heavy rainfall	Owase-Kihoku	Mie	–
Steep slope land agriculture system in Nishi-Awa	Nishi-Awa	Tokushima	2018

Note: “–” means the system is only J-NIAHS, and it is not GIAHS candidate.

Table 3 J-NIAHS designated sites (Second batch in February 2019)

Title of J-NIAHS	Region	Prefecture	Year of GIAHS designation
Yamagata's “Best Safflower” connecting History and Tradition —The only Japanese processing system for safflower production and dyeing which is rare in the world	Mogami River Basin	Yamagata	–
Brackish Water Lake Fishery System of Mikata Goko Lake	Mikata Goko	Fukui	–
Biwako System interwoven with Fishery and Agriculture nurtured in Forest, Village and Lake (Umi)	Lake Biwa	Shiga	Still candidate
Hyogo Mikata's Tajima Cattle System	Hyogo Mikata	Hyogo	Still candidate
Shimotsu Warehouse Storage Mandarin System	Shimotsu Region of Kainan City	Wakayama	–
Resource Circulation Agriculture of Okuizumo derived from Tataro Ironmaking	Okuizumo	Shimane	–
Citrus Farming System of Ehime-Nanyo	Nan-yo	Ehime	–

Note: “–” means the system is only J-NIAHS, and it is not GIAHS candidate.

J-NIAHS. Thirteen sites applied, and in September 2020, it was announced that 12 sites passed the first screening. Field surveys were conducted from October to December 2020, the second screening is scheduled to be held with presentations by the candidate sites in January 2021, and the final results will be announced around February 2021.

3 Characteristics of Japanese Agricultural Heritage Systems and their conservation

Since Japanese agricultural heritage systems are based on the “Satoyama” concept, which is a traditional rural Japanese landscape where such a human-influenced natural environment comprised of integrated ecosystems represents a balanced relationship between human beings and nature (Takeuchi, 2010) as mentioned above, Japanese GIAHS have been emphasizing the landscape aspect.

At the same time, since Japan is one of the developed countries, its agricultural policy for the conservation of GIAHS is not same as those of the developing countries, especially in terms of the initiative of local governments and local stakeholders.

In this section, the characteristics of Japanese GIAHS are clarified from the perspectives of GIAHS typology and agricultural policy.

3.1 GIAHS typology

Since a proposed GIAHS site is assessed based on the five key criteria and an action plan stipulated by FAO, every

GIAHS site should fulfill at least all five of these criteria. However, the way to meet these five criteria is different in each site according to its characteristics. Some GIAHS sites focus more on the landscape aspect while others focus more on traditional knowledge, such as the farming methods for specific crops. Therefore, we found that the current 62 worldwide designations of GIAHS can be classified into three types: 1) landscape type; 2) farming method type; and 3) genetic resource conservation type.

The landscape type is an Agricultural Heritage System centered on a landscape like “Satoyama”, that is a regional unit that develops activities of agriculture, forestry and fisheries on the land. The components of the landscape, such as farmland, hinter forest, river, irrigation canal/pond and human settlements, are closely interlinked and interconnected. It could also include watershed areas that are considered essential for the farming environment and agro-ecology.

The farming method type focuses on a specific traditional farming method that is unique to the traditional agricultural system and effective for the conservation of biodiversity. It is relatively easy to identify the farmland on which the specific traditional farming method is practiced.

The genetic resource conservation type is where globally important genetic resources are conserved through the continual practice of the traditional agricultural system.

According to this typology, we proposed a classification of the 62 current GIAHS designated by FAO, including the Japanese GIAHS sites (Table 4). More than half of the

Table 4 GIAHS Typology

FAO region (No. of sites)	Country/Site (No. of sites)	Name of system and year designated	Classification of type of system
Africa (3)	Kenya (1)	1. Oldonyonokie/Olkeri Maasai Pastoralist Heritage (2011)	Farming method
	Tanzania (2)	2. Engaresero Maasai Pastoralist Heritage Area (2011)	Farming method
		3. Shimbue Juu Kihamba Agroforestry Heritage Site (2011)	Landscape
Asia and the Pacific (40)	Bangladesh (1)	4. Floating Garden Agricultural Practices (2015)	Farming method
	China (15)	5. Rice Fish Culture (2005)	Farming method
		6. Wannian Traditional Rice Culture (2010)	Genetic resource
		7. Hani Rice Terraces (2010)	Landscape
		8. Dong's Rice Fish Duck System (2011)	Farming method
		9. Pu'er Traditional Tea Agrosystem (2012)	Farming method
		10. Aohan Dryland Farming System (2012)	Landscape
		11. Kuajishan Ancient Chinese Torreya (2013)	Genetic resource
		12. Urban Agricultural Heritage—Xuanhua Grape Garden (2013)	Farming method
		13. Jiaxian Traditional Chinese Date Gardens (2014)	Genetic resource
		14. Xinghua Duotian Agrosystem (2014)	Farming method
		15. Fuzhou Jasmine and Tea Culture System (2014)	Farming method
		16. Huzhou Mulberry-dyke and Fish Pond System (2017)	Farming method
		17. Diebu Zhagana Agriculture-Forestry-Animal Husbandry Composite System (2017)	Landscape
		18. Xiajin Yellow River Old Course Ancient Mulberry Grove System (2018)	Genetic resource
		19. Rice Terraces in Southern Mountainous and Hilly areas (2018)	Landscape
	India (2)	20. Koraput Traditional Agriculture (2012)	Landscape
		21. Kuttanad Below Sea Level Farming System (2013)	Landscape
	Islamic Republic of Iran (3)	22. Qanat Irrigated Agricultural Heritage Systems, Kashan (2014)	Landscape
23. Qanat-based Saffron Farming System in Gonabad (2018)		Genetic resource	
24. Grape Production System in Jowzan Valley (2018)		Landscape	
Japan (11)	25. Noto's Satoyama and Satoumi (2011)	Landscape	
	26. Sado's Satoyama in Harmony with Japanese Crested Ibis (2011)	Landscape	
	27. Managing Aso Grasslands for Sustainable Agriculture (2013)	Landscape	
	28. Traditional Tea-grass Integrated System in Shizuoka (2013)	Farming method	
	29. Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System (2013)	Landscape	
	30. Ayu of the Nagara River System (2015)	Landscape	
	31. Minabe-Tanabe Ume System (2015)	Landscape	
	32. Takachihogo-Shiibayama Mountainous Agriculture and Forestry System (2015)	Landscape	
	33. Osaki Kôdo's Traditional Water Management System for Sustainable Paddy Agriculture (2017)	Landscape	
	34. Nishi-Awa Steep Slope Land Agriculture System (2018)	Farming method	
	35. Traditional Wasabi Cultivation in Shizuoka (2018)	Farming method	
Philippines (1)	36. Ifugao Rice Terraces (2011)	Landscape	
	37. Traditional Gudeuljang Irrigated Rice Terraces in Cheongsando (2014)	Landscape	
	38. Jeju Batdam Agricultural System (2014)	Landscape	
Republic of Korea (5)	39. Traditional Hadong Tea Agrosystem in Hwagae-myeon (2017)	Farming method	
	40. Geumsan Traditional Ginseng Agricultural System (2018)	Farming method	
	41. Damyang Bamboo Field Agriculture System (2020)	Landscape	
Sri Lanka (1)	42. Cascaded Tank-Village System in the Dry Zone (2018)	Landscape	
Kashmir (1)	43. Saffron Heritage of Kashmir (2011)	Genetic resource	

(To be continued on the next page)

(Continued)

FAO Region (No. of sites)	Country/Site (No. of sites)	Name of system and year designated	Classification of type of system
Europe and Central Asia (7)	Italy (2)	44. Olive Groves of the Slopes between Assisi and Spoleto (2018)	Landscape
		45. Soave Traditional Vineyards (2018)	Landscape
	Portugal (1)	46. Barroso Agro-Sylvo-Pastoral System (2018)	Landscape
	Spain (4)	47. The Agricultural System of Valle Salado de Añana (2017)	Farming method
		48. Malaga Raisin Production System in La Axarquía (2017)	Landscape
		49. The Agricultural System Ancient Olive Trees Territorio Sénia (2018)	Genetic resource
		50. Historical Irrigation System at l'Horta de València (2019)	Landscape
Latin America and the Caribbean (4)	Brazil (1)	51. Traditional Agricultural System in the Southern Espinhaço Range, Minas Gerais (2020)	Landscape
	Chile (1)	52. Chiloé Agriculture (2011)	Genetic resource
	Mexico (1)	53. Chinampa System in Mexico (2018)	Farming method
	Peru (1)	54. Andean Agriculture (2011)	Genetic resources
Near East and North Africa (8)	Algeria (1)	55. Ghout Oasis System El Oued (2011)	Landscape
	Egypt (1)	56. Dates production System in Siwa Oasis (2016)	Genetic resource
	Morocco (2)	57. Oases System in Atlas Mountains (Oases of the Maghreb) (2011)	Landscape
		58. Argan-based Agro-Sylvo-Pastoral System within the area of Ait Souab-Ait and Mansour (2018)	Genetic resource
		59. Gafsa Oases (Oases of the Maghreb) (2011)	Landscape
	Tunisia (3)	60. Hanging Gardens from Djebba El Olia (2020)	Landscape
		61. Ramli Agricultural System in the lagoons of Ghar El Melh (2020)	Landscape
	United Arab Emirates (1)	62. Al Ain and Liwa Historical Date Palm Oases (2015)	Genetic resource

Note: The FAO region, order and classification of GIAHS country/site are based on the FAO GIAHS website: <http://www.fao.org/giahs/en/>.

GIAHS are the landscape type with 33 sites (53%), followed by 17 sites (28%) of the farming method type and 12 sites (19%) of the genetic resource conservation type. Some of these GIAHS are also located in urban or sub-urban areas, such as Xuanhua Grape Garden of China and Ayu of the Nagara River System of Japan, which indicates that traditional agricultural systems are not necessarily limited to the rural context.

From this typology, it is found that the majority of Japanese GIAHS could be classified as the landscape type (8 sites or 73%), with the remaining sites placing more emphasis on their farming method (3 sites or 27%), while none of the sites had prominent genetic resources. This could be because Japanese GIAHS are often build upon the “Sato-yama” concept and the GIAHS site areas also include watershed areas, hinter forests and grasslands which may not be agriculturally productive land per se but are nonetheless important components to the holistic functioning of the rural environment (Reyes et al., 2020). The landscape type GIAHS focuses not only on agricultural farmlands, such as paddy fields and upland fields, but also emphasizes a certain extent of ecological cohesion of the surrounding environments, including hinter forests, rivers and other watershed connections. The landscape type GIAHS that have been designated around the world so far have also acknowledged that these landscapes are maintained by the local community and their culture, including even non-farmer residents.

Moreover, from the aspects of agroecology and biodiversity conservation, a broader and more encompassing inclusion of diversity at the ecosystem level is also essential, rather than dealing only with the farming ecosystems in isolation. It is this understanding of the importance that the rural environment must be an integrated, holistic landscape that explains why more than half of the GIAHS designated around the world at this point are of the landscape type. However, the recent FAO requirements seem to overemphasize the mapping and boundaries of sites that include only the directly related farmlands, as set out in “Guidelines for making GIAHS Proposal Document” (FAO, 2020). This narrow perception of the complexity and connectivity of the GIAHS landscape with its surrounding environments may lead to the risk of an incomplete understanding of the GIAHS and restrict future conservation activities to only a small portion of the total GIAHS area.

One-quarter of Japanese GIAHS still maintain prominent traditional farming methods despite fierce competition in the highly modernized and mechanized agriculture in Japan, suggesting that such methods are truly time-tested and sustainable practices. However, while most Japanese GIAHS also have traditional crops and local livestock species, such genetic resources have not been emphasized very much. Future conservation efforts could consider making an inventory or record of the genetic resources of the Japanese GIAHS for more effective conservation.

3.2 Government support for GIAHS sites

In Japan, although there are many national subsidies available to and commonly used in rural farming areas that could include GIAHS sites, there are no direct subsidies from the national government that target GIAHS sites exclusively (Yiu et al., 2016). In other words, the municipalities or communities of Japanese GIAHS do not receive direct funding or subsidies for their GIAHS designation from the national government either upon or after GIAHS designation. Therefore, applicants to GIAHS are expected to have their own financial and funding capacities to ensure and prove the sustainability of the GIAHS after designation, rather than relying on national subsidies. GIAHS conservation activities are then based on self-help efforts, depending on how individual GIAHS sites intend to make the best of their designation through marketing efforts or fund pooling from interest holders, or other means.

There are many GIAHS conservation activities implemented by local governments and local stakeholders in Japan, such as tourism, branding, eco-payments, and education. For example, in Sado GIAHS region, the residents of the small settlement themselves take on the role of guides for the rice terraces. In Noto GIAHS region, elderly farmers run a farmers' inn and approximately 50 farm households receive more than 10000 guests every year. Regarding branding, almost all GIAHS sites have their own GIAHS logos and use them effectively for marketing their products. Some GIAHS sites have their own certification schemes for their products as a kind of eco-payment. For example, in Shizuoka GIAHS region, "Tea produced by GIAHS Traditional Tea-grass Integrated System practitioner" is displayed on tea products according to the certified effort and contribution towards maintenance of the tea-grassland which conserves biodiversity. In Oita GIAHS region, learning GIAHS in the schools is implemented by using animation in elementary schools, "delivery class" in junior high schools and interviews with senior farmers in senior high schools.

To attain economic sustainability and secure livelihoods, Japanese GIAHS emphasizes raising the awareness of GIAHS, attracting tourists to GIAHS sites, and other marketing efforts to add value and to be able to sell GIAHS agricultural products at higher prices. Although the national government, that is MAFF, do not give direct subsidies, the Ministry contributes to the efforts on raising awareness of GIAHS, such as holding events and media outreach. On the national policy basis, GIAHS has also been stipulated as a policy mechanism in the Basic Plan on Food, Agriculture and Rural Areas, which has been decided by the Cabinet since 2015 and is reassessed every five years based on the Basic Law on Food, Agriculture and Rural Areas.

3.3 Voluntary GIAHS network by GIAHS sites

In many countries, the state convenes national meetings of the GIAHS sites, whereas Japanese GIAHS sites form voluntary nationwide networks without direct national gov-

ernment involvement. These networks include the "Inter-prefectural Committee for GIAHS partnership" comprised of the prefectural governments and the "J-GIAHS Network" formed by the municipality governments. The related meetings, workshops and joint events have been organized jointly and voluntarily, with a prefecture or municipal government taking the annual chairmanship of each respective network on a rotating basis. However, these two networks were integrated in December 2020 to avoid the duplication of efforts. The new network consists of prefectures, municipalities and organizations such as GIAHS Promotion Associations in GIAHS sites, with MAFF, UNU, FAO Liaison Office in Japan, and others participating as advisors and observers. Their activities include improving the quality of efforts such as utilizing and conserving GIAHS, raising awareness of GIAHS, sharing and disseminating international information and contributions, establishing a unified domestic structure, and holding workshops. J-NIAHS sites are not included in this network, but they are invited to the events such as workshops.

4 Challenges and future opportunities

In the ten years since the first designation, Japanese GIAHS have each and collectively faced many challenges. Nonetheless, these challenges are often revealed as opportunities. The challenges and opportunities in the future development of GIAHS will include the following.

4.1 Further raising the awareness of GIAHS

As mentioned above, to ensure the sustainable conservation of GIAHS, GIAHS communities must be able to increase their income by effectively utilizing their GIAHS designation. In many countries, GIAHS are protected from the pressures of urban development. However, in the case of Japan, GIAHS must be protected from other pressures as well, such as the challenges caused by depopulation due to the aging of the local population, lack of successors, abandonment of farmland, and wildlife damages. For that purpose, GIAHS designation must be utilized to increase the number of tourists and add value to the agricultural products sold at the site. This will only be largely effective with increased awareness of GIAHS. Unfortunately, even after ten years, the recognition of GIAHS in Japan is still not high. The national and local governments are also making efforts to raise awareness of GIAHS by using various outreach tools such as promotion events, websites, symposia and workshops. Still, it is necessary to strengthen such activities further to raise the awareness of people through more creative means and reach a wider audience.

4.2 Inheritance of GIAHS by the younger generation

The population of rural Japan, including GIAHS sites, is aging. On the other hand, GIAHS designation brings confidence and pride to the younger generation in the GIAHS sites. In GIAHS sites, in order to pass on GIAHS to the

younger generation, the education on GIAHS is customized according to the educational stages: Elementary school, junior high school, and high school. MAFF also holds events related to GIAHS research for high school students. Education on GIAHS for the younger generation can be carried out at a relatively low cost with the understanding and cooperation of the stakeholders concerned. In the future, it will be necessary to strongly educate and promote passing on GIAHS to the younger generation, who will be responsible for and support GIAHS in the future.

4.3 Monitoring and evaluation of GIAHS

Effective monitoring and evaluation are essential to take stock of progress, introduce timely interventions and motivate stakeholders with the results of their efforts. In Japan, each GIAHS site is responsible for the monitoring of GIAHS conservation activities, often based on a five-year Action Plan. In the last year of the Action Plan, or based on the activities of the previous fiscal year, MAFF will conduct monitoring and evaluation of the respective GIAHS whereby the Japan GIAHS/NIAHS Scientific Committee will evaluate the self-assessment reports submitted by the GIAHS sites. The Action Plan should include indicators and targets, in quantitative terms as much as possible, and specify who should and how to conduct monitoring and evaluation. However, there are no concrete standards required of the GIAHS sites, so this system lacks uniformity and equality, as some may report less while others may report more since they are free to decide on their own reporting scope. However, studies have shown that there are some common characteristics and indicators which can be taken into consideration to enhance and enforce the monitoring and evaluation efforts in Japan (Kohsaka and Matsuoka, 2015; Reyes et al., 2020). Thus, Japan could improve the monitoring and evaluation methodologies to ensure greater effectiveness and uniformity of the exercise. The Japanese GIAHS should also view the monitoring and evaluation process positively, as an opportunity to improve their actions and report the outcomes to the public in order to generate greater interest and awareness.

4.4 Promotion of international cooperation on GIAHS

Since GIAHS sites have been designated as globally important, it is necessary for them to connect with the world. In October 2013, China, Japan and South Korea agreed to the Chinese proposal to establish the East Asia Research Association for Agricultural Heritage Systems (ERAHS). The ERAHS Conference has been organized every year since 2014, except for 2020, with the three countries rotating as the host country. Six ERAHS conferences have been held so far, and most of the Japanese GIAHS sites have actively participated every year. In addition, based on the concept of “twinning of GIAHS” as endorsed by the Noto

Communique of the 2013 GIAHS International Conference, some GIAHS sites are actively engaged in exchanges with overseas GIAHS sites, which include training and capacity building activities for the GIAHS in developing nations. GIAHS sites could also tap into their sister cities network, and promote interest and understanding of GIAHS, regardless of whether their counterparts are located in developing or developed countries, as Japan can be a role model to both. It is necessary for the Japanese GIAHS to continue to promote international cooperation in order to generate global interest and support for GIAHS, which will help them maintain and utilize their own GIAHS.

Reflecting on the ten years of GIAHS designations in Japan, while much still awaits improvements to enhance the effectiveness of conservation, the GIAHS designation has stimulated policy interventions and academic research. Local policy schemes are introduced to promote multiple stakeholder conservation efforts (Qiu et al., 2014), fund pooling (Yiu, 2014), product certification (Kajima et al., 2017), and agro-tourism (Chen et al., 2018), etc., as well as increasing research related to biodiversity status (Hayashi, 2014; Inagaki and Kusumoto, 2014), non-market food production and consumption patterns (Kamiyama et al., 2016), cultural features (Kajihara et al., 2018) and landscape connectivity (Hara et al., 2018), etc. within the GIAHS sites. Such GIAHS activities have not only snowballed interest from outside, but they have also reframed the sense of pride among the local people amidst the dim realities of the increasingly depopulated and aged rural communities of Japan. Henceforth, GIAHS designations in Japan have been meaningful and are necessary, as Professor Takeuchi, who introduced GIAHS to Japan, stressed “*we cannot restore traditional agriculture, forestry and fishery systems passed down to us from our ancestors once they are lost. It is imperative for us to transfer such invaluable agriculture, forestry and fishery systems to the next generations, including through the cooperation of various actors to add further value to agricultural, forestry and fishery products with GIAHS designation*” (Yiu and Nagata, 2018). GIAHS designations in Japan have inspired the awakening of its people from all walks of life in coming together as one to inherit their agricultural heritage, through rediscovering their cultural values and pride and rethinking about sustainable production and harmonious living with nature.

5 Conclusions

The designations of GIAHS in Japan and their subsequent development have shown that GIAHS need not be restricted to developing countries, but it is indeed also applicable for developed nations. Following Japan’s designations, other developed countries also began to show interest and were successful in their applications, such as several countries in Europe like Spain, Portugal and Italy. Japan’s first GIAHS designations in 2011 will always be a key milestone in

GIAHS history, but will not be the end of the Japanese GIAHS story. With a nationwide campaign to promote the achievement of the United Nations Sustainable Development Goals (SDGs) under the Japanese Cabinet Office, Japanese GIAHS are in a good position to synergize their GIAHS conservation efforts with the SDGs, thereby contributing not only to local rural revitalization but also to finding local solutions to address global challenges. Moreover, GIAHS sites have a great deal of relevance and potential to contribute to several of the UN decades—Family Farming 2019–2028, Ecosystem Restoration 2021–2030, and Ocean Science for Sustainable Development 2021–2030—Through showcasing how a harmonious relationship can be built between people and nature. In particular, in the post-COVID-19 pandemic world when societies will start to reconcile their soured relationship with nature, GIAHS can provide invaluable lessons and knowledge on how to build back better a healthier planet for all. Japanese GIAHS can contribute by leading as an example of how GIAHS conservation can contribute to global goals and sustainable development.

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日本全球重要农业文化遗产(GIAHS)的十年发展

永田明¹, 姚盈芳²

1. 联合国大学可持续发展高等研究所石川金泽支所, 石川 920-0962, 日本;

2. 联合国大学可持续发展高等研究所, 东京 150-8925, 日本

摘要: 自 2011 年全球重要农业文化遗产 (GIAHS) 引入日本, 已有大约十年的时间。迄今日本已获得 11 个 GIAHS 的认定。2016 年日本建立了日本国家重要农业遗产 (J-NIAHS) 体系, 该体系考虑了系统弹性、多方利益相关者参与和第六次工业化, 至今已认定了 15 个 J-NIAHS。GIAHS 可以分为三大类型: 景观、耕作方法、遗传资源保护, 而日本大多数 GIAHS 都是景观类型。由于日本的 GIAHS 和 J-NIAHS 几乎没有国家补贴, 遗产地必须自行筹集资金进行保护。因此, 一个由日本各 GIAHS 遗产地自发成立的合作网络一直在积极推广和促进 GIAHS 保护方面的合作。日本 GIAHS 保护的重点在于提高公众对 GIAHS 和 J-NIAHS 的认识、改善生计、促进农业文化遗产保护经验和知识的国际交流, 特别是日本、中国和韩国之间的交流。

关键词: 全球重要农业文化遗产(GIAHS); 农业遗产; 传统农业; 可持续性; 生物多样性; 景观