

博士論文（要約）

**THE STUDY OF LIVELIHOOD DIVERSIFICATION AND
MANAGEMENT SYSTEMS OF TRADITIONAL COASTAL FISHERIES
IN EAST ASIA**

（東アジアにおける伝統的沿岸漁業の生計多様化と管理システムに関する研究）

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ABSTRACT

The thesis examined the diversification strategies of livelihoods taken by fishers and how traditional coastal fisheries are managed in East Asia through examining: (i) why fishers engage in multiple livelihoods, (ii) how are coastal fisheries managed traditionally, and (iii) how traditional fisheries are valued in existing policies. It is found that factors and motivations affecting livelihood diversification strategies of fishers included historical background, personal aspirations (self-actualization), sense of satisfaction (spiritual wealth) and the valuing of rural, traditional livelihoods for its cultural and social importance. Fishers with diverse livelihoods often serve the important yet neglected role as connectors to link up different sectors of the local economy. The traditional management coastal fishery resources based on co-management is not necessarily limited to controlling fishing effort and amount of fish catch, but also about maintaining healthy marine environment to maintain and raise fish stocks. Moreover, local wisdoms such as communal rules and traditional knowledge on fishing seasons, methods, grounds and gear are not only kept exclusively to the insiders but could also be shared with outsiders to ensure sustainable use of marine resources. The study also compared the existing schemes and policies in East Asian countries of Japan, China and Korea on conserving traditional agricultural (including forestry and fisheries) heritage systems, in particular analysed the policy developments of conservation of Globally Important Agricultural Heritage Systems (GIAHS) and found commonalities, i.e. partnership (social), resilience (ecological), rural revitalization (economic), which implied that the three countries well recognise the vulnerability of agricultural heritage systems in face of modernization and development pressures. Moreover, as traditional fisheries management are often interlinked with other primary sectors, effective management requires policies like GIAHS, which embraces a multi-sectoral integrated approach. Synthesizing the findings, the study proposed that policies should be implemented to support and encourage multiple livelihoods and also for conservation and sustainable development of traditional fisheries systems to be mainstreamed in national policies. Hence, the study concludes that coastal fishers with diverse livelihoods play multiple roles to connect and sustain other primary sectors, and thus an integrated multi-sectoral approach in policies is needed to promote sustainable management of traditional coastal fisheries and create conducive environment for multiple livelihoods.

KEYWORDS:

Livelihoods, Diversification, Traditional fisheries, Coastal Fisheries, Fisheries Management, Agricultural Heritage Systems

CHAPTER 1. INTRODUCTION

I. Background

Challenged by the exodus of population to urbanized areas, rural communities around the world are facing depopulation pressures due to the reduction of inhabitants and lack of labor force working in traditional livelihoods depended on the primary industries (Mladenov & Ilieva, 2012; Matanle, 2014). According to the 2014 Revision of World Urbanization Prospects by the United Nations Department of Economic and Social Affairs (UN DESA), by 2050, the world's population living in urban areas is expected to increase to 66 percent from 54 percent in 2014, while the other hand global rural population is projected to decline to 3.1 billion from 3.4 billion in 2014, reaching its peak around 2020 (UN DESA, 2015). People move from the rural to urban for various reasons, such as “pushed” by poor living/housing conditions (G.D. Mitchell, 1950), also “pulled” by marriage and education advancement but primely for employment (House, 1965), either the jobless seeking for jobs or others seeking better occupation.

Livelihood options of rural areas are also changing as their economies modernize, replacing traditional livelihoods with jobs of other sectors. Primary industries of today struggle to stay attractive in the labor market and the lack of people working in the primary industries poses threats to their survival. Such a trend is especially so in the developed countries, yet few research about livelihood studies of rural communities in developed countries are known. To date, almost all livelihood studies have focused on poverty alleviation and climate change adaptation of developing countries, but rarely applied to understand rural livelihoods in the developed countries context. Yet, understanding the developed countries context can provide future scenarios on rural development challenges for developing countries as they will eventually make economic progress and face similar challenges as like the developed countries.

Fisheries as rural livelihoods in developed countries are mainly coastal fisheries. In Japan, 85 percent of Japanese fishers operate in coastal fisheries and coastal fisheries constitutes 23 percent of total fishery yield in 2016, if combined with sea aquaculture amounts to 47 percent of fishery yield. Coastal fisheries, also referred as inshore fisheries, are broadly defined as all fisheries within Economic Exclusive Zones (EEZ) which is 200 nautical miles (nm) or equivalent to 370km from territorial sea baseline (GEF, 2016). Within the EEZ or territorial sea, countries further categorize coastal fisheries; Japan defines its “coastal fisheries” of that within 2 nm and “offshore fisheries” of that beyond 2nm to within EEZ, while inner limit of the Austrian Fishing Zones (AFZ) is within its coastal waters of 3nm and outer limits of beyond that to within EEZ (Australian Department of Industry, 2005). Thus, it can be taken that coastal fisheries usually refer to fisheries operating in fishing grounds close to the coasts and this thesis study will consider coastal fisheries as the definition used by Japan, i.e. fisheries operating within 2nm of coastal waters.

Most coastal fisheries are traditional fisheries and fishers engage in multiple livelihoods, not only necessarily limited to fisheries. Coastal fisheries in developed countries are facing a lack of workforce due to depopulation of fishing villages and aging of fishers. The decline of coastal fisheries could lead to environmental degradation, cultural loss and national security challenges and thus there is an urgent need to address challenges in sustaining traditional livelihoods of coastal fisheries. As traditional fisheries are mostly coastal fisheries, this study will focus on diversification strategies of livelihoods related to traditional fisheries.

Although there is no exact widely accepted definition of traditional fisheries, it is very often referred to and thus understood as like that of artisanal fishing or small-scale fishing. Food and Agriculture Organization of the United Nations (FAO) defines artisanal fishing as

"traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption. In practice, definition varies between countries, e.g. from gleaning or a one-man canoe in poor developing countries, to more than 20-m. trawlers, seiners, or long-liners in developed ones. Artisanal fisheries can be subsistence or commercial fisheries, providing for local consumption or export. They are sometimes referred to as small-scale fisheries." (FAO, 2005)

Thus, traditional fisheries are often understood as small-scale fisheries that are set in environments lacking in scientific knowledge but where local fishers have good understanding of their marine environment and target catch based on traditional knowledge that are indigenous and/or ancestrally inherited. While there is no worldwide definition for traditional knowledge, the World Intellectual Property Organization (WIPO) defines it as "knowledge, know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity" and in which can exist in the form of agricultural, scientific, technical, ecological, medicinal and biodiversity-related knowledge. Fishers make use of these traditional knowledge to manage their fisheries including managing marine resource, assessing environmental impacts and determining location and size of marine protected areas.

Traditional fisheries may often be mistaken for those associated with low technology, non-motorised fishing vessels using primitive, non-sophisticated fishing gear, as still seen in some developing countries. However, traditional fisheries have less to do with mechanization or modernization of fishing equipment, but rather more on the management of local fisheries through ensuring the continuity of fishing knowledge, fishing method and usage of fishing ground that has been passed down for at least three generations. Traditional fisheries management practised in developed countries over the last few decades could be interpreted to be those fisheries which use traditional management tools such as gear restriction, capacity reduction, total allowable catch

reductions, total fishing effort reductions, closed areas, catch shares, fisheries certification and community co-management (Hilbon and Ovando, 2014). Therefore, this study defines traditional fisheries as small-scale, coastal fisheries where the management of fisheries based on local knowledge or communal rules relating to managing marine resources, conserving marine environment and ecosystem and practising fishing methods that have practised for at least three generations (or approximately more than half a century).

In such traditional fisheries, where fishing trips in coastal waters are short and highly subjected to weather conditions, fishers have the time and also the need for engaging in multiple livelihoods such as farming, forestry, food processing, tourism, retail and other small side jobs. Fishers thus play more than just one role and are important labour force playing “one person-multiple roles” in contributing to other primary sectors and local economy.

However, coastal fisheries today across the world are facing a lack of workforce due to depopulation and aging of fishing villages. This poses challenges to management and conservation of these traditional coastal fisheries which are valuable in traditional knowledge of sustaining marine resources and ecosystems. Hence, this thesis study examined factors affecting diversification strategies of livelihoods of traditional coastal fisheries, how coastal fisheries managed traditionally and how traditional fisheries are valued in existing agricultural policies.

In particular, the study focused on two case studies in Japan and also made a comparative analysis of policies towards conserving traditional fisheries in East Asia countries including Korea and China. These East Asian three countries, bordering the Sea of Japan, are chosen for comparative analysis as they share similar traditional, coastal fisheries in terms of fish species variety and fishing methods. However in recent years their traditional, coastal fisheries are facing the threat of disappearance due to pressures from labour shortage and development of coastal areas. Amidst this backdrop of dwindling of coastal fisheries, however, the increasing demand for seafood products in the past decade have led to more offshore and pelagic fishing efforts, which has escalated to a multinational rat-race for seafood resources and as a result increased the probability of fishing conflicts in the Sea of Japan. Revaluing the traditional, coastal fisheries in these three countries could then reduce their reliance of offshore and pelagic fishing, which could alleviate some of these pressures of not only international conflicts but also prevent over-depletion of marine resources in the Sea of Japan.

II. Research Purpose and Questions

As explained above, fishers of traditional fisheries can multiple roles to make up for labour shortage in other primary sectors and local economy and that it is important to first secure their major livelihood foundations, that is traditional fisheries. Thus, the thesis study aimed to propose that

national policies should revalue the multi-functional roles of coastal fishers and put in place management systems based on integrated multi-sectoral approach.

To achieve its research purpose, the thesis examined why, how and what form of livelihood diversification strategies of traditional, coastal fisheries occur in developed countries of East Asia by determining: (i) why fishers engage in multiple livelihoods, (ii) how are coastal fisheries managed traditionally, and (iii) why, what aspects of and how traditional fisheries are valued in agricultural policies.

Thus, the key research questions of the thesis were organized and constructed to address the thesis topic according to the individual, community and institutional level as follows:

[Individual Level] 1. Livelihood Diversification:

Why fishers engage in multiple livelihoods?

[Community Level] 2. Traditional fisheries management:

How are coastal fisheries managed traditionally?

[Institutional Level] 3. Policy Analysis of Traditional Fisheries:

How traditional fisheries are valued in government policies?

III. Research Methodology

For the research methodology, the study takes an inter-disciplinary approach to address the three key research questions as shown in Figure 1.1.

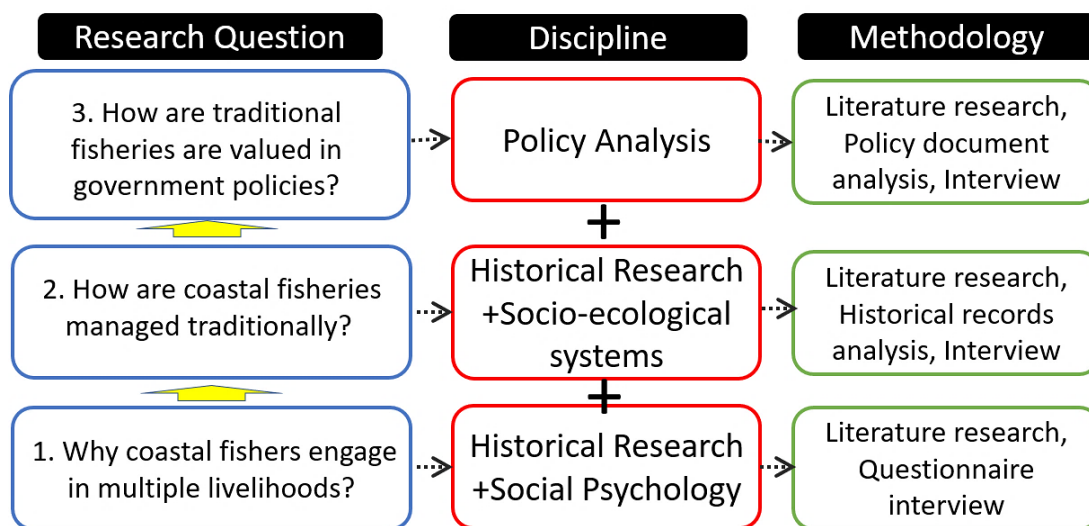
The study examined the first research question on “Livelihood Diversification: Why fishers engage in multiple livelihoods?” through historical research by tracing the historical development of agriculture in Noto peninsula, Japan to understand why traditional agriculture and multiple livelihoods are still practiced prevalently today, followed by analysing from a socio-psychological perspective the findings from interview surveys with local fishers to understand their motivations for engaging in multiple jobs.

For the second research question on “Traditional fisheries management: How are coastal fisheries managed traditionally?”, the study examined traditional practices and customs regarding the management of fishery resources in coastal fisheries in Japan through historical research of the development of the traditional fisheries management in Himeshima island, Japan to understand what kind of indigenous and traditional knowledge (ITK) are applied in this management system of traditional fisheries. It traced the origin and the historical development of Himeshima’s traditional

fisheries management to find out of the socio-economic drivers that affect the implementation and the philosophical concepts behind such traditional knowledge, through extensive literature research, historical records analysis and field interviews.

For the third research question on “Policy Analysis of Traditional Agricultural Systems: How traditional fisheries are valued in government policies?” the study conducted a comparative policy analysis to examine how East Asian countries of Japan, China and Korea value traditional knowledge in their agricultural (including forestry and fisheries) policies. In particular, it examined how the FAO’s programme of Globally Important Agricultural Heritage Systems (GIAHS) is being implemented in East Asian countries of China, Japan and Korea through literature review, analysis of official and policy documents and conduct of interviews with key experts on GIAHS conservation.

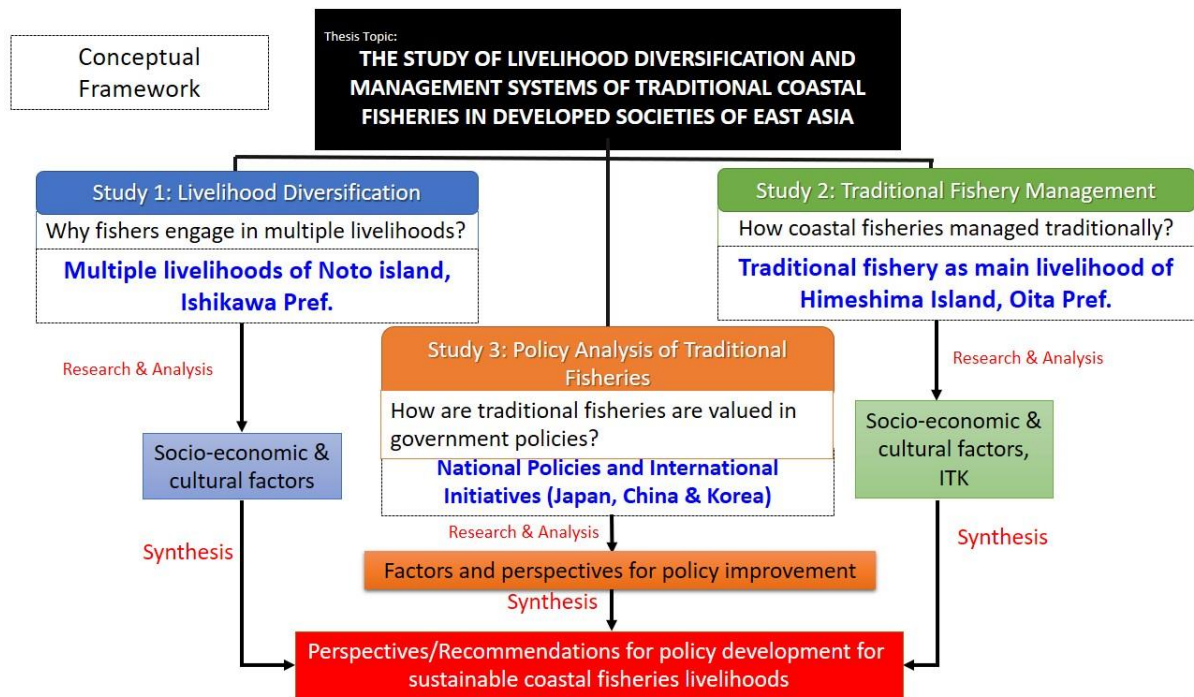
Figure 1.1. Research Methodology



IV. Conceptual Framework

The conceptual framework of the thesis research is organized as shown in Figure 1.2. The findings of the abovementioned research questions, conducted under three sub-studies, were then synthesized to provide new academic perspectives and policy recommendations for understanding the development of sustainable livelihoods in coastal fisheries in the developed countries context, particularly in East Asia.

Figure 1.2. Conceptual framework of the thesis research



CHAPTER 2. LITERATURE REVIEW

Almost all livelihood studies have focused on poverty alleviation and climate change adaptation of developing countries, but rarely applied to understand rural livelihoods in the developed countries context. Yet, understanding the developed countries context can provide future scenarios on rural development challenges to developing countries as they will eventually make economic progress and face similar challenges as developed countries. This thesis examined why, how and what form of livelihood diversification strategies of coastal fisheries occur in developed countries of East Asia by determining: (i) why fishers engage in multiple livelihoods, (ii) how are coastal fisheries managed traditionally, and (iii) why and what aspects of traditional fisheries are valued in agricultural policies.

I. Livelihood Diversification

This section reviewed past livelihood studies including livelihood strategies, livelihood diversification and the Sustainable Livelihood Approach (SLA).

According to the Food and Agriculture Organization of the United Nations (FAO, 2016), 90 percent of the world's capture fishers work in small-scale fisheries, which play a critical role in supporting livelihoods, particularly rural livelihoods, contributing to food security and alleviating poverty in developing countries. Small-scale fisheries often operate in coastal waters where much of the marine biodiversity is concentrated (Campbell and Beardmore, 2001), and are mostly coastal fisheries practicing artisanal fishing. Coastal marine ecosystems, being cradles for marine life to breed, spawn, feed and grow, if well managed through sustainable use and resource management by coastal fisheries can contribute to the health of the ocean and global fishery resources. However, coastal fishing is often regarded for "economic activity of last resort" (Panayotou, 1982) and those working in small-scale fisheries in developing countries tend to be associated with being entrapped in poverty.

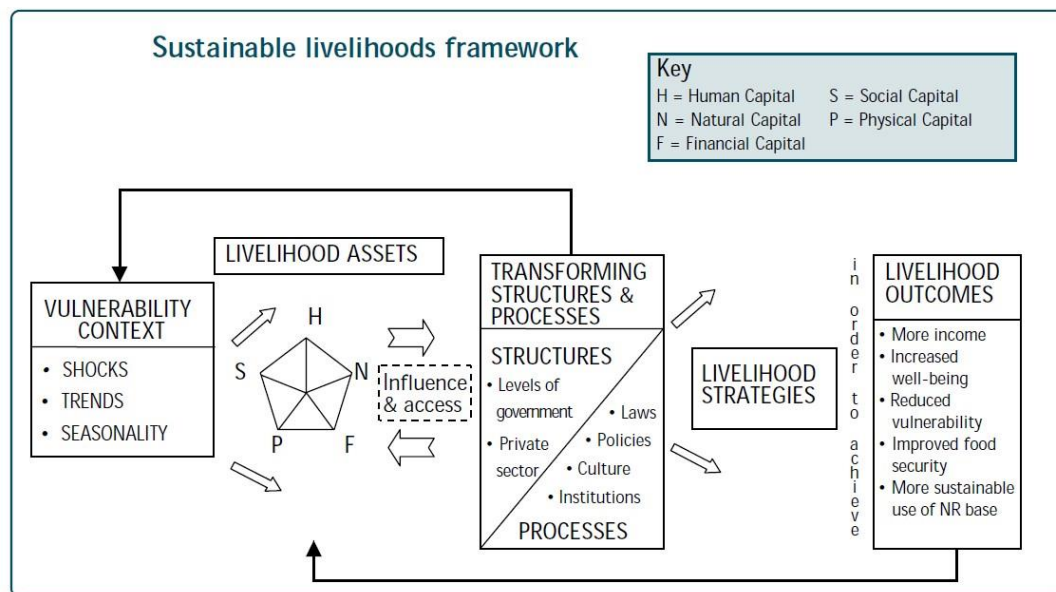
Not only are small-scale fishers considered to be poor, fishing is also viewed as a full-time occupation taking place in single, well defined sector, i.e. fisheries managed by sectoral based approaches of public policy and structure of public administration, which could lead to great scope for misunderstanding how of the fishers' livelihood strategies (Allison and Ellis, 2001). However, a recent FAO report estimates that out of 56.6 million people engaged in the primary sector of capture fisheries and aquaculture in 2014, out of which 36 percent were full time, 23 percent were part-time, and the rest were either occasional fishers or of unspecified status (FAO, 2016). This means most fishers hold other jobs than fishing alone. In fact, it is common for small-scale fishers to diversify their livelihood sources by holding other jobs from non-fishing activities such as farming, small-businesses and trade. Fishers adopt these diversification strategies of livelihoods for many reasons and mainly to reduce and adsorb risks of the high-risk nature of fishing. These include mitigating

risks arising from environmental conditions such as weather, seasonal fluctuations, poor fishing gears, etc. (Panayotou, 1982); spreading risk across several income sources, overcome the uneven use of assets caused by seasonality and reduce vulnerability to widespread market failures and uncertainties amongst others (Allison and Ellis, 2001); adopting strategies in reaction to policy-induced constraints and socio-economic realities (Tobey and Torell, 2006; Cinner et al., 2010). Moreover, diversified livelihoods on the household level where members of fishing households often hold jobs in different sectors can smoothen the effects of resource variations (Allison and Ellis, 2001). Moreover, income from alternative livelihoods may be reinvested in activities which increase fishing effort and pressure (Sievanen et al., 2005), and could keep fishers in fishing who would otherwise not function on fishing alone. (Slater et al., 2012). However, some other studies also showed that some fishers from households with diverse livelihoods are more likely to reduce fishing effort and consider exiting a fishery (Tobey and Torell, 2006; Muallil et al., 2011; Cinner et al., 2008; Wells et al., 2010).

Livelihood studies emerged in early 1990s amidst global discussions on rural development and poverty alleviation in the late 1980s. Most notably, livelihood studies were influenced by the Brundtland Commission Report of 1987 and the first Human Development Report from the United Nations Development Programme in 1990 which focused on poor people, their needs and the emphasis on self-reliance and sustainability (Solesbury, 2003). Subsequently “livelihood” became the buzzword of international development policy and politics, particularly after the United Nations Earth Summit held in Rio de Janeiro in 1992, where the Agenda 21 for sustainable development placed emphasis on enabling the poor to achieve sustainable livelihoods. Since then, growing interest in the “livelihood approach” to address poverty alleviation has led to many attempts of formulating theoretical framework for livelihood studies.

Among which the United Kingdom Department for International Development (DFID) in its 1997 White Paper on international development made the ‘sustainable livelihoods approach’ (or SLA), a core principle of its strategy for pro-poor policy making and subsequently commissioned the Institute of Development Studies (IDS) at the University of Sussex to formulate the SLA in 1998 (Scoones, 1998). In fact, the origination of sustainable livelihood as a concept is widely attributed to Robert Chambers at the IDS, who defined a livelihood as "comprising the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation (Chambers and Conway 1992)" in 1992, is still most frequently used today. Building on the work on SLA by IDS, DFID through the Sustainable Rural Livelihoods Advisory Committee further developed the Sustainable Livelihood Framework (see Figure 2.1).

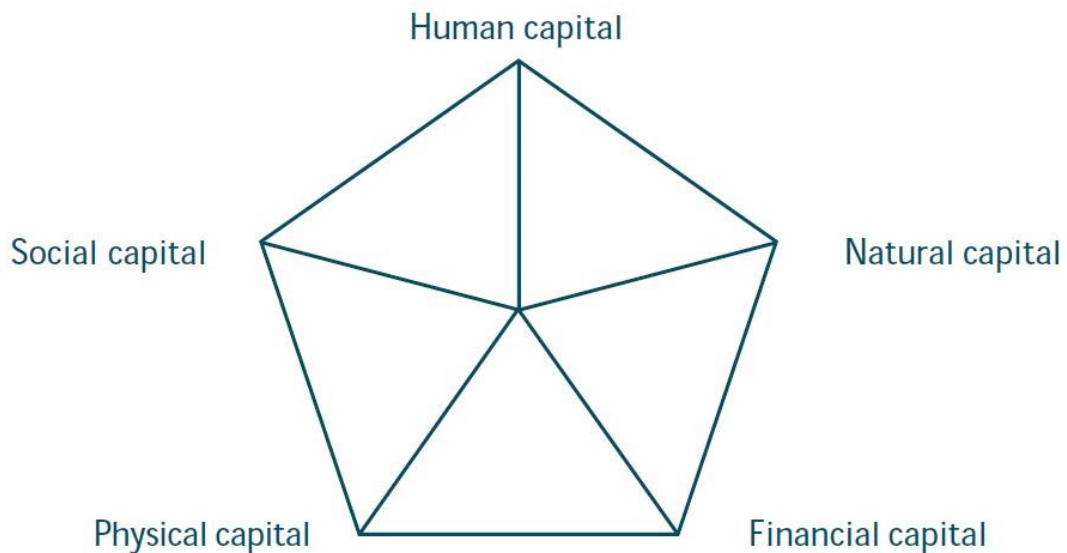
Figure 2. 1. Sustainable Livelihood Framework (DFID, 1999)



The Sustainable Livelihood Framework is intended to be a development tool for use in planning and management in poverty alleviation through offering a way in understanding complexity of livelihood and that it comprises of determinants including vulnerability, assets, transforming structures and processes, livelihood strategies and livelihood outcomes. Central to approach of this framework is that it is a people-centred analysis, whereby people utilize their assets, which are shaped by the Vulnerability Context and Transforming Structures and Process that they are exposed to and go through, to achieve sustainable Livelihood Outcomes through adopting Livelihood Strategies. It does not propose a starting point for analysis, recognizing that livelihoods are shaped by a multitude of different forces and factors that are themselves constantly shifting, but rather value the importance of simultaneous investigations of all aspects affecting livelihood.

The livelihood asset pentagon which lies at the core of the SLF, was developed to promote visibility and understanding of the inter-relationships amongst the various assets people possess (see Figure 2.2). The livelihood framework identifies five core asset categories or types of capital upon which livelihoods are built, they are namely: (i) Human Capital, (ii) Social Capital, (iii) Natural Capital, (iv) Physical Capital and (v) Financial Capital. DFID asserts that having more access to these capital, which can take the form of ownership or the right to use, could then better support livelihoods and eliminate poverty. The center of the pentagon being zero access, the further each corners of capital reached indicates abundance in the assets. Nonetheless, DFID also caveats that not all the assets are capital stocks in the strict economic sense of the term but the five “capitals” are perhaps best thought of as livelihood building blocks.

Figure 2.2. The Livelihood Assets Pentagon (DFID, 1999)



The SLA and its framework seek “to identify what the poor have rather than what they do not have” (Moser, 1998), draws attention on the assets of rural people, and how they increase the ability of families to withstand shocks (Swift, 1989). It also propagates the need to understand the institutional structures and processes that affect the livelihood strategies that will be adopted cover more than just economic growth, and which SLA is an attempt to understand poverty as a multifaceted concept (Krantz, 2001). The livelihoods framework is used for policy-relevant empirical research that seeks to capture the cross sectoral nature of rural people’s income-generating and subsistence activities (Béné et al., 2000).

Following this strong advocacy for SLA in development in the 1990s, livelihood studies since then have mostly revolved around the SLA and its framework with alterations to examine poverty issues in developing countries. However, as Scoones (2009) pointed out that the livelihood perspectives were not necessarily easily translated into practice “with inherited organisational forms, disciplinary biases and funding structures constructed around other assumptions and ways of thinking”, highlighted as some of the obstacles in implementing the SLA. Scoones further highlighted the four failures of SLA - to engage with processes of economic globalisation, debates about politics and governance, the challenges of environmental sustainability and the fundamental transformatory shifts in rural economies – and as a result the research and policy focus has shifted away from the contextual, transdisciplinary and cross-sectoral insights from livelihood perspectives, often back to a predictable default of macro-economic analyses. It was perhaps due to such hurdles to effectively capture livelihood complexities, that the popularity of livelihood studies began to fizzle out from the late 2000s, when most major international aid agencies and global-scale projects also started to shift to focus on sustainability and climate change issues.

However, almost all livelihood studies today focus on developing countries for poverty alleviation and climate change adaptation, but rarely on developed countries. Yet, understanding the developed countries context can provide future scenarios on rural development challenges to developing countries, as they will eventually make economic progress and face similar challenges as like developed countries. Moreover, the SLA does not explain exactly what constitutes “the livelihood strategies”, how and under what circumstances would the strategies be taken. Understanding the diversification strategies of livelihoods and motivations to engage in multiple jobs could also provide insight on how to attract workforce to the rural. Coastal fisheries in developed countries now are critically facing a lack of workforce due to depopulation of fishing villages and aging of fishers and a decline of coastal fisheries could lead to environmental degradation, cultural loss and national security challenges. Thus there is a need to address challenges in sustaining livelihoods of coastal fisheries in developed countries, like the one of the world’s largest fishing nation Japan, through examining fishers’ livelihood strategies using livelihood studies approach.

II. Traditional Fisheries Management

Fisheries co-management, where fishers are often seen as driven by the principle of self-interests to maximise benefits tend to over fish and as a result deplete the common-pool resources, have been referred as alike to Gordon Hardin’s famous analogy of the “tragedy of commons”. Some studies have also shown that shared resources in fisheries were more prone to overexploitation (McWhinnie, 2009), and that fishers desire for higher relative performance over fish stock concerns further exacerbated the tragedy of the commons in a fishery (Long, N.V. and McWhinnie, 2012). A common-pool resource, as defined by Ostrom (et. al 1994) are systems with finite natural or man-made resources such as a lake or ocean, an irrigation system, a fishing ground, a forest, the internet, or the stratosphere, from which it is difficult to exclude or limit users and that one person’s use will deprive the benefit of another. However, Ostrom argued that the catastrophic fate of common-pool resources Hardin has assumed “did not envision that users could self-organize and devise institutions to extract themselves from tragic overuse”, and that if users usually have the capabilities and actually collaborate amongst themselves to manage their common-pool resources (Ostrom, 2008).

Berkes et al. (1991) defined collaborative management, or co-management as “the sharing of power and responsibility between the government and local resource users”. The decentralized nature of decision making, accountability and local stakeholders as equals with the nation state are also stressed in co-management. (Singleton, 1998; The World Bank, 1999). Co-management is often associated natural resource management, involves some kind of partnership between public and private actors, and evolves over time. (Carlssona and Berkes, 2005). Furthermore, the benefits of co-management could include allocation of tasks, exchange of resources, linking different types and

levels of organization, reduction of transaction costs, risk sharing, conflict resolution mechanisms and power sharing. (Carlssona, and Berkes, 2005). On assessing the effectiveness of co-management, Berkes (2007) proposes the examination under seven faces of co-management to be power sharing, institution building, trust building, learning and knowledge co-production, problem solving, and governance.

However, scientific research for fishery data requires expertise and is both time consuming and expensive (Hunt, 2013). As a result, government driven models of management that are designed based on scientific evidence may not be able to provide timely and effective methods for management of coastal fishery resources. Thus, alternative models, especially those which incorporates local knowledge of the marine environment, communal planning methods and customary marine tenures, could substitute for, or complement management measures of fishery authorities. Past studies have also found that national governmental agencies were notably unsuccessful in designing effective and uniform set of rules to regulate important common-pool resources across a broad domain (Ostrom, 1998; Nasuchon and Charles, 2010). Friedlander et al. (2016) reported that governments of many Pacific Islands recognising customary marine tenure (CMT) rights by communities and helping to facilitate more localised management of marine resources, such as the revival of traditional resource practices to improve management of marine areas to maximise benefits for local communities in Fiji. Another example of such customary marine tenure is in the case of Hawaii, where fishing activities and catch distribution were strictly disciplined by *kapu* (rules), which managed fisheries through specifying fishing seasons and places so as to not interrupt marine environments vital for food resources (Friedlander et al., 2016). In Japan, the coastal fisheries commons management is that of a “state-reinforced, user self-governance” model where “the state neither owns the commons nor privatizes it but provides strategic support to reinforce user self-governing institutions”, could enhance user autonomy and self-governance (Sarker et al., 2015).

This thesis thus examined the management of traditional, coastal fisheries in Japan, specifically the case of Himeshima island in Oita Prefecture, where the local customary marine tenure and communal rules of “*Fishery Season Rules*” is being implemented for 110 years to understand how resources whereby fishers’ livelihoods are dependent on are traditionally managed. Also, it examined how this traditional way of management also had any interactions, linkages or impacts with other sectors within the local economy to sustain multiple livelihoods of the people.

III. Policies on Traditional Fisheries Systems

Agriculture has faced a long history of dealing with famine. In an effort to counter famine especially in developing countries, Food and Agriculture Organization of the United Nations (FAO) has actively promoted increase food production to supply the global population surge through breed innovation and expansion of farmlands, as symbolized by the “Green Revolution”. While such initiatives have achieved considerable success in increasing food supply, it is cautioned that their incompatibility and dis-harmonization with local way of life and culture, biodiversity and environment conservation have also posed problems. Amidst this background, FAO’s “Globally Important Agricultural Heritage Systems (GIAHS)” initiated in 2002 then came about as an initiative to ensure the heritage of significant traditional agriculture to the future generations (Takeuchi and Nagata, 2015).

Defined by FAO 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”, GIAHS aims to identify, support, safeguard and dynamically conserve agricultural heritage systems and their livelihoods, agricultural and associated biodiversity, landscapes, knowledge systems and cultures (FAO, 2012). While GIAHS is termed “agricultural heritage”, it should be noted that “agriculture” here takes the FAO definition of taking agriculture to refer to all primary industries, including forestry, fisheries, husbandry, hunting and so on (From Paragraph 1, Article I of the FAO Constitution). In most cases, a GIAHS would consist of a core industry (agriculture, forestry, fisheries or husbandry) but at the same time also include other related sectors and embraces the diversity of livelihood option of the local communities dependent on the agricultural heritage system.

As at December 2017, 45 GIAHS sites in 19 countries have been designated, where more than three-quarters being concentrated in Asia, among which East Asia constitutes more than half of GIAHS sites in the world (China 13 sites, Japan 9 sites and Korea 3 sites). Designated GIAHS which mainly consists of or includes fisheries includes “The Ayu of Nagara River” in Gifu Prefecture, “Noto’s Satoyama and Satoumi” and “Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System” – currently all located in Japan, although both Japan and Korea also have several nationally designated fisheries heritage systems. Thus, this thesis examined GIAHS as being the most available policy framework in conserving traditional livelihoods.

However, there are few studies on the comparison of designation criteria, selection process and evaluation of traditional agricultural systems and the impact of GIAHS designation. Although GIAHS designation was found to enhance in the young high school students an increased sense of

pride for their homeland and positive hopes for future (Yiu, 2015), and some studies done on the economic and ecological impacts to the GIAHS designation, there are mostly studies of a single GIAHS within a country, but rarely international comparisons. Thus, this thesis made a comparison analysis of the agricultural heritages systems policy in East Asia, in particular China, Japan and Korea who have the most GIAHS, so as to investigate how they value and conserve traditional livelihoods dependent on such agricultural heritage systems.

CHAPTER 3. LIVELIHOOD DIVERSIFICATION

【Details on the research findings in this Chapter will be undisclosed due to the preparation for journal paper publishing.】

This chapter examined factors affecting diversification strategies of livelihoods through the case study on Multiple Livelihoods of Fishers in Noto island, Ishikawa Prefecture, Japan. It first traced the development of agricultural history of Noto Peninsula to understand the socio-economical background on how livelihood structures have formed, and then discussed the findings of structured interview surveys on factors affecting diversification strategies of livelihoods with 35 multiple livelihood fishers on Noto island.

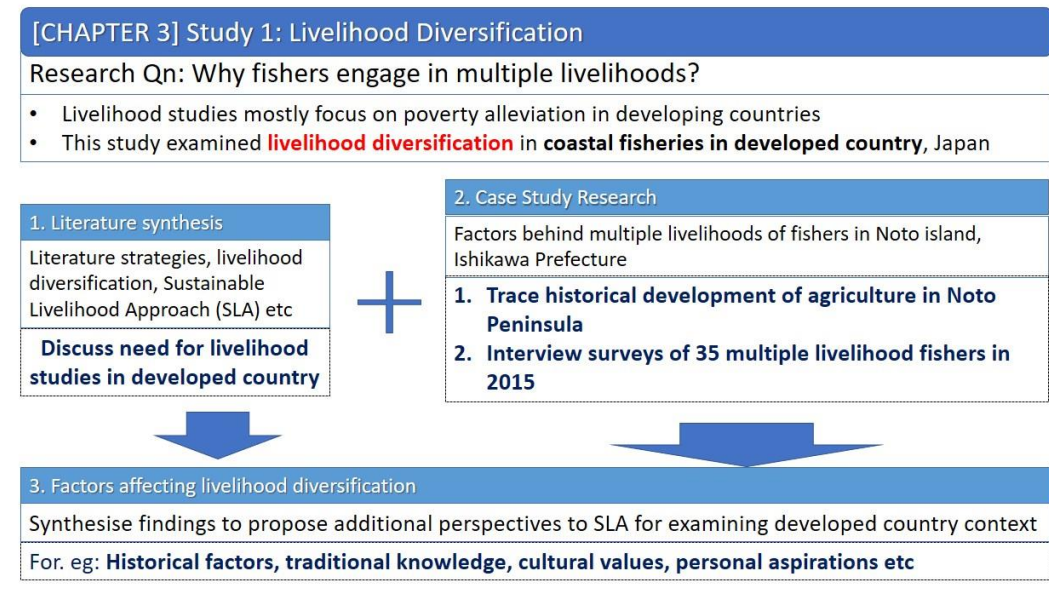
I. Research Question and Design

As explained in Chapter 1. Literature Review, most livelihood studies focused on poverty alleviation in developing countries and multiple occupations are often viewed for the purpose of diversifying of income sources. This study examined factors affecting livelihood diversification strategies in coastal fisheries in a developed country context, i.e. Japan. This study aims to encourage fishers to take up multiple livelihoods (livelihood diversification) so as to ease the rural workforce shortage in primary industries due to aging and depopulation. In particular, it examined the case study of multiple livelihoods of fishers in Noto island, Ishikawa Prefecture, Japan.

The study site, Noto Island, was chosen based on the reason that it belonged to Noto Peninsula, which was designated as one of Japan's first designated Globally Important Agricultural Heritage Systems (GIAHS) for the concept of "Noto's Satoyama and Satoumi" (which can be also understood as the Socio-ecological productive landscapes and seascapes of Noto), where the traditional livelihood of the local people practicing fishing and farming concurrently is said to be still very prevalent across the Peninsula. Thus I chose Noto Island, the biggest populated island in the Peninsula, as there is a higher probability of finding coastal fishers who also engage in farming compared to those fishers on the Peninsula who tend to engage in offshore or pelagic fishing.

The study first traced the historical development of agriculture in Noto peninsula to understand why traditional agriculture and multiple livelihoods are still practiced prevalently today, followed by analysing the findings from interview surveys with local fishers to understand their motivations for engaging in multiple jobs. The findings were then synthesised and new factors to be included into the SLA were also proposed. The design of this study is as in Figure 3.1.

Figure 3.1. Research Question and Design of Study on Livelihood Diversification



II. The Agricultural History of Noto Peninsula, Japan:

Tracing the development of socio-economic interconnectedness of Satoyama & Satoumi

【Details on the research findings in this Chapter will be undisclosed due to the preparation for journal paper publishing.】

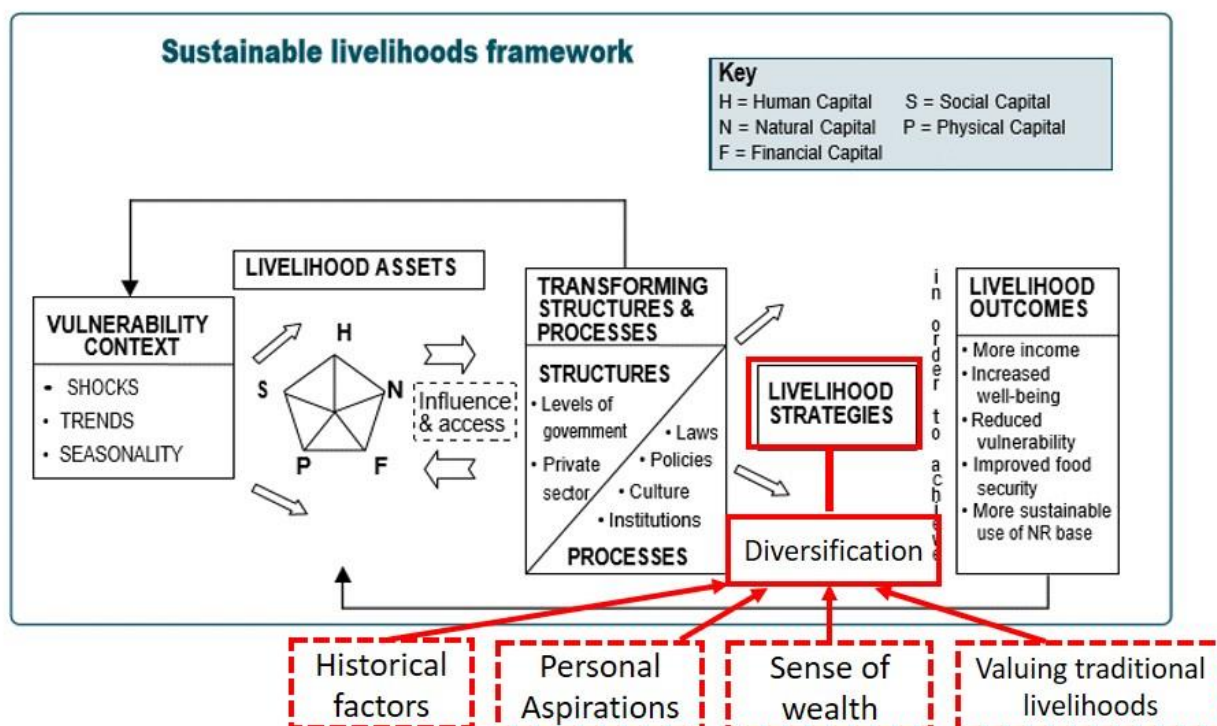
III. Interview Surveys of Multiple Livelihoods of Fishers

【Details on the research findings in this Chapter will be undisclosed due to the preparation for journal paper publishing.】

IV. Chapter Analysis

The study has determined factors affecting livelihood diversification strategies of fishers, in particularly examining self-awareness on occupational roles, perceptions on taking up on multiple livelihoods, and their connection with nature through looking at how they value the multifunctional roles of fisheries, agriculture and forestry. Including the findings on Section 3.I : The Agricultural History of Noto Peninsula, it can be concluded that these factors are historical background, personal aspirations (self-actualization), sense of satisfaction (spiritual wealth) and the valuing of rural, traditional livelihoods especially for its cultural and social importance. These factors do not really fall under the assets pentagons: Human capital are referred to as “represents the skills, knowledge, ability to labor and good health (DFID, 1999)” that did not include personal values of self-actualization and spiritual wealth; Social capital are “the social resources upon which people draw in pursuit of their livelihood objectives (DFID, 1999)” but do not cover historical backgrounds and social systems that preserves the cultural value of traditional livelihoods. Thus, the study proposes new factors that could be considered to understanding diversification in livelihood strategies and Figure 3.34 illustrates how these factors could be positioned in the sustainable livelihood framework.

Figure 3.34. Proposed new factors affecting diversification in livelihood strategies added to the sustainable livelihood framework



Having also examined the pros and cons, the socio-economical factors affecting their decisions to taking up multiple livelihoods, this study has brought to the attention that rationality of their occupational choices could be perceived differently: that income is not necessarily the main reason but social and cultural aspects also come into play; that multiple livelihoods of fishers does not necessarily mean that they are financial deprived and dissatisfied, and people here seemed literally able to survive on pride – for the rich boutiful nature of their homelands and of themselves for fulfilling their social obligations and achieving personal aspirations. While scholarly recommendations and administrative policies could highlight the positive effects that livelihood diversification can bring to local economy, social fabric and ecological resilience, it should be noted that occupation is after all a personal choice and that reasons for rationalising could also be easily revoke simply based on personal preference or circumstances. Nonetheless, adding the abovementioned new factors to livelihood diversification can provide new dimensions to better understand these decisions from a social, cultural and psychological level.

Acknowledgments

This study was conducted under the research projects on “Sustainable Primary Industries in Noto Satoyama and Satoumi” and “Noto Satoumi Movement” of the United Nations University Institute for the Advanced Studies of Sustainability Operating Unit Ishikawa/Kanazawa (UNU-IAS OUIK) in which I am the lead researcher. The Agricultural History Society of Japan sponsored my participation at International Conference of the East-Asian Agricultural History, Nanking, China, May 2015, where I presented the research findings on “The Agricultural History of Noto Peninsula, Japan: Tracing the development of socio-economic interconnectedness of Satoyama & Satoumi”.

For this research, I received various generous assistance and guidance. In particular, I am deeply grateful to the ex-president of Ishikawa Fishers Association and fisher in Noto island, Mr Nobuhiro Kido and council chief of Noto island Mr Shigeyuki Nakamura for their support, cooperation and invaluable opinion. Last but not least I express my heartfelt appreciation to all the fishers and residents in Noto island, who have taken time to take my interviews and the warm support given to me during my field surveys.

CHAPTER 4. TRADITIONAL FISHERIES MANAGEMENT

This chapter examined how fisheries are traditionally managed in Japan through the case study on the Traditional fisheries management of Himeshima island, Oita Prefecture, Japan. It traced the origin and historical development of *Fishery Season Rules* over 110 years since it was first officially documented and implemented in 1904, to determine the core principles, how the management system is working today, and what impacts it has brought to local and neighbouring fishing villages in conserving their traditional coastal fisheries.

This study was conducted under the research grant which I applied from The Kunisaki Peninsula Usa GIAHS Promotion Association for “FY2016 Research on Conservation of Kunisaki Peninsula Usa GIAHS” from August 2016 to March 2017. Part of the findings of this study is published in a web 48 pages web report in Japanese on The Kunisaki Peninsula Usa GIAHS Promotion Association website¹.

I. Research Question and Design

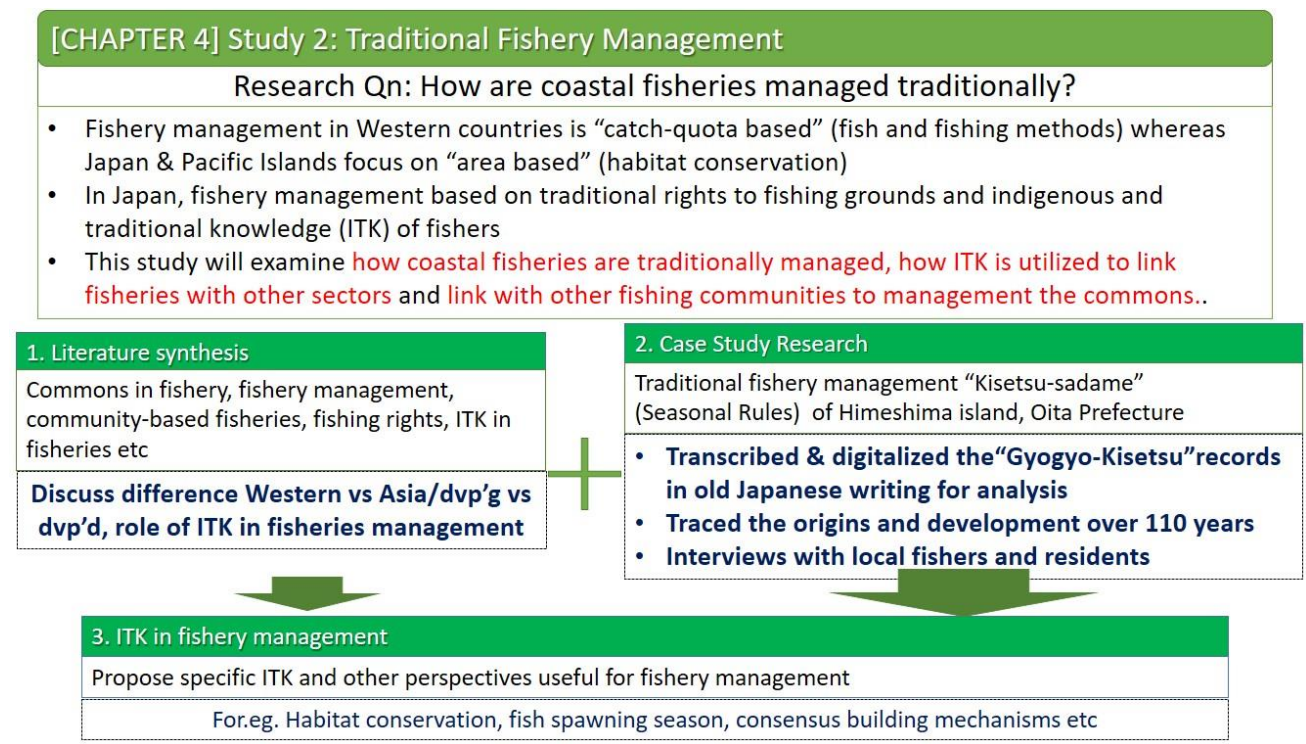
As explained in Chapter 1. Literature review, fishery management in Japan are mostly based on traditional rights to fishing grounds and indigenous and traditional knowledge (ITK) of fishers. This study examined such traditional practices and customs regarding the management of fishery resources in coastal fisheries in Japan. This study aimed to understand what kind of ITK are applied in this management system of fisheries, and traced the origin and the historical development to find out of the socio-economic drivers that affect the implementation and the philosophical concepts behind such traditional knowledge. The study also examined if traditional fisheries have interaction with other primary sectors and if this ITK is shared with other fishing communities for management of the commons. In particular, it examined the case study of the Traditional fisheries management of *Fishery Season Rules* of Himeshima island, Oita Prefecture, Japan, through extensive literature research and interviews with local fishers and residents, on the following three key research questions:

- i. Clarify purpose and consensus building of traditional fishery management
- ii. Ascertain linkages of traditional fisheries with other primary sectors
- iii. Examine interactions with other fisheries through sharing of management knowledge

The design of this study is as in Figure 4.1.:

¹ The report can be downloaded on Kunisaki Peninsula Usa GIAHS Promotion Association website at <http://www.kunisaki-usa-giahs.com/news/detail.php?id=201704121354026163>

Figure 4.1. Research Question and Design of Study on Traditional Fisheries Management



II. Origin and historical development of *Fishery Season Rules*:

Traditional fisheries management of Himeshima island, Oita Prefecture, Japan

This chapter examined how traditional practices of fisheries help to sustain the livelihoods of fishers. In particular, it will study the traditional fishery resource management of Himeshima island, located in Kunisaki-Usa region, Oita Prefecture, which is also designated as FAO Globally Important Agricultural Heritage Systems (GIAHS) in 2013, under the system concept of "Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System" (hereinafter referred to as "Kunisaki GIAHS"). Himeshima island is chosen as the case study site to examine how communities where fisheries is the major livelihood but is declining today continue to cope and utilize its ITK related to fisheries resource management.

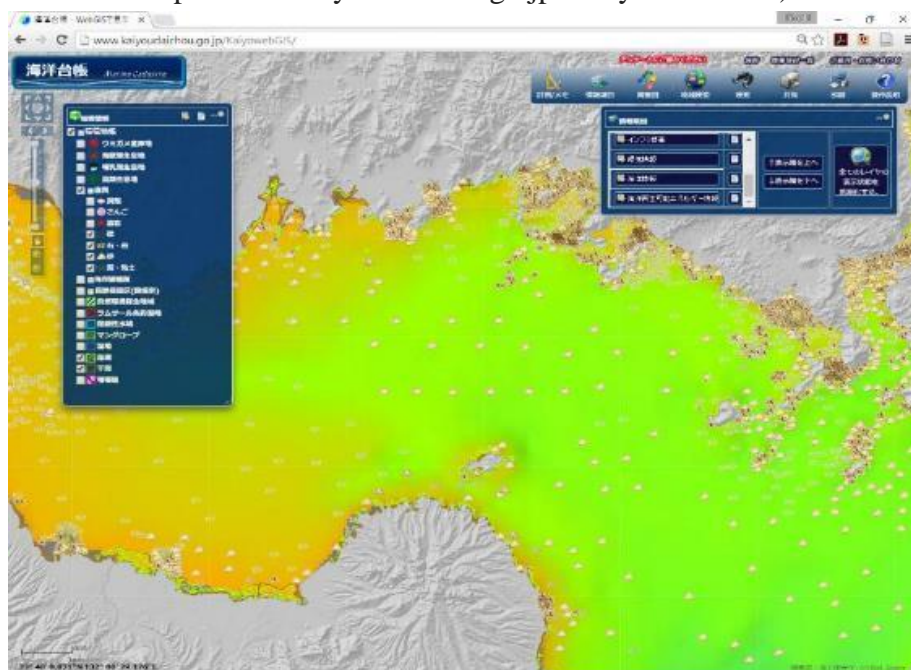
1. Research Purpose

Himeshima village is an island located in the Seto Inland Sea Suo-Nada. Its close geographical proximity with the Usa Peninsula also connects it ecologically, socially and economically with the Peninsula, playing an important role as part of the Kunisaki GIAHS. The study focused on the fishery resource management which has been traditionally carried out in Himeshima village, by examining the historical records and documents to trace its historical development and clarify how this traditional management of fisheries have also affected neighbouring fisheries on Kunisaki peninsula.

The purpose of this study is aimed to ascertain (1) the connection between the potential Himeshima village and the Kunisaki peninsula Usa area socially and economically and clarifying the position in Himeshima village within the Kunisaki GIAHS, and (2) the value and practices of the traditional practice of fisheries management so as to contribute to the improvement of added value of fishery products in Himeshima village and the lives of local people.

The Kunisaki GIAHS is designated for its system concept of “Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System”, whereby agriculture was made possible by the water provided by the growing of Sawtooth Oak (*Quercus acutissima* or “Kunigi” in Japanese) forests for the logwood cultivation of shiitake mushrooms as the forests helped to retain water in the soil and recharge groundwater. The water is then channelled and stored in the many integrated chain of irrigation ponds that cascade the water resources downstream, irrigating farmlands on the way and eventually transports organic matter and nutrients from land to the sea nourishing the marine environment and nurturing its fisheries. Although it is not connected by land with the Kunisaki Peninsula, Himeshima island is also part of the designated under Kunisaki GIAHS. Nevertheless, the distance between Himeshima island and the Kunisaki peninsula is a narrow strait of sea just 6 kilometers between them, and it can be considered that they share a similar and interconnected marine environment that was formed in between them in terms of the depth and sediment (see Figure. 4.2). Indeed, this water, also known as the Himeshima Channel (*Himeshima suido*), nurtures abundant fishery products including the branded "Himeshima flounder" (*Himeshima karei*).

Figure 4.2. Geographical position relationship between the Kunisaki and Himejima
Orange and green in the sea area indicate the water depth, bottom sediment, seaweed bed and tidal flats position based on the seafloor topography (Source: Japan Coast Guard "Marine Casdatre"
<http://www.kaiyoudaichou.go.jp/kaiyowebGIS/>)

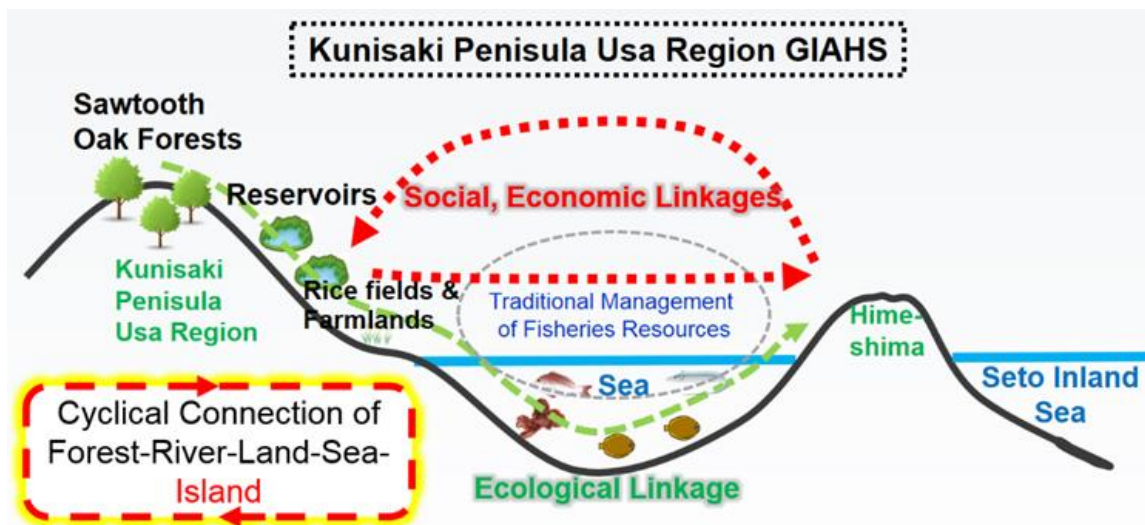


However, the connection between Himeshima island and Kunisaki Peninsula, how Himeshima contributes to the system and whether there is an interactive connection with Himeshima island and the Kunisaki peninsula is not clearly indicated in its GIAHS application proposal which is available to public access on FAO GIAHS website. Thus there is a need to clarify the connection between Himeshima island and the Kunisaki Peninsula, and this relationship if clarified could prove cyclical relationship amongst agriculture, forestry and fisheries with the Kunisaki GIAHS itself so as to better position the role of Himeshima as part of the agricultural heritage system. This relationship of a cyclical agriculture, forestry and fisheries system connecting the peninsula and its outer islands if proven will be useful in discussing the roles of similar systems in areas with other similar geographical configurations in Japan in the future, and thus would be a pioneering research.

The agriculture, forestry and fisheries systems connected by the Sawtooth oak forests and irrigation ponds in the Kunisaki Peninsula provide marine life with nutrients and plankton from land and the resulting rich marine environment is then maintained between Himeshima island and the Kunisaki peninsula. It may seem that Himeshima island is benefiting unilaterally from the Kunisaki peninsula, yet it may not always be the case. Himeshima's coastal seas contributes to the sustainability of marine resources by providing habitats for marine life around the sea of the Himenjima Channel through maintaining the surrounding ocean in a rich environment where fish can breed, spawn, feed, grow and survive. Furthermore, the connection between Himeshima island and the Kunisaki peninsula is not necessarily limited to ecological linkage. Himeshima island, one of the most powerhouse of fisheries in Oita Prefecture, has contributed to the sustainable fishery resource management of the Kunisaki peninsula through its traditional wisdom and practices, such as its unique fishing resource management and fishing methods that have been practiced for over a century long. Thus if the existence of social and economic connection between Himeshima island and the Kunisaki peninsula, in addition to ecological linkage, could be ascertained, then a relationship of comprehensive circulation system between the peninsula and island could also be established.

Moreover, with this circulation system established, the role of "island" could be then added to the existing concept of "Forest-Land-River-Sea" interlinkages to propose a new broad and comprehensive view of "Forest-Land-River-Sea-Island interlinkages". Thus, this study examined the connection between the Himeshima and Kunisaki Peninsula (Figure 4.3).

Figure 4.3. Interlinkages between the Kunisaki peninsula and Himeshima island



Specifically, the study clarified the history of fisheries resource management of Himeshima island, where fishery is the main industry of the island, so as to ascertain the social and economic impact Himeshima bring to the Kunisaki peninsula, and vice versa. Toward this end, the study traced the historical background and investigated on the present situation of traditional fishery resource management that have been practiced in Himeshima island, in particular the "*Fishery Season Rules*" (*Gyogyo kisetsu* 漁業期節), or also known as “Kisetsusdame (期節定)”. The survey fields were conducted mainly Himeshima island and also Kunimi Town, the closest town in Kunisaki peninsula from Himeshima island across the Himeshima Channel linked by a ferry service.

2. Methodology

i. Research Questions and Methodology

The study investigated the following three research questions:

- a. Clarified the historical background and development on Himeshima's traditional fishery resource management up to present day. In particular, it focused on how the fisheries resource management, Fishery seasonal rules have been implemented since the Meiji era to present day and analysed how it has impacted the fishery right and resource management of local fisheries.
- b. Ascertained how, through the case study of seaweed usage, the linkages of traditional fisheries with other primary sectors and discussed how they are interdependent

- c. Examined the interactions of Himeshima with other fishing villages on the Kunisaki Peninsula through sharing of their traditional fisheries management knowledge and also its influence on regional fisheries management arrangements in Kunisaki Peninsula.

The research methodology was mainly based on extensive literature of fishery management records, ancient literature and literature review of past research, along with interviews conducted with local fishers and residents.

The study was conducted mainly in Himeshima Village, and also Kunimi town of Kunisaki City in Oita Prefecture, Japan. The survey was carried out from June 2016 to May 2017: 27 to 30 June 2016, 24 August to 27 August 2016, 23 to 25 Oct 2016, 5 to 10 Mar 2017, 28 to 29 May 2017, a total of 20 days over 5 visits.

ii. Location of study site and duration

Himeshima village is situated in the Suo-nada Sea area, at the western end of the Seto Inland Sea and 5 kilometers north-northeast of Iimi Port, Kunimi Town of Kunisaki city at the northern tip of Kunisaki peninsula. Access to Himeshima island takes only 20 minutes by ferry from Iimi Port to Himeshima Port. The island is 6.6 kilometers from east to west, 2.6 kilometers north to south, and has a coastline of 17 kilometers and a total area of 6.98 square kilometres. Formed by four volcanoes connected by sandbels, the highest elevation is Mt. Yamzu-dake (266.6 meters) on the central southern tip of the island, and Mt. Daliyama (105 m) to the west end, Mt. Shiroyama (62 m) which forms the base of the Kannonzaki peninsula in the northeast and Mt. Tamagakeake (45 m) with a lighthouse on the eastern end. The residential areas are formed on the flat ground area amongst these connected mountains (see Figure 4.4). It is an administratively autonomous village. It was designated as GIAHS by FAO in May 2013 and as Japan Geopark by the Japan Geopark Network in September 2013 (see Figures 4.5 to 4.8).

Figure 4.4. Map of Himeshima Island

(Source: Geospatial Information Authority of Japan, accessed on 30 March 2017)



Figure 4.5. (upper left) Himeshima heading from Iimi port in Kunimi Town;

Figure 4.6. (upper right) Ferry connecting Iimi Port and Himeshima Port;

Figure 4.7. (lower left) A signboard of Himeshima GIAHS designation in front of Himeshima Port;

Figure 4.8. (lower right) Himeshima Port Ferry Terminal



The climate is mild, with annual average temperature of 17.5 ° C, little rainfall at around 1,500 millimetres which is lower than annual national average. The population is 1,930 people of which are 911 men and 1,019 women, and has 877 households (as at February, 2017). The declining birthrates shows that Himeshima village is aging, but Himeshima village office in the “Himeshima Village General Plan” proclaimed to “maintain the current state of 2,180 people in 2008 by 2021”. Historically, Himeshima, which was under the rule of Kitsuki clan in the Edo period, became part of Kitsuki prefecture in Meiji 4(1871), then Oita Prefecture 1st Battalion 1st section (Takada) in Meiji 5(1872), and the following year the government office of “1st Main 11 Small Ward Himeshima” was set up. It subsequently came under the administration belonged to the Eastern Kunisaki in Meiji 11(1878), and in the same year Himeshima Village consisting of six residential districts was established.

Major industries today are fisheries, tourism and agriculture, but the municipal government is the biggest employer to the people of Himeshima island. The fishery cooperative of Oita Prefecture (JF

Oita) as the biggest fishery cooperative in Japan, consisting of 27 fishery cooperatives in the prefecture after its merger in April 2002, and Himeshima falls under JF Oita Himeshima Branch (hereinafter referred to as "Himeshima Branch"). The number of fishers belonging to the Himeshima Branch was at 120 people as at 2016 and is in the trend of decreasing. The main fishing types are pole fishing, trap net fishing, drift net fishing, longline fishing, octopus fishing, diving and seaweed gathering, with a total fish catch worth totalling to 288,957,000 yen in the fiscal year of 2015. Himeshima has been the main driving fishery industry of Oita Prefecture since ancient times. There are seven fishing hamlets on the island, namely Nishiura, Kitaura, Minamiura, Matsubara, Omi, Kane, and Inazumi, each have a fishing port.

3. Findings

i. Origin of Himeshima's *Fishery Season Rules*

While several previous studies on the *Fishery Season Rules* have been conducted so far, they were mainly brief introductions of the historical background and simple explanations of its contents (Yanagi, 2004; Miyazawa, 2005; Okaichi, 2012 etc.), and no analysis of its impacts in the connection with the Kunisaki Peninsula. Therefore, in this study, first of all traced the origin to investigate philosophy and concept which it was built on, based on review of existing literature and old documents related to *Fishery Season Rules*. Specifically, the study focused on ascertaining the social background and cultural elements related to the arrangement and management of the *Fishery Season Rules* and other traditional management mechanisms that support sustainable development of the local fisheries.

In order to trace the historical development Himeshima's traditional fishery resource management such as *Fishery Season Rules*, other customary tenures and communal arrangements related to traditional fisheries management, the Himeshima Branch, local fishers and local residents were interviewed.

First, the study found that although there was no clear or official written record stating the origin of the *Fishery Season Rules*, it is often said that the existence is officially recognized in the Meiji 19 (1886) when the fishermen's union was established (Himeshima Village History, 1986).

According to the *Ministry of Agriculture and Commerce Ordinance No. 7* (農商務省令) issued in 5 May 1886, a fishery association rule was issued, which stipulated that convention agreement of each fishing village that had conventionally been done in an autonomous organization based on local customs, should be uniformly implemented as follows (Nishimura, 1983):

1. Determine the period for fishing and seaweed gathering
2. Restrictions on fishing gear, fishing method and seaweed gathering
3. Matters concerning the fishing area

According to a paper written by Mr. Takumi Nishimura who served as director of the Himeshima village fishery association in the 1980s, agreements on fishery resource management such as *Fishery Season Rules* had already been stipulated in agreement before 1886 and that the principles of *Fishery Season Rules* did not differ significantly with those stated in Ministry of Agriculture and Commerce Ordinance No. 7 (Nishimura 1983).

In addition, on 15 June 1886, the same year when the Ordinance of Ministry of Agriculture and Commerce was issued, in accordance with the *Oita Prefecture A.30 Clause on the Fishery Association* (大分縣甲第三十号布達、漁業組合準規則), all coastal villages were grouped into a single district under Higashi-Kunisaki County Fishery Association with its office located in Kunisaki-cho, and Himeshima became one of its subsidiary organization (Nishimura 1983). However soon after on 18 April 1893, an “*Application of Approval for Fishermen Association*” was submitted by Himeshima village mayor to Oita Prefectural governor to request for autonomy to set up Himeshima village’s own protection provisions suited to the local situation and needs. It reasoned that Himeshima had its traditional way and customary measures for fishery resource management implemented long ago. Another reason for submitting the application was that despite there were traditional rules relating to fishery resource management in Himeshima, from time to time fishers (from the peninsula) violate these rules and thus Himeshima wanted to strengthen crackdown by getting approval to carry out their own enforcement of rules set by the Prefectural office (see Figure. 4.9). This suggest that the prototype of the *Fishery Season Rules* originated in Himeshima were in practice before 1885.

Figure 4.9. "Map of Red Sea Bream Fishing License in Meiji 35"

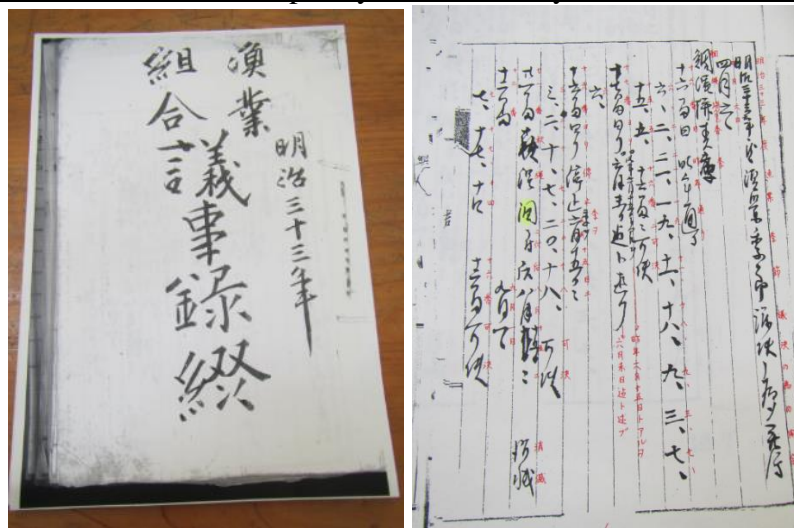
(Source: Yamashita, S. (1956) "National Park fishing in Himeshima")

Licensing of red sea bream fishing set in Himeshima as early as in Meiji 35 or 1902.



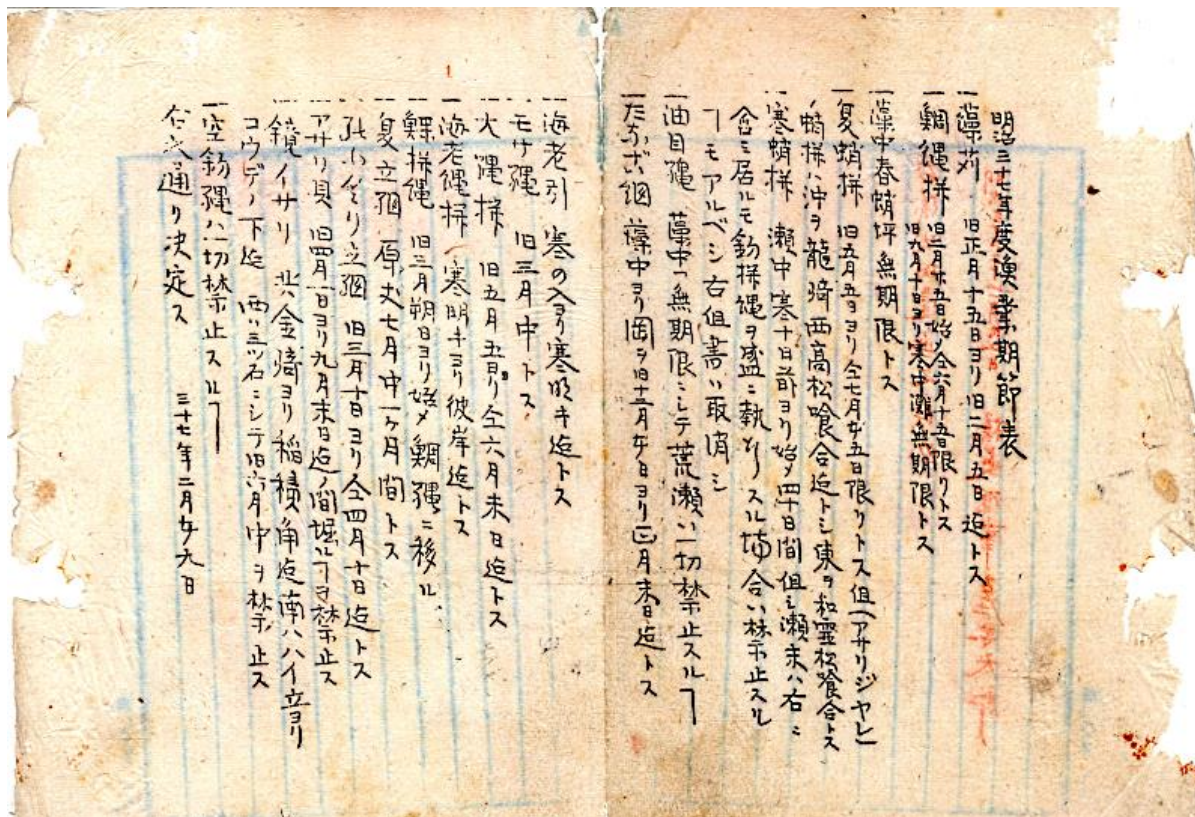
Moreover, a meeting proceedings document, "*Meiji 33 (1900) Fishery Association Minutes*" for the meeting to decide on "Fishery Seasonal Rules Voting for Meiji 33" of Higashi-Kunisaki County Fishery Association, recorded fishing rules to be "as similar to last year" when referred to the fishing season for several fish types, which suggests that *Fishery Season Rules* has been decided and in practiced before 1900 (Nishimura, 1983). A photocopy of the actual meeting proceedings was obtained with the help of Mr. Koichi Kinomura, a historian residing in Himeshima (See Figure 4.10 and 4.11). Furthermore, it can be ascertained from the meeting procedures that there was already an arrangement termed "gyogyo-kisetsu" or *Fishery Season Rules* at the time.

Figure 4.10: (left) Photocopy of Higashi-Kunisaki County Fishermen's Association "Meiji 33 (1900) Fishery Association Minutes"; Figure 4.11. (right) First page of meeting proceedings
(Source: Provided and temporary translations by Mr. Koichi Kinomura)



In 1899, a year following after the enforcement of the Fishery Act (former Fishery Law), amidst the establishment of fishermen's association in each municipality around Japan based on the Fishery Act, Himeshima Village also established the Himeshima Fishermen's association and became independent of the Higashi-Kunisaki County Fishermen's Association. In the following year 1903, the Himeshima Fishermen's Association published in print officially for the first time the "*Meiji 37 (FY1904) Fishery Season Rules Schedule*" and distributed to local fishers (Nishimura, 1983). This original copy of this "*Meiji 37 (FY1904) Fishery Season Rules Schedule*" is still kept in the current Himeshima Branch. The *Fishery Season Rules*, which documented the rules relating to fishery resource management based on the communal agreements and arrangements of the ancestors, still serves as the basis of the fishery resource management today, and carried out in the present day under the "Common No. 8 Fishery Rights Exercise Agreement" (共第 8 号漁業権行使規約) hereinafter referred to as "Co-8" of Himeshima Branch (see Figure 4.12).

Figure 4.12. The original copy of "Meiji 37 Fishery Season Rules" that was handwritten on paper in 1904 (Provided by: Oita Prefecture Fishery Cooperative Himeshima Branch)



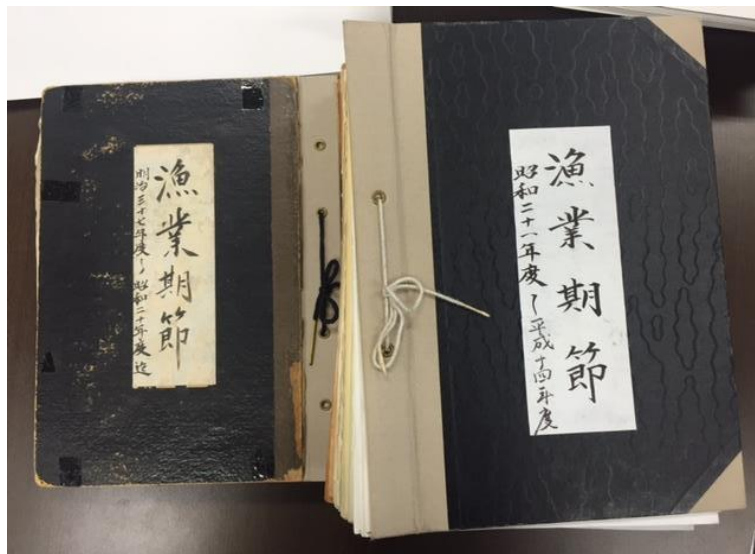
However, ancient records and documents materials older than this "Meiji 37 (FY1904) Fishery Seasonal Rules Schedule" that specified in the term "Fishery Season Rules" were not found nor kept by Himeshima Branch. However, as mentioned above, ancient records such as *Ministry of Agriculture and Commerce Ordinance No. 7* in 1886, *Application of Approval for Fishermen Association* in 1893, and *Meiji 33 Fishery Association Minutes* in 1900 documented that Himeshima had its own rules on fisheries resource management alike that of *Fishery Season Rules*, which suggests that the *Fishery Season Rules* has been in existence at least between 1886 and 1900. Since there is no formal documentation stating the actual term "Fishery Season Rules" before 1886 that has been kept, the actual originating year is, unfortunately, unknown. In any case, there is no doubt that there has already been more than 130 years history since the enforcement of the *Fishery Season Rules* from 1886. Even across the country, it is extremely rare that the content of the fishery resource management has been recorded and kept in original form over a hundred years, and thus making it a very valuable record.

ii. Contents and preservation status of the records of *Fishery Season Rules* of Himeshima

Currently, the original *Fishery Season Rules* kept at the Himeshima Branch is divided into two volumes: Volume I with records from the period of the fiscal year of Meiji 37 (1904) to the Showa 20 (1945), and Volume II from the fiscal year of Showa 21 (1946) to Heisei 14 (2002). Most of the

Fishery Season Rules Schedules in the earlier days were handwritten or in print, and later from the 1960s created using word processors. Each annual schedule of the *Fishery Season Rules* is about 4 pages and an annual copy is bundled together by string with the copies of preceding years (see Figure 4.13). Also since 2002, the *Fishery Season Rules Schedules* were named and filed as "Co-8". Although from the Heisei era (from 1989) the *Fishery Season Rules Schedules* were created on computer, they were not recorded into digital data nor open to the public either. It is perhaps for this reason that many previous studies on *Fishery Season Rules* were mostly on explaining the origin and implementation mechanisms, but there were no in-depth analysis of the management system or research on the resource management by fish types over the years.

Figure 4.13. The two volumes of *Fishery Season Rules* kept at Himeshima Branch



Therefore, in this study, it was first explained to the local stakeholders that digitalizing these records into data will not only preserve these valuable records but also enable further analysing in future. With the cooperation of the Himeshima Branch and local people, the first volume of 127 pages and the second volume of 1047 pages were converted to PDF for the first time in the island's history. Each volume included not only the *Fishery Season Rules Schedules* of Himeshima but also petitions, pledges, maps of fishing grounds and protected areas. Filed together with Himeshima's maps were also copies similar "*Fishery Season Rules*" schedules of neighbouring villages in the Kunisaki peninsula dated between the 1920s and 1950s; for instance like those of "Kumage Village Fishery Cooperative Fishery Coordination Regulations (熊毛村漁業協同組合漁業調整規程)", "Takedatsu Town Fishery Cooperative Fishery Type Operation Agreement(竹田津町漁業協同組合漁業種別操業規約)" and "Kunimi Town Fishery Cooperative No.7 Fishery

Exercise Regulation with Fishery Seasonal Rules Schedule (国見町共同七号漁業権行使規約附漁業期節一覧表)” (Figure 4.31) were filed in the Volume II of *Fishery Season Rules of Himeshima*. Also, several copies of “Meeting Minutes of Himeshima Channel Fishery Seasonal Rules Consultation Meeting (「姫島水道漁業期節協議会議定録」)” were also found included in *Fishery Season Rules of Himeshima*, which proved that fishermen’s associations in Kunisaki peninsula were influenced by *Fishery Season Rules* of Himeshima to be gathering periodically to discuss about it. The *Fishery Season Rules of Himeshima cannot be made* public due to the personal information included. I am grateful to Himeshima Branch for the understanding and great support to allow my assess to the two Volumes of *Fishery Season Rules of Himeshima* for the purpose of this study. Based on the information included in the records, the status of fishery resource according to fish type and the main concerns of fishers through the petitions, pledges and meeting records etc can be ascertained.

As the *Fishery Season Rules* were handwritten in old Japanese scripts, the interpretation of the original manuscript and transcription was assisted by Mr Akira Nagata, member of the Agricultural Japanese Agricultural History Society. The scanned copies and digitalized data were then organized chronologically and along with the originals returned to the Himeshima Branch for the permanent archiving. Before this thesis study, the only transcription of the *Fishery Season Rules of Himeshima* was done only for the first annual record of the *Fishery Season Rules Schedule of Meiji 37 (1904)* which is published in the history records of Himeshima Village (1986), and subsequently made reference by some other books and articles (Yamashita, 1956; Nishimura, 1983). Through this study, the *Fishery Season Rules of Himeshima* is transcribed and digitalized from FY1887 onwards to FY1965. Those after 1965 are written in modern Japanese language and in printed characters that is relatively comprehensible and thus needed no transcription or digitalization (see Table 4.1).

Table 4.1. Fishery Season Rules Schedule of Meiji 37
(in Japanese, as interpreted and transcribed by Akira Nagata)

明治三十七年度漁業期節表	
一 藻刈	旧正月十五日より旧二月五日までとす
一 鯛縄 ^𤝵 *	旧二月二十五日始め同六月十五日限りとす 旧九月十日より寒中灘無期限とす
一 藻中春蛸坪	無期限とす
一 夏蛸 ^𤝵	五月五日より同七月二十五日限りとす 但（アサリジャレ）の 蛸 ^𤝵 は沖を龍崎西高松喰合迄とし東を和霊松喰合とす
一 寒蛸 ^𤝵	瀬中寒十日前よりはじめ四十日間 但し瀬末は右に含み居るも 釣 ^𤝵 縄を盛に執行する場合は禁止することもあるべし 右但書は取消し
一 油目縄	藻中は無期限にして荒瀬は一切禁止すること
一 たなご網	藻中より岡を旧十二月十日より正月末日迄とす
一 海老引	寒の入より寒明き迄とす
一 モサ縄	旧三月中とす
一 大縄 ^𤝵	旧五月五日より同六月末日迄とす
一 海老縄 ^𤝵	寒明きより彼岸迄とす
一 鰈 ^𤝵 縄	旧三月朔日より始め鯛縄に移る
一 夏立網	原丈七月中一ヶ月間とす
一 ノフクリ立網	旧三月十日より同四月十日迄とす
一 アサリ貝	旧四月一日より九月末日迄の間掘ることを禁止す
一 鏡イサリ	北は金崎より稲積角迄南ははい立よりこうでの下までとす 西 は三つ石にして旧六月中を禁止す
一 空釣縄	は一切禁止すること
右の通り決定す 三十七年二月二十九日	
(*これまでの文献は ^𤝵 の文字を「撰」という字に訳されているが（西村巧 1983、姫島村史 1986）、原本の文字は識別しがたいため、本研究はこの文字が「漁」を意味していると解釈し、「𤝵」との当て字で記す）	

As seen from the *Fishery Season Rules Schedule of Meiji 37*, regulations concerning fishing gears, fishing season and fishing grounds according to 17 fish and seaweed species and fishing methods were stipulated and used lunar calendar dates. The number of regulations according to

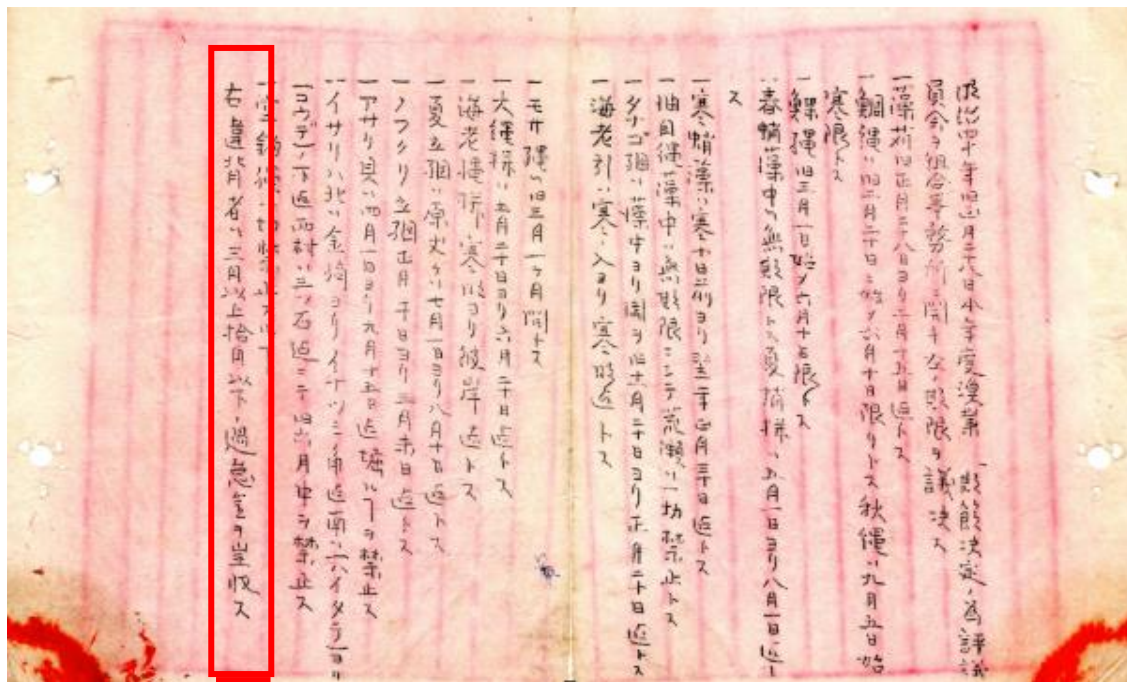
fish species, fishing methods and fishing grounds have also increased with time; there are now a total of 41 items included under "Co-8", of which only about 5 items from 1904 are included today, i.e. red sea bream, flounder, summer octopus, winter octopus and shrimp net fishing. Thus, it can be seen that the fishing methods of Himeshima has changed considerably in the last hundred years.

For the duration of fishing season, the lunar calendar was used from 1904, but both the Gregorian calendar and lunar calendar were both used from 1920, and subsequently from 1926 onwards only the Gregorian calendar is used. For several years after changing to the Gregorian calendar, the fishing season was in accordance with the Gregorian calendar date converted from the date of the lunar calendar. However, the fishing season gradually became shorter or extended, adjusting flexibly to situation of the fishery resources, fishing methods and fishing gear of the time. Fishers still practicing adaptive resource management adjusting to the sea situation and the condition of resources with its own rules is one of the key characteristics of Japanese fisheries today, which is in sharp contrast with that of the Western countries whereby fishery management regulations are set by the central government and thus difficult to respond flexibility and change operational regulations during the fishing season. It is evident in Himeshima's *Fishery Season Rules* that this tendency had existed since the Meiji era, a significant discovery in discussing the characteristics of Japanese fisheries with the world.

In 1907, just a few years after the implementation of *Fishery Season Rules*, penalties were introduced where "violator will be imposed a fine of three yen or more but less than ten yen" (see Figure 4.14). Japanese fisheries have a long history of emphasizing on enforcement and keeping the arrangements committed by fishers according to records regarding the Edo bay (modern day Tokyo bay) in the Edo period. There are old records stating that some 200 years ago in June 1816, fishermen who operate in the Edo inland bay gathered to resolve the conflict and formulated the *Edo Inland Bay Fishery Protocol* (Fujimori et al., 1971). Thus, the emphasis on commitment of the *Fishery Season Rules* in Himeshma can be read as if the way of thinking continued from the Edo Bay fisheries in the Edo era.

Figure 4.14. Clauses concerning fines imposed on violators were added to *Fishery Season Rules of Meiji 40(FY1907)*

(Source: Oita Prefecture Fishery Cooperative Himeshima Branch)



“violator will be imposed a fine of three yen or more but less than ten yen”

Unfortunately, *Fishery Season Rules* over a 5-year period from Meiji 41 (1908) to Taisho 1 (1912) are missing. When asked why these records were missing, the chief of fishery management of Himeshima Branch Mr. Akio Kitamura recalled that senior fishers told him that *Fishery Season Rules* were not necessary for some years, especially when “there was nothing particular to fight about or during years of bumper harvests”. That is to say that while the purpose of *Fishery Season Rules* was to manage fisheries resources, it was not restrictive during years of bumper catch. It is also apparent that these communal rules were set out to prevent conflicts rather than to penalise or restrict catch(Figure 4.15).

Figure 4.15. Interview with fishery management chairperson of Himeshima Branch Mr. Kitamura

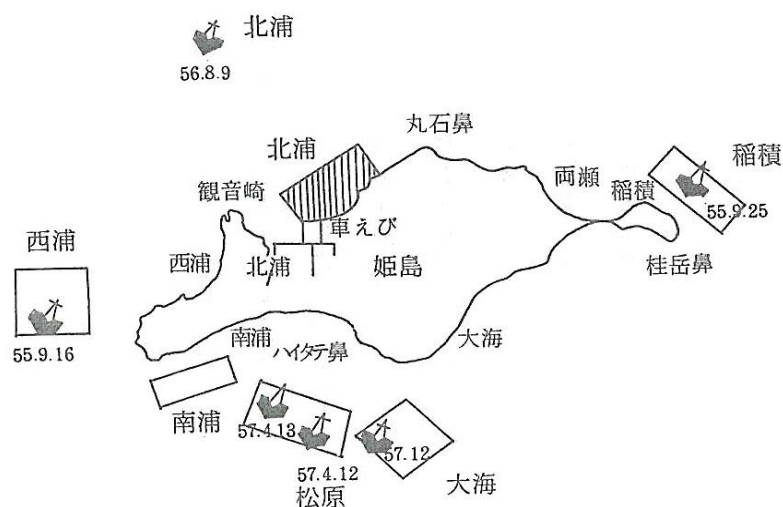


From the 1940s, apart from regulations on fishing gear and fishing method according to fish species, a new section on "ban or restriction" have been added to specify stricter bans on fishing gear, fishing methods and fishing grounds. From the 1950s, "ban or restriction" targeting specifically the hamlets of Nishiura and Kitaura were introduced in FY1957, and it was expanded to Kane, Omi (and Inazuma), Matsubara (and Namaura). Furthermore, in the 1960s, more detailed regulations for each fish species and fishing method were established according to fishing grounds and fishing hamlets. From the FY1980, the position map of "Protected nursery sea area of Himeshima village (姫島村地先保護育成水)", from FY1983 "Sunken artificial reef installation map" (see Figure 4.16) and "Detailed regulations of *Fishery Season Rules* (漁業期節細則)" such as fishing holidays and the mandatory use of lighting at night etc were also introduced. As one can see, more detailed regulations and descriptions of *Fishery Season Rules* increases with time year compared to when it first started in FY1904 (Meiji 37).

Figure 4.16. "Sunken ship and protected sea area position map" Himenshima village (1983)

In 1976, the first "Protected sea area" was established in Kitaura, and in the following year other fishing hamlets voluntarily established " Protected nursery sea area " and sunk to them.

(Source: Nishimura Takumi (1983) "The role of resource management type fishery and fishery cooperatives." Map created by Mr. Nishimura based on "No. 8 Fishery Rights Exercise Regulation for FY1983" of Himeshima Village Fisheries Cooperative)



Regarding the means of consensus building to decide the *Fishery Season Rules*, it remains unchanged from the Meiji era whereby a General Assembly is held at the end of the year to discuss changes in the prohibited fishing period and fishing grounds, and the regulations for the next year will be decided through negotiations at this meeting. In fact, before the General Assembly, consultation meetings were held where representatives from each hamlet will discuss their requests and comments regarding the *Fishery Season Rules*, and subsequently have these requests put up at the General Assembly. Also, as learnt from Mr Kitamura, adhoc amendments can be made flexibly

to accommodate changes in fish catch quantity, fishing season and fishing grounds requested through the applications by fishers and application for change of fishing season, or take these requests into considerations for revision of the *Fishery Season Rules* for the next fiscal year.

This process of consensus building amongst the parties, which have remained unchanged for more than 100 years, suggests that such arrangements for consensus formation was not made for the first time in Meiji 37 (1904), but more natural to think that this culture of consensus building and trust has started before 1904, maintained and passed on for generations.

In 1949 an amendment was made to the Fishery Rights Law, and in 1962 the addition of the Fishery Right Exercise Regulation System (Joint Fishery Right, Fishery right of Specific District) and the Recreational fishing regulation system (type 5 joint fishery right). In response to these revisions, in 1964 Oita prefecture also established prefecture wide rules on the exercise of fishery rights, and in Himeshima, "Himeshima Village Fishery Cooperative No. 8 No. 1 Fishery Right Exercise Regulation" (now "Co-8") was stipulated. The *Fishery Season Rules* was positioned as part of the "Co.8" at that time was supplemented to "Co-8" in the form of *Fishery Season Rules Schedule* for the following year. The title of *Fishery Season Rules of Himeshima* was changed to "*Fishery Right Exercise Rules*" during the period from 1972 to 1976, on the occasion of the enforcement of the "Oita Prefecture Fishery Adjustment Rule" from FY1973.²

However, the title of *Fishery Right Exercise Rules* was changed back to the title of "*Fishery Season Rules*" again, and since remained unchanged until today. It seemed that while the Himeshima Branch at that time probably attempted to change the name of *Fishery Season Rules* to "fishery right exercise policy" to align with the other fisheries cooperatives under fishery reform of the prefecture, but has failed since local fisher were used to the term "*Fishery Season Rules*" and other substitutions were rather unpopular.

From this, one can see the strong pride and emotional attachment of the fishers of Himeshima to *Fishery Season Rules*, regarded as an unique tradition of Himeshima. Although the official name of *Fishery Season Rules* today was officially renamed as "Co-8", local fishers recognize and regard "*Fishery Season Rules* (its Japanese names "*Kisetsu-sadame* or "*Gyogyo-kisetsu*") and "Co-8" to be the same (see Figure 4.17 and 4.18).

²This rule, "In cooperation with the Fisheries Law, Fisheries Resources Protection Law and other laws concerning fishery, we aim to establish protection of fisheries by protecting fishery resources, protecting fisheries, and fishery management in Oita Prefecture. Regulation on permission of fishery, protection culture of fishery resources, control of fishery, penalties etc. " is still enforced under the "Oita Prefecture Fishery Adjustment Regulation (Oita Prefecture 1975 Oita Prefecture Rule No. 18) "(last revised 28 June 2016) under Oita prefecture fishery basic.

Figure 4.17 and 4.18. At the port of Himeshima, the annual fishing season and fishing holiday season set out by "Co-8" is written on the calendar for easy reference



iii. Purpose of Fishery Season Rules

As mentioned above, while the originating year of *Fishery Season Rules* has not been clarified, since many fishers had to fish within limited fishing grounds, it is thought to be necessary to have create form of rules to maintain the fishery order and prevent collision. To that end, regulations in the *Fishery Season Rules* stipulated the restriction or ban on fishing of pregnant parent fishes and juveniles during spawning season, and restrictions on the cutting of seaweed that are breeding grounds for the fishes are also defined (Nishimura, 1983).

This study focused on the restriction on the collection of seaweed (including seagrass) in the *Fishery Season Rules* to trace the origin and purpose of why it was originally set out for. The methodology for the research was through review of historical literature including the 110 years of *Fishery Season Rules*, along with interview surveys with fishers and local residents of Himeshima. As a result, although not much much attention has been paid so far, it was surprisingly found that seaweed was originally regarded as an important and central component in the *Fishery Season Rules*. And considering the importance of seaweed, it can be inferred that the basic principle for Himeshima 's fishery resource management is not meant only for "prevention of overfishing" which is currently considered to be, but also to protect the seaweed beds as habitats for raising fish, in order words for the maintenance of a rich marine ecosystems.

Indeed, even on the first documented “*Fishery Season Rules Meiji 37*”, the first item was "seaweed gathering (cutting)". Generally, it can be considered that some seaweeds are used for human consumption such as *hijiki* and *wakame*, and those not used for human consumption may be collected for use as agricultural fertilizers. Furthermore, as fishing gear and fishing boat propellers and so on

often gets entangled with seaweed, and it could also become a hindrance, so in some cases they are just simply cleared out to make way for passage of fishing boats.

However, there was no explanation in the *Fishery Season Rules* nor past literature or historical records about why the restrictions on seaweed gathering is set as the very first item. Perhaps it was due to the fact that seaweed beds are important habitats for fish breeding and growing which could explain why there is a need to regulate seaweed gathering to prevent excessive harvest. To support this assumption, that seaweed beds are important fish habitats, in the *Fishery Season Rules Schedule*, for example on the rules regarding Fat greenling (or *Ainame* in Japanese) fishing stipulated “a total ban of fishing in seaweed beds for all seasons”, and on Bitterling (or *Baratanago* in Japanese) fishing “fishing from seaweed beds to the hill area only permissible from December 10th to the end of the New Year of the lunar calendar”. From these descriptions it is not to mean the target catch was seaweed, but the fish species of Fat greenling and Bitterling. If the main target catch was seaweed itself, there would have been descriptions of specific seaweed gathering methods or techniques. Rather, it can be inferred that the conservation of seaweed beds was not intended to restrict seaweed gathering for the seaweed itself to be sold as a commodity, but for its importance as spawning, breeding and living habitats of marine life. From this, we could see that the fishers in Himeshima place high priority in conserving the marine ecosystems and traditionally understood that the importance of the seaweed beds in as important spawning habitats for marine life.

The regulation on “seaweed gathering” has been discontinued from *Fishery Season Rules* from FY1961. However, before that in FY1955 the regulation on “Bottom gillnet and Seaweed bed gillnet” was introduced and stipulated “fishing permissible from December 26 to December 10”, which totals up to a duration of almost an entire year. This regulation on “Bottom Gillnet and Seaweed bed gillnet” continues to be implemented today and in the FY2017 “Co.8” states “In addition to the month of January for Kane hamlet, the rest will be prohibited for 3 months of August, September and October”. Other fishing hamlets can set stricter no-fishing periods, such as Kane hamlet that “prohibits fishing in the seaweed beds of Kanezaki-higashi from February 1st to August 15th”.

Needless to say, fishers would know that fish gathers in the seaweed beds from their experience. Yet from FY1955 seaweed bed gillnet fishing became permissible almost throughout the year, but gradually shortened further with time, to the currently an average of about 3 months prohibition on the fishing season. Looking at the transition of the fishing season of seaweed and seaweed bed related fishing, we could infer the way of thinking and attitude of Himeshima fishers towards maintaining seaweed and seaweed beds, in a broader sense, their understanding of seaweed beds as integral part of marine ecosystems where fish can breed. With the advancement of scientific knowledge today deepens our understanding of the ecology of the fishes and it is now possible to establish a fishing prohibition period during the spawning season and growing season of juveniles more accurately than in the past. However, it is worth noting that Himeshima fishers already had this traditional and

indepth knowledge of marine ecology of their seas and implemented these regulations from the Meiji period is truly remarkable.

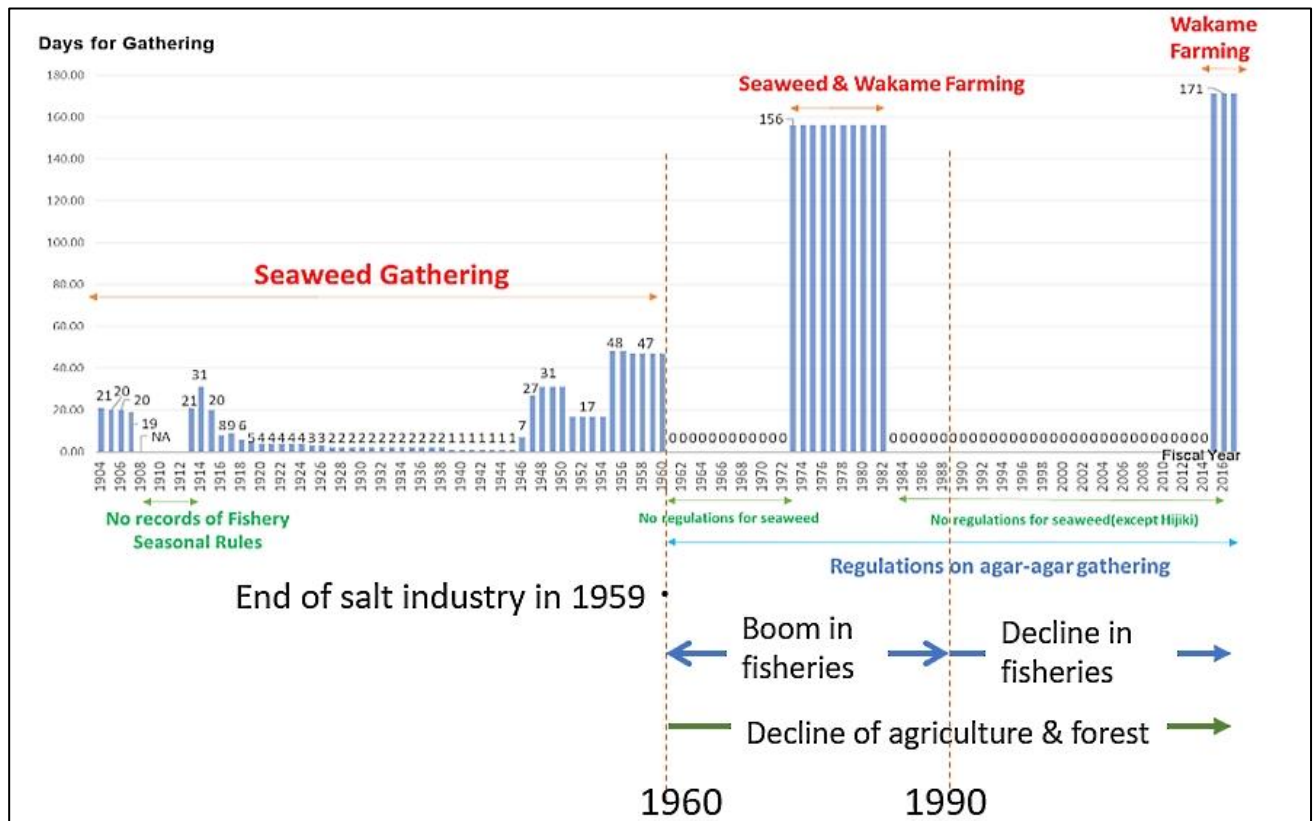
However, *Fishery Season Rules* did not state what kind of seaweed was gathered under the “seaweed gathering” regulation during the 55 years it appeared in *Fishery Season Rules* from 1904 to 1961. Thus, from the *Fishery Season Rules* alone, it was unknown if the seaweed gathered was used products for food consumption or as fertilizers. In order to elucidate this point, the study further investigated and reviewed other ancient documents and conducted interviews to understand the use of seaweed in Himeshima.

Recalling from his memory of post-war Himeshima, Mr. Kitamura of Himeshima Branch said that it was a daily routine for the fishers of Himeshima to cull seaweeds such as *Sargassum fulvellum* (hondawarra) and *Sargassum horneri* (akamoku) which were growing in abundance around the island so as to be able to put their boats out to the sea. Also, seaweed gathering was conducted from March to April, in which seaweed is used for germinating seedlings of sweet potatoes or fertilizers for wheat fields. Because seaweed is thick, it possesses well insulating and heat generating effect that was most suitable as nursery beds for germinating sweet potato seedlings. This matches the findings from literature review of the preceding researches which had similar explanations about “seaweed gathering” of *Fishery Season Rules* (Yamashita 1959). Moreover, Mr Kitamura added that it was necessary to restrict seaweed gathering to prevent them from being cull excessively as the fishers long understood that seaweeds are feeding and hiding places for fishes.

The usage of seaweed was then verified with the interviews with several local fishers in their 50s to 70s. Some said that the *Fishery Season Rules* was originally meant to protect the abundant seaweed beds of *Hijiki* and *Wakame* seaweed around the waters of Himeshima island, rather than to prohibit overfishing. Similar to what Mr. Kitamura said, many fishers told that in the past the fishers have to first cull the seaweed and seagrass to get through the coastal waters surrounded by abundant eelgrass beds and seaweed beds. Local residents also gathered the seaweeds and seagrass for their sweet potato fields, as sweet potatoes were a main staple for Himeshima island back then. However, eelgrass beds and seaweed beds have gradually disappeared and these days it is not easy to find popular seaweeds in the wild such as *Hijiki* and *Wakame* seaweed, so some fishers are trying to farm seaweeds instead. From the information of other fishers, it reaffirms the hypothesis that the fisher of Himeshima from the past well understood the importance of protecting seaweed beds, recognized seaweed beds as the “cradles for fish growth” and thus restricted seaweed gathering to prevent excessive culling. Thus, it was becoming evident that the original principle of *Fishery Season Rules* was perhaps not so much for fishing control, but rather based on the principle of “breeding fish” – that includes maintaining conducive environments for them to feed, live and grow.

However, if conservation of seaweed beds was crucially related to core principle of “breeding fish” as inferred, then why seaweed gathering was no longer regulated since 1961? To clarify the background and reasons to this, the study analysed the transition of seaweeds related regulations in *Fishery Season Rules* from FY1904(Meiji 37) to FY2017 (Heisei 29) by graphing out the number of days which seaweed gathering or seaweed related fishing was permitted (See Figure 4.19):

Figure 4.19. Trends and changes of seaweed gathering periods in the *Fishery Season Rules of Himeshima* (Created by Yiu, E. based on data in *Fishery Season Rules* from 1904 to 2017)



As shown in Figure 4.19, during the period from FY 1904 (Meiji 37) to FY 1915 (Taisho 4), there was an average of 21 days for “seaweed gathering”. As mentioned earlier, unfortunately there is documented records of *Fishery Season Rules* for five years from FY1908 to FY1912, nonetheless even without this five years of data, it can still be assumed that there was likely not much difference from the year before in FY 1907 and after that in FY1913, since the available data of 19 days in FY 1907 and the 21 days in FY1913 only differed in two days. Therefore, the average days of seaweed gathering during the five years of missing data between FY1907 and FY1912 can be assumed to be between 19 to 21 days.

The period of "seaweed gathering " was also carried out generally from January 15th to February 5th of the lunar calendar (late February to early March of the Gregorian calendar). However, in FY1916 (Taisho 5th year), the period of "seaweed gathering " was sharply shortened to eight days and gradually decreased from there to four days from FY1920, fell further to three days from FY1925,

then two days from FY1927 (Showa 2), and finally to only a day in a year between FY1939 to FY1945 which were the World War II years. However, at the end of the war from FY1946, “seaweed gathering” duration was prolonged to 7 days. In the following fiscal year it drastically increased to 27 days, and reached to about a month of 31 days for the next several years. After that, it fell to 17 days from FY1951 but bounced back to reach its peak from FY1955 to FY1960 with the longest duration ever of between 47 or 48 days a year. However, at the end of FY1960, “seaweed gathering” made a dramatic exit by suddenly disappearing from the *Fishery Season Rules*. It became clear that there was a dramatic fluctuation regarding this transition of the “seaweed gathering” in *Fishery Season Rules*, suggesting that there might have been some major market-oriented or socio-ecological induced reasons that drove this fluctuation.

Instead, “agar-agar (*Tengusa*) gathering” was added from FY1960, and subsequently from FY1992 *Hijiki* was added and integrated with agar-agar into the same item of “Gathering of agar-agar and *Hijiki*”. However, it is found that this agar-agar gathering was different from the seaweed gathering because the gathering season for a type of agar-agar, known as *Honten*, was held for one day in August while for another agar-agar, known as *Bakaten*, was held in the summer season of July. Since the “seaweed gathering” before FY1960 used to be conducted in early spring months of March and April, one can deduce that these seaweeds were not included in the “Gathering of agar-agar and *Hijiki*” introduced in FY1960, and that vice-versa nor were agar-agar seaweeds included in the “seaweed gathering” category before FY1960. On the other hand, from FY1992 the annual gathering of *Hijiki* was stipulated to be “decided and announced a week prior to the season”. Until recently in FY2017, for the past several years, only two days during the mid-winter period is allowed for the gathering of *hijiki*, due to the significant reduction of naturally grown *Hijiki* in the Himeshima waters. Because the gathering period has become so short that *Hijiki* can now be marketed as a speciality product of Himeshima as “the famous and extremely limited *Hijiki* seaweed”. In other words, since FY1960, apart from agar-agar and *Hijiki*, *Fishery Season Rules* no longer stipulates regulations on seaweed gathering.

So why did the regulations of seaweed gathering disappeared from the *Fishery Season Rules*? Was it due to the abundant growth of seaweed and seaweed beds had been restored so it was no longer necessary to restrict? Or was it the opposite case whereby seaweed has drastically decreased to an extent that there was none to gather for?

To clarify the abovementioned queries, the study further investigated about the situation of seaweed use in Himeshima. Unfortunately, data on the amount of seaweed gathered was not recorded by the Himeshima Branch. If seaweed gathered before FY1960 was indeed mainly for agricultural use, then it could explain why there was no necessity for the fisheries cooperatives to make record of its harvest volume. It also did not help that the *Fishery Season Rules* had only descriptions about

period of gathering but did not indicate the amount collected. Thus, one cannot assume that longer periods of seaweed gathering necessarily equates to more seaweed being collected. Rather, it could also be possible that the gathering period has been extended because there was scarcity of seaweed resources and fishers needed more time to find and gather the seaweed. Therefore, it is impossible to verify the correlation between gathering period duration and gathered volume, nor infer the state of seaweed resources in the sea just based on the *Fishery Season Rules* records alone.

Nonetheless, the study then focused on the social and economic background that might have influenced and changed the form of usage of seaweed. In order to elucidate the relationship between the “seaweed gathering” and the change in usage of seaweed, the study then investigated the relationship of seaweed with agriculture.

Firstly, the study traced the historical background and socio-economical context during the past 113 years since *Fishery Season Rules* was officially documented and implemented in 1904. From 1904 to 1945 was the pre-World War II period, from the 1950s to the mid-1960s was the post-war era of rebuilding, the latter half of the 1960s till early 1980s saw the period of high economic growth, but economic recession slipped in after early 1990s to plague Japan for more than two decades following the collapse of the bubble economy. With regards to fisheries, in the early 1970s, fuel costs of ships rose due to oil shocks and Japan adopted an exclusive economic zone of 200 nautical miles from the coast which narrowed down Japan’s domestic fishing grounds. The fish catch volume from offshore fisheries started to decline rapidly and coastal fisheries also find themselves challenged by changes in the ocean environment, drastically decrease in fish catch amount and the aging of fishers etc. Once boasting the world's largest catch volume, Japan fisheries in general has passed its peak and has started to dip from 1990s.

The study analysed the variation of “seaweed gathering” against the historical and socio-economical background described above. In the pre-World War years from the 1904, “seaweed gathering” was clearly stated in the *Fishery Season Rules* that there was an average of 21 days of gathering. But from FY1915 until FY1945, the period in between of the two World Wars when food supplies were scarce, it could explain that gathering seaweed as fertilizers for agricultural products such to grow their main staple of the sweet potato was controlled strictly to ensure sustainable production in agriculture to secure food provisions. As seaweed is a prominent feature in the Japanese diet, it is not unlikely some kinds of seaweed such as *Wakame* were gathered for food consumption use in small quantities on a more daily basis and did not necessarily have to fall under the “seaweed gathering” regulation. On the other hand, Japan fell into a nationwide food shortage in the post-World War II, and it was likely that Himeshima was also suffering from food shortage. Thus, it could be inferred that in order to increase agricultural production, “seaweed gathering” was

extended from one day in FY1945 to seven days in FY1946, and subsequently a drastic leap to 27 days in FY1947 from the following year thereafter.

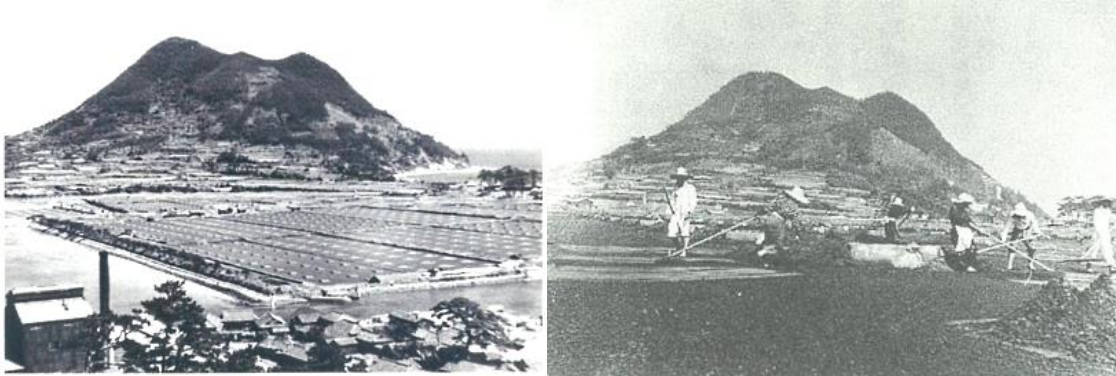
According to Himeshima village history records (Himeshima Village History Editorial Committee, 1984), it was recorded that "In Himeshima, agriculture was most flourishing during the war and immediately after the war. Sweet potatoes fields were scattered all over in Himeshima, including almost to the top of until the Mt. Yazudake. Sweet potatoes were first brought to Himeshima in 1757, and since then, during the war, after and into the high growth period in the 1960s, sweet potatoes as food, as a cash crop, played the leading role of Himeshima's agriculture." From this, it can be suggested that seaweed was needed as fertilizers for the cultivation of sweet potatoes which was a staple food of Himeshima at that time. Also, as sweet potatoes were also used for making exported *shochu* wine, and the agricultural land area reached over 180ha from 1960s. However, although the farmers population growing mainly sweet potato and wheat was 1110 people in 1950, it started to decrease in 1960 and then in 1975 to only 155 people but out of which the number of male farmers dropped to zero (Takeuchi, 1981).

Regarding the use of seaweed as fertilizers, in addition to male fishers, interviews were also conducted with several women in Himeshima aged between 50s to 70s and who are today still responsible for farming in their households. Most of them have heard from their parents that their parents and/or ancestors have used seaweed as fertilizer in the past but in the mid-1950s, the island residents begin to switch to using excretion of the Himeshima cattle as compost rather than seaweed. Yet the rearing of the award-winning Himeshima cattle on Himeshima island also gradually faded out from the mid-1950s and eventually livestock breeding of cattles ended in 1985 (Kinomura, 2011). Also there seems to be geographical difference to how seaweed was used as fertilizers; in particular fishers and residents of the Omi hamlet on the east side of Himeshima, especially those in their 50s, recalled themselves helping their families in their early childhood years to dry seaweed on the beach to desalinate it and then transporting the dried seaweed to the fields on the mountain. On the other hand, residents living on the western side of the island did not have much memory nor impression on the use of seaweed for agriculture as fertilizers.

On the other hand, the workforce of fisheries and aquaculture business in Himeshima was 531 people (including 6 women) in 1945, and in 1954 reached 904 people that exceeded 570 people in agriculture, grew to 725 people in 1975 (180 women), and after the latter half of the 1950s fisheries had absorbed the farming labour force. It is said that women were giving up on farming and going to fish at the sea with their husbands due to the fact that sweet potatoes, which used to be major cash crop had ceased to sell well. This period also coincided with the closure of salt making fields in 1959, in which the small island faced one of its biggest economic transformation in history as it has just closed a chapter of its 337 years of salt making history (see Figure 4.20 and 4.21).

Figure 4.20 and 4.21. Himeshima salt fields in 1950's and people working

At that time the sweet potato fields spread over to the summit, but now most fields are no longer cultivated (Source: (Left) Kim Nomura Koichi (2011), (Right) Takahashi Yoichi (2001))



After that, in 1953 the salt fields site were converted to carp shrimp aquaculture farms. Having experienced several setbacks, Himeshima made a mark as the name for Japan's largest carp shrimp producing farm which grew to be an important industry in Himeshima providing many employment opportunities and economic effects to related industries (Kinomura, 2011). According to Himeshima fishers, since the 1960s the functionality of fishing boats and fishing gears also began to progress and fisheries became far more profitable than agriculture, so there was no need to gather seaweed since agriculture itself has dwindled and the main staple has also changed from sweet potato to rice. Also, along with the popularization of chemical fertilizer and artificial compost in agriculture, the use of seaweed as a fertilizer has also ceased (See Figure 4.22 and 4.23). Besides, from 1975, sea urchins and seaweeds were abundantly available on the coast, so most women began to abandon the fields in order to engage in work related to fisheries such as shellfish and seaweeds gathering that immediately leads to high income (Takeuchi, 1981). Therefore, from the abovementioned reasons, it can be inferred that agriculture in Himeshima declined due to these social and economic changes.

Figure 4.22 and 4.23. The only rice fields of Himeshima in Kane hamlet over a small area (left), farmland in Matsubara hamlet where seaweed is still used by locals as fertilizers today (right)



In the 1970s there were attempts to cultivate seaweed but ended in failure. Nonetheless, fishers who remembered this history said that the liquid fertilizer used for the seaweed cultivation also contributed to the abundance of surrounding seaweed beds around the cultivation area. Today, agar-agar and *Hijiki* are the main seaweed products, especially dried *Hijiki* which could fetch 500yen for per 36 grams has now became one of the representative product of the island. In the past, it was only the women who went to pick *Hijiki*, but now even men will also pick *Hijiki*. This is due to the fact that the fish catch in general has declined to the extent that now fishers needed to also go for *Hijiki* picking. As the sales of seaweed is increasing slowly, there are new efforts in producing seaweed in recent years such as cultivating *Wakame*, *Aosa* and kelp in the Omi hamlet and the gathering of natural *Aosa* in the Inazumi hamlet.

As explained up to this point, based on the evidence that the regulation of "seaweed gathering" was stated as the first item in the first documented *Fishery Season Rules* in FY1904, the study has investigated the transition and usage of seaweeds from social and economic aspects. Although the study only took up one item i.e. seaweed out of all the fish species for the purpose to examine the transition of the management method and usage, it was not intended to verify the status of its stock or harvest amount. Nonetheless, the PDF and digitalization of the *Fishery Season Rules* could contribute to further research in future. For example, one possibility of further study could include examining relationship amongst seaweed gathering period with that of fishing seasons and fish catch amount etc to determine whether these is any correlation.

More importantly, it was found through this study by tracing the original purpose of the *Fishery Season Rules* revealed the initial core principle and philosophy of this traditional way of managing fisheries, that is to “breed fish” rather than to “control fish catch”, and that marine ecosystems such as seaweed beds are highly vital to the health of marine environment. It is also shown that the changes in fisheries and other primary industries could have impact and are dependent of each other; the decline of agriculture led to a reduced use of seaweed and also less importance and attention placed on seaweed could have led to the reduction of seaweed beds due to lack of maintenance.

iv. Customary practices concerning Himeshima's fishery resource management that supports the philosophy of *Fishery Season Rules*

As mentioned above, in addition to the perspective that Himeshima's fishery resource management of controlling fish catch, its origin was also that of maintaining healthy ecosystems for marine life to “breed fish”. The study has found that apart from the *Fishery Season Rules*, other traditional customs and practices of fishery resource management also existed in Himeshima. These customary practices shared the same philosophy of “breeding fish” which complement the *Fishery Season Rules*.

a. Fish-breeding forests

In the Oita Prefecture Fishermen's Association rule promulgated on 19 June 1879, there were clauses referring to "matters regarding to coastal forest conservation " stipulated in Article 30, paragraphs 1 and 4. From that time on, management of coastal fishery and fishery promotion policies went underway through the conservation of fish-breeding forests. Since the start of the salt making industry in Himeshima in the early 1600s, trees around the whole island were cut for firewood for boiling down to brine. The demand for firewood was so intense to the extent that island literally became bald. Trees were so few then, the islanders even had to pick drifting wood on the coasts for firewood. Thus when Mr. Ishitaro Nakajo assumed his post as the first Himeshima Post Office Master³, he felt the necessity of conserving fish-breeding trees. He then advocated his theory of "fish will gather under the shades of trees" and subsequently from 1886 made surveillances around the island himself to stop people from cutting trees. And in 1891, Mr. Nakajo formed a forestry association and created the "Himeshima Village Forest, Wilderness and Trees Protection Agreement" (see Table 4.2) which forbid cutting of trees for the next 30 years, and imposed that the violators would be handed over to the police and be fined 50 yen (Nishimura,1983). In addition, it was said that he had hired at his own expense some samurais to patrol and protect the coastal forests around the island with their Japanese swords. At first Himeshima villagers were bitter at this strict regulation imposed, but thanks to the policies of Mr. Nakajo, pine tree forests of green, white sandy beaches of white and fishes returned to the island in the early 1900s (Yamashita, 1959). Unfortunately, Mr. Nakajo, who had left several legacies for Himeshima such as afforestation of fish-breeding forests, purchasing rain meter, teaching of squid fishing technique and innovation of salt kiln etc., passed away at the age of 54 in 1900 (Takahashi, 2008). It was just a few years before the *Fishery Season Rules* was officially documented and implemented in 1904. Since then, fish-breeding forests have been inherited as a main pillar of Himeshima's fishery resource management along with the *Fishery Season Rules*. As for the current afforestation in Himeshima, while young fisher in their thirties today still recall their participation in pine trees planting ten years ago, they said that forests management has not been conducted in recent years.

³ In the Meiji period, such government appointed positions like post office master is equivalent to be like that the level of mayor who had strong administrative authority.

Table 4.2. 1887 " Himeshima Village Forest, Wilderness and Trees Protection Agreement "
(in Japanese)

(Source: Nishimura (1983) "The role of resource management fishery and fishery cooperatives")

姫島村山林原野樹木保護規約	
第一条	本村山林原野の樹木保護の為、私有共有地をとわず、毎年間十一月一日より十二日迄が伐採期限と定め、以外は一切禁伐とするものとす。但し、伐採期限といえども、立枯木に限り、外は根切りすることを得ず。
第二条	禁伐期間といえど、家屋普請の為或は成木の山林を売却せんとするものは村長に純分請願の上、許しを請うおのとす。
第三条	各区一人、村長の指名を以て、山林原野樹木保護監視人を置き、毎年一回地区内を巡視するものとす。
第四条	村長は、毎年一回監視人を引率し村内の樹木保護について巡視せんものとす。
第五条	第二条に違反したものは、違約金貳を出さしめ、その違反の旨知りて監視人或は村役場願上げ、巡査に受けさせるもやむなし。 但し、家族の違反者は、戸主の責任とす。
第六条	本規約実行を計るため、積立金の保護を受けるものとす。
第七条	本規約を確立する為に、総ての山林原野所有者署名捺印するものとす。
明治二十年一月 日	
姫島村村長 印	

The traditional knowledge about the relationship between the mountains and the sea seemed to have been well inherited by fishers of Himeshima. According to an article written in 1959 by Mr. Yamashita Fujimatsu, a former counsellor of Himeshima Branch, it stated that "there are various theories as to why tree mountain trees have effect with fish, but we are told by predecessors that trees provide nutrients and planktons for fishes in the sea and that fishes will gather under the dark shade of trees "(Yamashita 1959). This implies that fishers in Himeshima already knew about the "Forest-Land-River-Sea" interlinkages about 60 years ago and have practiced this knowledge for more than half a century before that. Besides this, there was also a traditional knowledge regarding the Sea bass fish pole fishing; the peak fishing season of the Sea bass coincides with the rainy season and during that period, cattle grazing, weeding and mowing of grass along the local coastline of the Sea bass fishing ground are forbidden so as to increase the fish catch (Yamashita, 1959). For the past 10 years in Japan, the concept of "Forest is the love of the Sea" that goes by the logic of the "Forest-Land-River-Sea" interlinkages, was proposed and championed by Mr. Shigetaku Hatakeyama, an oyster farmer in Kesenuma City, Miyagi Prefecture, had attracted wide public interest. However, from the study findings it showed that Himeshima fishers had already been pioneering this concept about more than 110 years ago and were planting forests up to roughly ten years ago. When asked

about the relationship between afforestation and fishery, most Himeshima residents were also aware that "as fishes gather under the shade of trees, there will not be much fish if the forests are not in good condition", as taught to them by their parents and older people.

b. Protection and Raising of Fish

Since the fishery reform in 1950, the Himeshima Branch also implemented the following measures to expanding fish breeding facilities. The main measures were as follows:

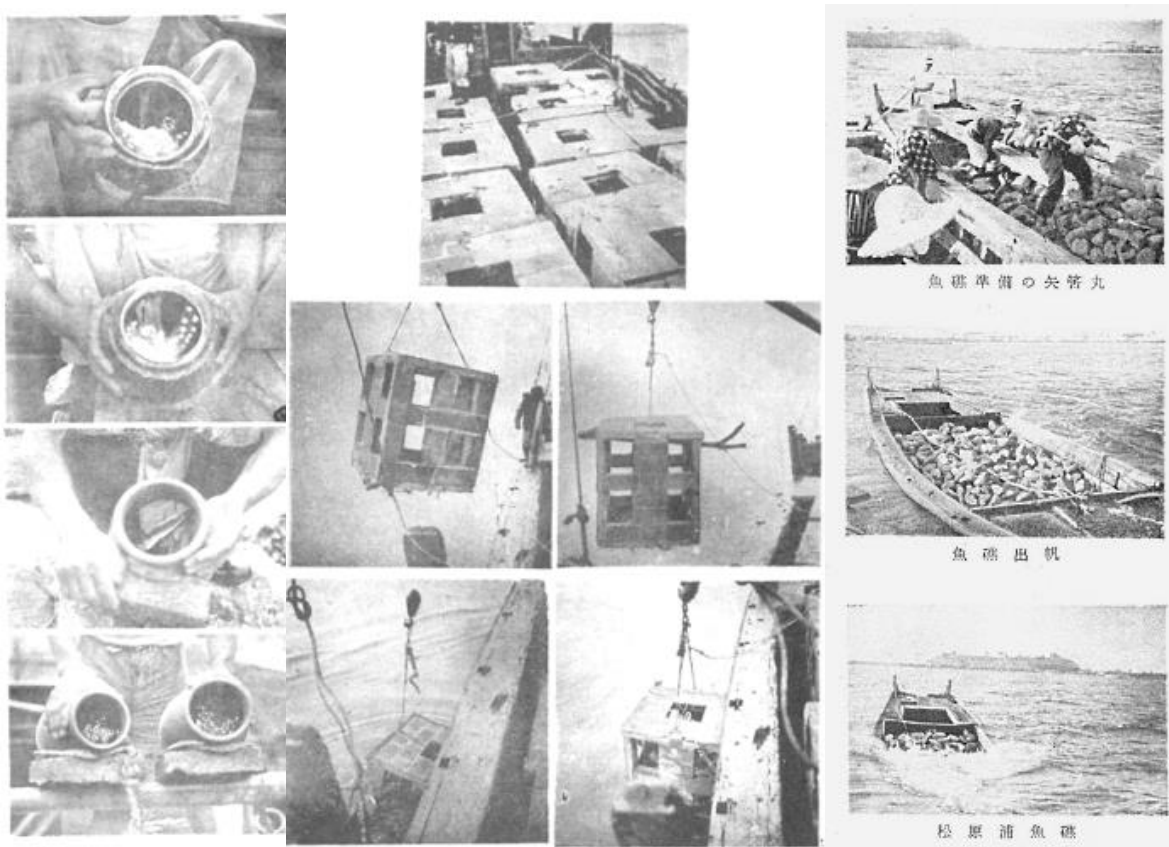
- (1) General breeding and protection facilities: Octopus spawning jars (27 thousand) (see Figure 4.24), parallel type reefs (5914) (see Figure 4.25), artificial reefs (26587 m³) from 1950 to 1983, sunken ships (iron or wood, 14220 ton) (see Figure 4.26), and others (iron scrap, scrapped car, iron pipes, stone etc). It is said that octopus spawning jar has an effect of increasing spawning rate by 20 percent, and around 1951, many jars were ordered from Yamaguchi prefecture.

Figure 4.24. In 1954, checking the spawning situation inside octopus jars (left)

Figure 4.25. In 1955, the parallel type reefs called "fish apartment" (middle)

Figure 4.26. In 1951, sinking of wooden ship "Yazu Maru" to be used as artificial reefs
(right)

(Source: Yamashita, S. (1956) " Fisheries in Himeshima, National Park")

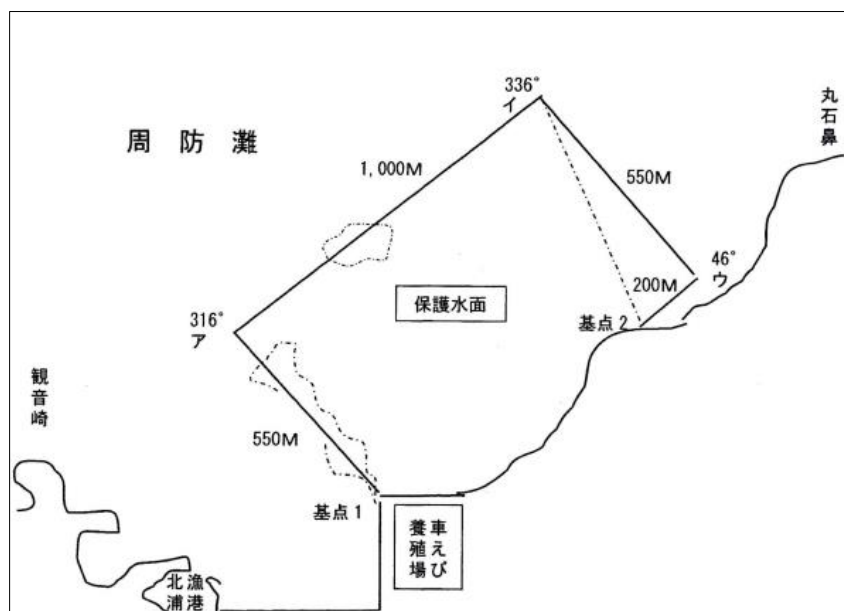


(2) Setting of protected and nursing water surface:

According to the announcement by the Ministry of Agriculture and Forestry in September 1977, Kitaura hamlet was first designated as "Protected Water Surface", and in response 5 other hamlets (Nishiura, Minamiura, Matsubara, Omi, Inazumura) had set up "protection and nursing water surface" on their own initiative the following year. In these "protected water surface" and "protected and nursing water surface", fishing methods harmful to fish breeding were restricted or prohibited. Regarding Kitaura's "Protected Water Surface of Himeshima", in the FY2017 "Co-8", it is indicated as "Spawning grounds and nurseries for fishes and shellfishes" and that fishing of all fish, shellfish, seaweed and other marine creatures are strictly prohibited and warn that offenders will be punished by Oita Prefecture Fishery Adjustment Rule (See Figure. 4.27).

Figure 4.27. "Protected water surface of Himeshima "

(Source: FY2017 Himeshima Village Fishery Cooperative No. 8 Fishery Rights Exercise Regulation)



(3) Recycle of sunken ship, steel wreck and oil tank:

Since 1951, fishing boats that were sunken by accidents within the waters of Himeshima were not pulled out but instead left in the sea as artificial reefs. Furthermore, based on traditional wisdom of fishers all over Japan, it is well known that fishes gather around iron rust. Thus for 3 years from 1980 steel ship wrecks were purchased and sunken in the protected water areas (see Figure 4.16). Furthermore in 1984, an oil tank after removing all the residual fuel and outer paint etc. was installed slightly away from natural reefs and other artificial reefs about 18 meters deep. It was said that in the half year after its installation, it had a “wonderful effect” attracting schools of Sea bass fish (Yamashita, 1956).

Hence as shown above, the principle concepts of fishery resource management of Himeshima is not only about capturing fish, but also fish breeding efforts such as installing artificial reefs like octopus spawning jars, stone reefs, sunken ships etc., *Fishery Season Rules* that prohibits fishing during spawning season, afforestation of the fish-breeding forests and setting of the fishery protection sea area. Also, it was revealed that *Fishery Season Rules* originated from the principle to conserve seaweed beds to breed fish. The traditional wisdom of this historical fishing practice and the local fishers' philosophy in living in harmony with the sea is indeed globally important agricultural heritage system (GIAHS) worthy which Japan could showcase to the world and be inherited by future generations. It is hoped that the value this "spirit of breeding fish " of Himeshima's fisheries should be revisited and that fishers could return to the origin of the *Fishery Season Rules* to use it as a hint to the recovery and maintenance of the fishery resources of Himeshima, which is decreasing year by year.

v. The linkages between Himeshima and the Kunisaki Peninsula through *Fishery Season Rules*

This section examined how the traditional fisheries resource management of Himeshima, i.e. *Fishery Season Rules*, was not only practiced in Himeshima island alone, but how through which it also influenced other fishing communities in their traditional fisheries management. Determining Himeshima's influence on the Kunisaki peninsula could also then explain the role that Himeshima island plays as part of the Kunisaki GIAHS. For the study, literature review and interview were conducted with fishers and residents in Himeshima island and also those living in the Kunisaki Peninsula, in particular Kunimi of Kunizaki city were to examine if there existed any past and present socio-economical linkages and interactions between the island and the peninsula.

a. Implementation of *Fishery Season Rules* and its influence on the fishery right and resource management of the Kunisaki peninsula

To examine how Himeshima 's fishery resource management have impacted fisheries of Kunisaki peninsula, the study first reviewed the current situation of fishery resource management in Oita prefecture in general. Since 2002, all fishery cooperatives in Oita prefecture have been merged into one and all Branch cooperatives have to basically abide to the prefecture wide resource management regulations set for 13 types of fish species, the fishing season, and amount of allowable catch (see Appendix 2 "Oita prefecture fishery resource management"). Resource management items listed are in order of compliance strength from the strongest: 1. Legal regulation (TAC, TAE, etc.), 2. Fisheries adjustment committee directive, and 3. Resource management plan where the target area of regulation is decided for each main type of fishing. The most restrictive fish species are Class 1 Designated Marine Creatures (Horse Mackerel, Mackerel, Sardine), Class 2 Designated Marine Organisms (Marbled Sole, Spanish Mackerel) that are managed under the legal regulations enforced

at the national level, followed by the order emphasized by the Oita prefecture fishery adjustment committee that is Hairtail, Spanish Mackerel, Abalone, Red sea urchin, Carp shrimp (13 cm), Marbled Sole (15 cm), and Grunt (20 cm). In addition to the above items, there are also regulations on fishing that should be observed across the prefecture, such as prohibiting the catch of Carp Shrimp (total length less than 10 cm), Abalone (total length 10 cm or less, and setting of prohibited fishing period), and Crab (shell width 15 cm or less).

The *Fishery Season Rules* of Himeshima is currently being exercised as the "Co-8" of the Himeshima Branch that contained elements of its fishery management. In addition to the regulations stipulated by the Oita prefecture fishery resource management policy described above, there are further independent regulations. Such voluntary regulations are in fact stricter than the resource management plan on the prefectural level. For example, regarding fishery regular holidays, apart from the second Saturday of every month which is imposed by Oita prefecture and observed by all fishery cooperatives, Himeshima mandatory fishery holidays also include New Year 's Day from January 1 to 3, Golden week holidays from May 3 to 4, May 22 Himeshima Flounder Festival, August 14 to 16 Obon festival, September 23 coastal clean-up day, October 9 boat festival and October 23 Himeshima carp shrimp festival, a total of 12 no-fishing holidays are set up. In addition, all fishing boats are mandated to return to port by 6pm on the day before the holiday, and only allowed to leave the port after 4pm on the holiday. This is far more stricter than even compared to Kumini town, which is located on Kunisaki peninsula just directly next to Himeshima and whose fishing grounds are connected.

Interviews were conducted with fishery officials in Oita Prefecture Government and Kunizaki city regarding the influence of *Fishery Season Rules* of Himeshima on the Kunisaki peninsula. While it is thought to be that Himeshima, as one of the prefecture's most famous and powerhouse in fisheries, would have had some exchanges on fisheries knowledge or cooperation with other fishing villages in Kunisaki peninsula, the fisheries officials regretted that they knew no one whom they could verify this information, as that was already history for several decades ago. Subsequent extensive research and review of old literature and historical records conducted on the interactions and exchange between Himeshima and Kunisaki peninsula did not meet significant findings and was not conclusive.

However, through the process of transcribing the *Fishery Season Rules*, it was discovered that the minutes of proceedings to discuss Fishery Seasonal Rules and admission adjustments with the Kunisaki peninsula, including the fishing regulations similar to *Fishery Season Rules* of other fishing villages such as that of Kunimi town were also filed in the Volume II of "*Fishery Season Rules* of Himeshima (FY1946 to FY 2002)". From these minutes of proceedings and copies of old records led to the discovery that Kunimi has their very own version of *Fishery Season Rules* and is termed

exactly the same. There, it can be inferred that there was indeed a history of exchange between Himeshima and Kunisaki peninsula on knowledge related to fisheries resource management.

As mentioned earlier, Himeshima was once a subsidiary under the Higashi-Kunisaki county fishery association in 1886. Although Himeshima had been implementing its own fishery resource management from that time, it could be thought that there were exchanges between Himeshima and other fishing villages as they belonged under the same fishery association, especially with fishing villages Kunimi (or better known as Imi port today), Kumage, Taketsuda etc., whose fishing grounds are closely located from that of Himeshima's. Also, in the "*Meiji 33 (1900) Fishery Association Minutes*" for the meeting to decide on "*Fishery Season Rules* Voting for Meiji 33", it could also be inferred that other subsidiary fishery associations under Higashi-Kunisaki county had implemented the *Fishery Season Rules*.

Therefore, after examining the "*Meiji 33 (1900) Fishery Association Minutes*", the original *Fishery Season Rules* of Himeshima, and other regulations similar to *Fishery Season Rules* of other fisheries cooperatives, this study could conclude confidently that there was indeed interactions, exchanges and cooperation on fisheries between Himeshima and Kunisaki peninsula. However, in 1903, after Himeshima became an autonomous fishery association independent from Higashi-Kunisaki county fishery association, there was no official records that show Himeshima's interactions with Kunisaki peninsula. The most recent evidences of the interactions were between FY1945 (Showa 26) to FY1983 (Showa 58), which included descriptions in *Fishery Season Rules* of Himeshima which made reference to other fishing villages, minutes of joint meetings held, and *Fishery Season Rules* alike regulations of other fishing village also filed together with *Fishery Season Rules* of Himeshima, and there are listed in Table 4.3 below.

Table 4.3. Minutes, materials and descriptions related to the Kunisaki region, recorded or filed in Volume II of "Fishery Season Rules of Himeshima" (in Japanese)

(Source: Oita Prefecture Fisheries Cooperative Himeshima Branch
Created by Yiu E. based on the Volume II "*Fishery Season Rules* of Himeshima (FY1946 to FY 2002)")

年度	収録資料の内容
S26	・ 姫島の漁業期節に伊美に関する記述が手書きで書き込まれていた
S27	・ 「昭和二十七年度 熊毛村漁業協同組合漁業調整規程」 ・ 伊美町にて姫島水道漁業期節制定協議会の開催通知（竹田津、熊毛、伊見、姫島が出席）
S28	・ 「昭和二十八年度 竹田津町漁業協同組合漁業種別操業規約」 ・ 姫島村にて開催の姫島水道蛸壺漁業協議会議事録（竹田津、熊毛、伊見、姫島が出席）

- S29 ・「昭和二十九年度 竹田津町漁業協同組合漁業種別操業規約」
 - ・ 姫島村にて開催の姫島水道漁業期節協議会議定録（竹田津、伊見、姫島が出席）
 - ・ 「熊毛村漁業協同組合漁業調整規程（昭和二十九年五月五日改正）」
- S31 ・ 来浦地区から漁業期節を定めたことについての通知
- S32 ・ 「熊毛漁業協同組合漁業調整規程（昭和三十三年二月改正）」
- S33 ・ 姫島村にて開催の「昭和三十三年度姫島水道入会議決書」（竹田津、熊毛、伊見、姫島が出席）
- S36 ・ 「熊毛漁業協同組合漁業調整規程（昭和三十六年三月改訂）」
- S37 ・ 姫島漁業協同組合から伊美漁業協同組合、熊毛漁業協同組合宛てに姫島水道入会漁業協議会において議決された「ユウ漕」の漁場についての通知
 - ・ 山口県（祝島ほか）～大分県（姫島、熊毛）タコツボ漁業操業方法会議記述書
- S39 ・ 国見町「昭和 39 年度共同七号漁業権行使規約附漁業期節一覧表」
- S41 ・ 国見町「昭和 41 年度共同七号漁業権行使規約附漁業期節一覧表」
 - ・ 国見町から姫島宛てにこぎ網漁禁止区域についての通知
- S42 ・ 国見町「昭和 42 年度共同七号漁業権行使規約附漁業期節一覧表」
- S44 ・ 国見町「昭和 43 年度共同七号漁業権行使規約附漁業期節一覧表」
- S46 ・ 姫島「漁業期節」の「付帯事項」に国見、香ヶ地と入会協定開催、国見「漁業期節」の蛸壺漁、穴子縄に関する記述
 - ・ 国見との「共第 7 号、第 8 号入会協定会議事録」（9 月、11 月）
- S47 ・ 姫島「漁業期節」の「付帯事項」に国見と「共第 7 号、第 8 号入会協定会」開催、国見町「漁業期節」の蛸壺漁、穴子縄に関する記述
 - ・ 国見と香ヶ地の間で行った入会協定会議事録
- S47 ・ 国見との「共第 7 号、第 8 号入会協定会議事録」（11 月）
- S48 ・ 姫島「漁業期節」の「付帯事項」に国見と「共第 7 号、第 8 号入会協定会」開催、国見の海藻の解釈、国見漁業期節の蛸壺漁、穴子縄、吾智網、あぶらめ漁に関する記述
- S49 ・ 国見との「共第 7 号、第 8 号入会協定会議事録」（11 月）
- S50 ・ 姫島「漁業期節」の「付帯事項」に国見と「共第 7 号、第 8 号入会協定会」開催
 - ・ 国見との「共第 7 号、第 8 号入会協定会議事録」（11 月）
- S51 ・ 姫島「漁業期節」の「付帯事項」に国見と「共第 7 号、第 8 号入会協定会」開催、協定会の結果としてはえ縄、えび漕場、すずき撒餌釣漁場の操作禁止、アナゴ漁、アナゴ籠、たこつぼ漁、吾智網、立貝こぎ漁業に関する記述
 - ・ 国見との「共第 7 号、第 8 号入会協定会議事録」（12 月）
- S52 ・ 国見町「昭和 52 年度共同七号漁業権行使規約附漁業期節一覧表」
 - ・ 姫島「漁業期節」の「付帯事項」に国見と「共第 7 号、第 8 号入会協定会」開催、協定会の結果としてはえ縄、えび漕場、すずき撒餌釣漁場の操作禁止、アナゴ漁、

	アナゴ籠、たこつぼ漁、吾智網、立貝こぎ漁業に関する記述
	・国見との「共第7号、第8号入会協定会議事録」(11月)
S53	・国見町「昭和53年度共同七号漁業権行使規約附漁業期節一覧表」
	・姫島「漁業期節」の「付帯事項」に国見と「共第7号、第8号入会協定会」開催、 協定会の結果としてはえ縄、えび漕場、すずき撒餌釣漁場の操作禁止、アナゴ漁、 アナゴ籠、たこつぼ漁、吾智網、立貝こぎ漁業の記述
S58	・国見町「昭和58年度共同七号漁業権行使規約附漁業期節一覧表」

As shown in the above table (Table 4.3), from FY1954 (Showa 29) to FY1968 (Showa 43), the Himeshima Village Fisheries Cooperative (present Himeshima Branch) has kept records of the regulations of Takedatsu, Kumage, Kunimi (Imi), Kakachi and Kiura by filing these documents together along with its *Fishery Season Rules*. From this finding, it could be inferred that Himeshima at that time had considerable interest in the fishery resource management of these fishing villages.

For example, at the “Consultation meeting on octopus fishing in Himeshima Channel” that was held at the Himeshima Village Fishery Cooperative Conference Room in 1951, the minutes recorded that it was attended by representatives of Takedatsu, Kumage, Imi (current Kunimi) fishery cooperatives and that the meeting has reached consensus to the decisions as follows:

"(1) FY1953 Operation period for Octopus jar fishing

Summer - Until October 1st

Winter - From November 30th

(2) FY1953- Octopus Fishing Area

All waters within Himeshima Channel during the period as stated in (1), and outside of this period shall only operate in the waters south of Line 28. 9 "

Also filed together in the *Fishery Season Rules* of Himeshima were documents on fishery regulations of other neighbouring fishing villages such as "Kumage Village Fishery Cooperative Fishery Coordination Regulations (熊毛村漁業協同組合漁業調整規程)" (Figure 4.28), "Takedatsu Town Fishery Cooperative Fishery Type Operation Agreement(竹田津町漁業協同組合漁業種別操業規約)" (Figure 4.29), "Kunimi Town Fishery Cooperative No.7 Fishery Exercise Regulation with Fishery Season Rules Schedule (国見町共同七号漁業権行使規約附漁業期節一覧表)" (Figure 4.30). While they did not all use the term “Fishery Season Rules” to name their document, the format and content –regulations on fishing seasons, gears, methods and grounds – were striking resemblances to that of *Fishery Season Rules* of Himeshima. Particularly in the case of Kunimi, which used the exact term “Fishery Season Rules”, implies the close interactions Kunimi and Himeshima had.

Figure 4.28. Kumage Village Fishery Cooperative Fishery Coordination Regulations
(Source: Oita Prefecture Fisheries Cooperative Himeshima Branch, included in "Fishery Season Rules of Himeshima (FY1946 to FY 2002)")

The document is a handwritten regulation titled "熊毛村漁業協同組合漁業調整規程 (昭和二十年五月六日制定)". It contains several articles (第1条 to 第6条) detailing the cooperative's purpose, membership, and fishing regulations. At the bottom, there is a table with columns for different types of fishing gear and their corresponding regulations.

漁具の種類	漁具の寸法	漁具の使用期間	漁具の使用場所
沖建網	長さ100メートル	三月一日から三月三十一日まで	沖合
磯建網	長さ50メートル	三月一日から三月三十一日まで	磯場
浅敷網	長さ30メートル	三月一日から三月三十一日まで	浅瀬
定置網	長さ20メートル	三月一日から三月三十一日まで	定置
手網	長さ10メートル	三月一日から三月三十一日まで	手網
その他			

Figure 4.29. Takedatsu Town Fishery Cooperative Fishery Type Operation Agreement
(Source: Oita Prefecture Fisheries Cooperative Himeshima Branch, included in "Fishery Season Rules of Himeshima (FY1946 to FY 2002)")

The document is a handwritten agreement titled "漁業協同組合規約 (昭和二十年五月六日制定)". It contains several articles (第1条 to 第6条) detailing the cooperative's purpose, membership, and fishing regulations. At the bottom, there is a table with columns for different types of fishing gear and their corresponding regulations.

漁具の種類	漁具の寸法	漁具の使用期間	漁具の使用場所
沖建網	長さ100メートル	三月一日から三月三十一日まで	沖合
磯建網	長さ50メートル	三月一日から三月三十一日まで	磯場
浅敷網	長さ30メートル	三月一日から三月三十一日まで	浅瀬
定置網	長さ20メートル	三月一日から三月三十一日まで	定置
手網	長さ10メートル	三月一日から三月三十一日まで	手網
その他			

conflict and the dispute have disappeared between the two regions”. Mr Kitamura added that since the 19080s, there had been no formal exchanges or cooperation between the two fishermen's cooperatives, but only in cases if necessary.

In the interviews conducted at the Kunimi Branch, fishers in their 40s and 50s have heard stories from older fishers about them learning about fishery from Himeshima, but it was too long time ago to know the details. Nonetheless, in recent years, young fishers from both branches initiated to conduct joint operations for pole fishing of beltfish at Saganoseki. Also, amongst the regulations on the 36 items of fish species/fishing methods stipulated in Kunimi’s *Fishery Season Rules*, there are some items which Himeshima do not include, or has longer fishing seasons for some fish species than that of Himeshima; this goes to show that Kunimi has developed its own set of “*Fishery Season Rules*” suitable in their own situation and needs.

As shown above, it is evident that there were exchanges in the area of fishery connecting Himeshima village and the Kunisaki peninsula, besides the fact that they were under the same administrative jurisdiction in the Meiji period. Since the fishing grounds are located adjacent to each other in the narrow seaway of the Himeshima Channel, it must have taken both sides painstaking efforts to negotiate, positively cooperating with each other and sharing knowledge in order to eliminate disputes regarding use of common fishing ground, fishing ground invasion and violation of operations etc. Therefore, Himeshima’s traditional fisheries management is not only about being concerned with fisheries within its own waters, but also had a cooperative stance to work with other fisheries and imparting their traditional knowledge to them if necessary. It is hoped that both sides could continue to cooperate through exchange of information and worked together for the sustainable use and maintenance of fishery resources, to pass on the culture of cooperation of their predecessors and continue to set a good example of fishery resource management for Japan.

b. Historical background and social and economic ties between Himeshima village and Kunimi town

The study has found that historically, trade exchanges between Himeshima and the Kunisaki Peninsula have been close since ancient times. According to the history records of Kunimi town (1993), the ancestors of Kunimi crossed over to Himeshima by boat and brought back the obsidian gemstone and used these raw stones to processed goods for trade from ancient times. When the salt making industry thrived in Himeshima, Himeshima traded salt for rice, straw, firewood and daily supplies with the peninsula. However, it was also said that the barter trade of fish from Himeshima was not as popular nor fetched higher price than salt, and it was often hard for Himeshima fishers to sell or exchange fishes for farm products such as rice and wheat with the peninsula (Yamashita, 1956).

Nonetheless, as an old saying of Kunimi goes “Land-based man(*jigata-otoko*) and island lady(*shima-onna*)”, it implies that there were many intermarriages and close social networking of people between these two places. In order to support their frequent exchanges, ferries linking both places began around 1848. Even today, rice, meat, vegetables, and daily supplies are brought to Himeshima by the Himeshima ferry that connects Imi Port and Himeshima Port. As there is no senior high school in Himeshima today, the students will have to leave Himeshima island and study in high schools in Kunimi or other schools in Kunisaki city. At such, we can still see some form of social exchanges that are ongoing between Himeshima and the Kunisaki peninsula today.

However, from the economic point of view, seafood products from Himeshima are not sold to or sold at Kunisaki peninsula today including Kunimi; the fresh fish of Himeshima are directly loaded on the transport truck daily, which would go onto the ferry to Imi port in Kunimi. Directly after the truck arrives at Imi port the seafood products would be delivered immediately, or have their products reloaded to various trucks at the Imi port carpark, to their markets in Fukuoka, Kansai region and Tokyo. Only a small portion of processed octopus, dried *hijiki* and dried *wakame* find their way to the souvenir stores at Kunisaki airport or rest stations in Kunisaki city (see Figures 4.31 to 4.34). In Himeshima village, promotion festivals of famous marine products such as "Himeshima Flounder Festival" at the end of May and "Carp Shrimp Festival" in October will be held and many tourists from and outside the prefecture will pass through Imi Port of Kunimi to get to Himeshima. But despite visiting Himeshima, tourism revenues for Kunimi town seem to be limited because most tourists come on day trips or will stay in Himeshima. For these reason, it seems that present day there is no direct nor strong economic connection between Himeshima village and the Kunisaki peninsula.

Figure 4.31 and 4.32. At Himeshima Branch, seafood products are packed immediately and shipped directly to Fukuoka and Kansai region by land and Tokyo by air transport



Figure 4.33 and 4.34. Trucks awaiting at Imi port car park to transport seafood products to markets out of Oita prefecture (left), frozen carp shrimps from Himeshima found at retail store run by Kunisaki Branch(right)



Nevertheless, in recent years Kunimi fishers are getting the fruits of the efforts by Himeshima fishers for releasing of Devil Stinger (*Oniokoze*) juveniles as Kunimi fishers are catching more of this fish than ever before; the Devil Stinger is considered as expensive fish that fetches between 2000 yen to 4000 yen for 1 kilogram. Not only did this example proved how closely geographically and ecologically connected is Himeshima with the peninsula, but also goes to show that even in juvenile release efforts, it is difficult to produce effects only at one location; it is necessary to cooperate on the release of juveniles in a wider area, and at the same time step up on conservation marine ecosystems so that juveniles can seek refuge, live, feed and grow in the local waters. Therefore, Himeshima and Kunimi, and other fishing villages on Kunisaki Peninsula should collaborate on fisheries resource management and work towards collectively conserving marine ecosystems to boost fish stocks in the Himeshima Channel.

III. Chapter Analysis

Through this study of Himeshima's traditional fishery resource management, it is affirmed that Himeshima has various traditional features of fishery management as like those seen throughout Japan. For instance, in Himeshima, fishers are the main body to decide the rules of resource management and allocation. These features of co-management and cooperation in natural resources sharing are representative features of Japan, as also commonly practiced in the management of water rights in agriculture, management and use of forest resources, as well as management of fishery rights. This traditional fishery resource management of Himeshima is as an effective case to counterproof that fisheries need not always be taken as "tragedy of commons".

In fact, when assessed on Elinor Ostrom's eight principles for the sustainable management of common-pool resources (CPR) (Ostrom, 1990), the case of Himeshima traditional fishery management fulfills all the principles for sustainable self-governing of natural resources:

1. Well-defined group boundaries.

The CPR of Himeshima are located well within the fishing grounds stipulated under Co-8 that have clearly demarcated geographical boundaries from that of its neighbouring fishing villages, such as that of Kunimi town whose CPR is also well defined under their own Co-7. Also, fishers of Himeshima are all members to the local fisheries cooperative Himeshima Branch, and making them well-defined group who are given administrative eligibility by the Himeshima Branch to exercise fishing rights in access to the CPR.

2. Congruence between appropriation and provision rules and local conditions

Although based on ancestral and traditional knowledge of fish species and marine ecosystems, the *Fishery Season Rules* has over the years adjusted to changes to meet the local needs and conditions. With reference to the seaweed gathering alone, one can see the number of days stipulated for seaweed gathering differed each year, and also the same for other fish species, proving that it has been able to adjust flexibly adjust the rules to address to local conditions and needs.

3. Ensure that those affected by the rules can participate in modifying the rules. Collective-choice arrangements.

The decision-making process of *Fishery Season Rules* is designed as such that most individuals affected by the operational rules can participate in modifying the operational rules. Before the annual General Assembly to decide on the *Fishery Season Rules* of the next fiscal year, consultation meetings were held where representatives from each hamlet, representing the individuals of their hamlets will discuss their requests and comments regarding the *Fishery Season Rules*, and subsequently have these requests put up at the General Assembly. In addition, adhoc amendments

can be made flexibly to accommodate requests from fishers. This process of consensus building and collective-choice arrangements amongst the parties have remained unchanged for more than a century.

4. Community based self-monitoring system of members' behaviour

The monitoring and surveillance is basically the responsibility of the Himeshima branch, but in reality, is rarely conducted in present days due to rare occurrence of conflicts, as compared to the fishery heydays of 1980s and 1990s. Fishers will “mutually check” on each other and report any suspicions to the Himeshima Branch, whose officers will then check on fishing boats that return to port or call on the fishers in question. Due to the confined fishing grounds on the narrow Himeshima Channel and around the island, it is likely that fishers are constantly visible and under the “surveillance” of one another. Also as fishing seasons, fishing gears and fishing time are specified in details according to fish species, fishers can easily tell if others are fishing illegally outside of the stipulated duration and area.

5. Graduated sanctions for rule violators

Penalties were first introduced in 1907 where "violation will be imposed a fine of three yen or more but less than ten yen", demonstrating Himeshima's history of emphasizing on enforcement and keeping the arrangements committed by fishers. Today, under its objectives of Himeshima Branch Co-8, Clause 7 states that violators will be subjected to the jurisdiction of the Fishing Rights Management Committee meeting in which they will have their fishing gear and fish catch confiscated or pay a penalty fine of comparable amount decided by the Fishing Rights Management Committee.

6. Accessible, low-cost means for conflict-resolution mechanisms

Conflict mediation and resolution is conducted by convening the Fishing Rights Management Committee meeting as and when necessary which is relatively accessible and low-cost way for conflict resolution. Any requests for changes to the Fishery Season Rules can also be submitted to the Himeshima branch one week before the start date of the fishing season.

7. Recognition and respect for community-based rule-making rights by outside authorities

Himeshima's own unique management system of traditional fisheries resource and customary measures has long been recognized by Oita Prefecture, dating back to 1893 when Oita Prefectural Governor approved the request for autonomy to set up Himeshima village's own protection provisions suited to the local situation and needs. It is this respect and recognition for Himeshima's community-based rule-making rights that the Oita Prefecture then subsequently separated it from the Higashi-Kunisaki County Fishermen's Association in 1899 to establish the Himeshima Fishermen's Association. Today, while Himeshima fishers have to also adhere to prefectural wide

rules, Himeshima branch have the autonomy to maintain and set their own rules, on the condition that it shall not be less stringent than those set by the Oita Prefecture Fishers Cooperative on certain fish species.

8. In the case of larger CPR: rules are organized and enforced through multiple layers of nested enterprises

In the case of larger CPR, all fishery cooperatives branches in Oita prefecture must basically abide to the prefecture wide resource management regulations set for 13 types of fish species, the fishing season, and amount of allowable catch (see Appendix 2 "Oita prefecture fishery resource management"). These resource management rules listed are managed under the legal regulations (TAC, TAE, etc.) enforced at the national level, followed by the stipulations set by the Oita prefecture fishery adjustment committee and then the resource management plans administered by the local fishery cooperatives branches.

The above analysis of Himeshima's traditional fishery resource management through Ostrom's eight principles of sustainable governing of the commons showed that fisheries can practice self-governing of CPR. In fact, when the CPR itself is not easily visible and total capacity unknown, i.e. the marine resources are "hidden" underwater as compared to physically visible terrestrial resources such as trees in forests and pastures on rangelands, it is more important and a need to practice more disciplined co-management to prevent exhaustion of the CPR. However, according to Ostrom's characterization of CPR, which should have excludability (exclusion of users is difficult) and subtractability (the use of such a resource by one user deprives the benefits from the resource for other users). Yet Himeshima and almost all other Japanese coastal fisheries which practices stringent assess based on highly regulated fishery rights, it could perhaps be more accurate to say that fishery resources in Japan are more like "community-owned resources" than "common-pool resources". In anyway, one can see that co-management is indeed a representative feature of Japanese traditional fishery resources management.

It was also worth to note that through the examination of the role of seaweed, the study demonstrated the integrated nature of agriculture, forestry and fisheries in Himeshima. In our present time, one could barely have imagined that seaweed was once gathered excessively for agricultural use to the extent that it needed to be restricted, and that when the agriculture sector itself declined and forests deteriorated would then also bring about ecological impacts affecting the marine environment and the fisheries. Whether the disappearing seaweed beds of today is a directly an ecological consequence of the disappearing agriculture could not be proven and is also not the purpose of the study to make such a deduction, it is still worthwhile to consider the possibility of this causal relationship between the change in usage patterns of seaweed and the state of agriculture to capture the problem more holistically.

Hence, the study has succeeded in tracing and analysis *Fishing Season Rules* of Himeshima in such depths that no other researches have ever done before, and through which has shed some light into the understanding the remarkable philosophies and measures that Himeshima has held towards its fisheries and marine environment. The findings of this study could raise domestic and international interest in Himeshima's fisheries, and Himeshima could be a model case to demonstrate the "Forest-Land-River-Sea-Island" interlinkages.

Acknowledgments

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5. POLICIES ON TRADITIONAL FISHERIES

This chapter examined national and international policies on conserving traditional fisheries through conducting comparative policy analysis of how East Asian countries of Japan, China and Korea value traditional knowledge in their agricultural (including forestry and fisheries) policies. In particular, the study examined their policies on the Globally Important Agricultural Heritage Systems (GIAHS) designated sites by the Food and Agriculture Organization of the United Nations (FAO) with the objective to identify perspectives for policy improvements on sustaining coastal fisheries and livelihoods.

Part of the findings have been published as a peer reviewed journal article on Journal of Resources and Ecology in 2016. (Yiu, Evonne, Nagata, Akira and Takeuchi, Kazuhiko, (2016). Comparative Study on Conservation of Agricultural Heritage Systems in China, Japan and Korea. Journal of Resources and Ecology, 7(3), 170-179)

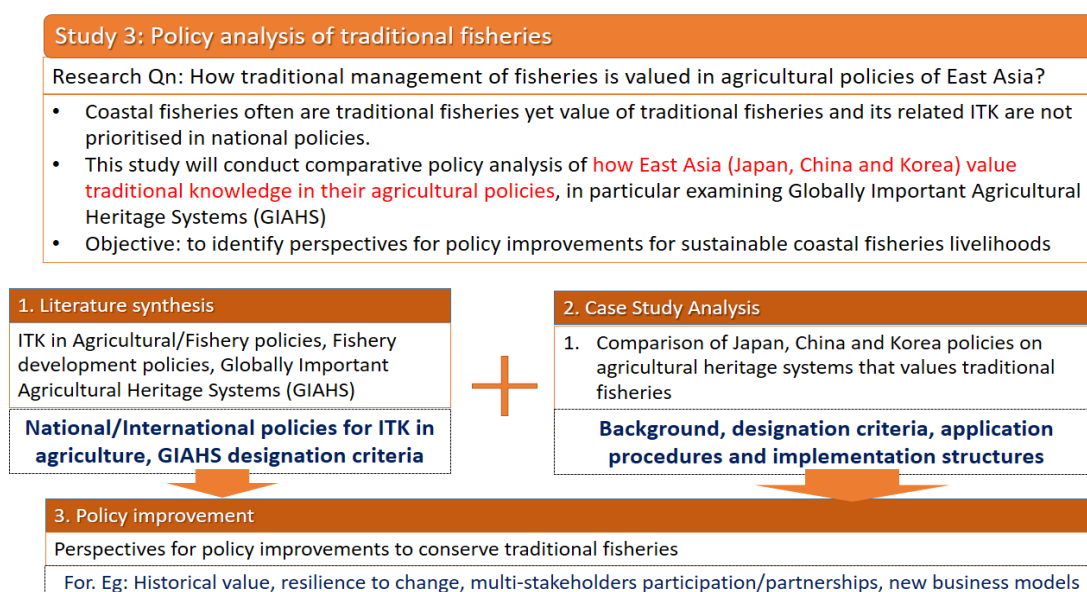
I. Research Question and Design

As explained in Chapter 1. Literature Review, the conservation of traditional fisheries and its related indigenous and traditional knowledge (ITK) are often not prioritized in national or global policies. This study examined how East Asian countries of Japan, China and Korea value traditional knowledge in their agricultural (including forestry and fisheries) policies. In particular, it examined how GIAHS is being implemented in East Asian countries of China, Japan and Korea. The FAO's GIAHS programme, a designation scheme that was launched in 2002 to safeguard traditional agricultural (including fisheries) systems that are of invaluable importance to mankind.

Although China is not a developed country as compared to Japan and Korea, the coastal fisheries have almost disappeared in the coastal provinces in China due to rapid urbanization and redevelopment of coastal areas into mega ports. Thus, China, Japan and Korea, though at different stages of development, are facing challenges of sustaining coastal traditional fisheries due to a lack of young labour force due to depopulation and aging. The study therefore chose to examine these three countries in East Asia to analyse how they are conserving their traditional fisheries. It is found that these three countries have in common, designated GIAHS sites and are implementing national programmes to safeguard and conserve traditional agricultural heritage systems.

The design of this study is as in Figure 5.1.

Figure 5.1. Research Question and Design of Study on Policy Analysis of Traditional Fisheries



II. Comparative Analysis on Conservation Policies of Agricultural Heritage Systems among China, Japan and Korea

The FAO GIAHS was first launched as an initiative in 2002 but later became a FAO regular programme in 2016. As at December 2017, 45 GIAHS sites in 19 countries have been designated, where more than three-quarters being concentrated in Asia and especially in East Asian countries which constitute more than half of GIAHS sites in the world; China has the most at 13 sites, Japan has nine sites and Korea has three sites. China and Korea were first to develop their own national designation systems (China Ministry of Agriculture, 2012; Korea Ministry for Food, Agriculture, Forestry and Fisheries, 2012) while also conserving their agricultural heritages systems through FAO GIAHS programme. Japan later introduced their national important agricultural heritage systems (NIAHS) in April 2017, and 8 NIAHS have since been designated in Japan (as at December 2017).

This study examined the conservation schemes of agricultural heritage systems of the three East Asian countries of China, Japan and Korea by making comparisons of the background of developments, designation criteria, application procedure and implementation structure of their GIAHS and domestic programme for conserving agricultural heritage systems. Through this analysis, the commonalities and differences in the GIAHS conservation against the national circumstances of Japan, China and South Korea has become clear.

1. Background of developments

This section examined the background of developments of agricultural heritage systems in the three East Asian countries.

i. China

In China, the “Rice-Fish Culture System” of Qingtian County, Zhejiang Province was identified as China’s first site in its early days of inception of the GIAHS Initiative. According to the *Newsletter of Agri-Cultural Heritage Systems* published in 2012 by the Institute of Geographic Sciences and Natural Resources Research at Chinese Academy of Sciences (CAS-IGSNRR), it has documented that the “Inception Meeting of the Globally Important Agri-Cultural Heritage Systems Project: Rice-Fish Culture System” was held from 9 to 11 June 2005 (CAS-IGSNRR, 2012), which can then be inferred as the inaugural effort of GIAHS related activities in China. The Rice-Fish Culture System is also one of the first GIAHS pilot sites selected in the world, and which eventually became the first designated GIAHS site for China. More GIAHS designations for China subsequently followed; “Hani Rice Terraces Systems” of Yunnan Province and “Wannian Traditional Rice Culture” of Jiangxi Province in June 2010, “Dong’s Rice Fish Duck System” of Guizhou Province in August 2011, “Pu’er Traditional Tea Agro-system” of Yunnan Province and “Aohan Dryland Farming System” of Inner Mongolia Autonomous Region in September 2012, “Kuaijishan Ancient Chinese *Torreya*” of Shaoxing Province and “Urban Agricultural Heritage of Xuanhua Grape Garden” of Hebei Province in May 2013, “Xinghua Duotian Agrosystem” of Jiangsu Province, “Fuzhou Jasmine and Tea Culture System” of Fujian Province and “Jiaxian Traditional Chinese Date Gardens” of Shaanxi Province in April 2014. As at December 2017, there are 13 GIAHS sites in China, which accounts to about one-quarter of total 45 GIAHS sites of 19 countries in the world, making China home to the most number of GIAHS designations thus far.

In March 2012, it was officially announced by Agricultural Products Processing Bureau of China’s Ministry of Agriculture (MOA) in the *Circular of the Ministry of Agriculture on discovering and exploiting important agricultural heritage systems of China* that the development of China Nationally Important Agricultural Heritage Systems (hereafter refer as China-NIAHS) will commence, stating the designation criteria and procedure in appended documents to the circular (MOA, 2012). Later in July 2013, the *Circular of the General Office of the Ministry of Agriculture on printing and distributing two documents as A Guide to Filing Application for Induction into List of Nationally Important Agricultural Heritage Systems (NIAHS) and A Guide to Planning of Conservation and Inheritance of Agricultural Heritage Systems* were released to concretize the plans with more administrative and procedural details (MOA, 2013a). Following which in May 2014, the

Circular of the General Office of the Ministry of Agriculture on printing and distributing the Administrative Measures on Nationally Important Agricultural Heritage Systems was also announced (MOA, 2014a).

Subsequently the Expert Committee for GIAHS and the Expert Committee for China-NIAHS were established respectively in January 2014 and in March 2014 to supervise development of the initiative (MOA, 2014b)⁴. The first batch of China-NIAHS of 19 systems were selected in May 2013 (MOA, 2013b), followed by the announcements of the second batch of 20 China-NIAHS in May 2014 (MOA, 2014c) the third batch of 23 China-NIAHS in November 2015 (MOA, 2015), and the fourth batch of 29 China-NIAHS in November 2017, adding up to a total of 91 China-NIAHS as at December 2017.

ii. Japan

In Japan, GIAHS is officially referred to as “*Seikai-nogyo-isan*” in Japanese in which its literal translation means “World Agricultural Heritage”. While some civil society groups in Japan had interests in GIAHS before 2008, it did not lead to specific developments to GIAHS designation. It was the United Nations University (or UNU, headquarters in Tokyo), a long-time partner of FAO in the study of agricultural diversity (agrobiodiversity), that proposed to FAO GIAHS Secretariat and other Japanese stakeholders the possibility to explore the application for GIAHS designation of Japan’s *Satoyama*⁵ in 2009. In response, Hokuriku Regional Agricultural Administration Office of the Japan Ministry of Agriculture, Forestry and Fisheries (MAFF) cooperated closely with UNU to initiate a feasibility study of GIAHS in Japan (Nagata, 2011). With such a generation of interests in GIAHS, concrete developments for GIAHS application gradually caught on and eventually, the *Satoyama* of Sado Island, Niigata Prefecture and Noto Region, Ishikawa Prefecture then became the candidates of GIAHS application. In cooperation with MAFF, the local municipalities of both prefectures established their respective GIAHS Promotion Associations for “Sado’s Satoyama in Harmony with Japanese Crested Ibis” and “Noto’s Satoyama and Satoumi” and then submitted their proposals to

⁴The composition of Expert Committee for GIAHS is also basically made up by the same members of the China-NIAHS Expert Committee. The current Chairman specialises in ecology, Deputy Chairman in grassland sciences, and other members with expertise in biodiversity, plant protection, agricultural ecology, agricultural history, agricultural heritage and tea science, etc., comprising a total of 27 experts of various backgrounds from the three major areas of agricultural history and culture, agricultural ecological environment and agricultural economics.

⁵ *Satoyama* refers to the terrestrial landscapes of dynamic mosaics of habitats and land uses where the harmonious interaction between people and nature maintains biodiversity while providing humans with the goods and services needed for their livelihoods, survival and well-being in a sustainable manner.

FAO in December 2010. Following in June 2011, both applications were approved and designated as GIAHS at the GIAHS International Forum held in Beijing, China, marking the first two GIAHS designations for Japan, and also the first GIAHS designations for a developed country.

Subsequently in December 2012 “Traditional Tea-grass Integrated System in Shizuoka” of Shizuoka Prefecture and “Managing Aso Grasslands for Sustainable Agriculture” of Kumamoto Prefecture, and then in May 2013 “Kunisaki Peninsula Usa Integrated Forestry, Agriculture and Fisheries System” of Oita Prefecture, having the cooperation and endorsement from MAFF, submitted their GIAHS applications to FAO. The three sites were then also successfully designated as GIAHS on May 29, 2015 at the GIAHS International Forum in Noto Region, Ishikawa Prefecture, Japan, the first time where the Forum is held in a GIAHS designated site.

These successful GIAHS designations then raised the profile of GIAHS in Japan and stimulated interests across the nation. With the objective to ensure smooth facilitation of the GIAHS applications, the GIAHS Experts Meeting was then established by MAFF in March 2014 (MAFF, 2014)⁶. After three rounds of meeting, in October 2014, the meeting then selected three potential GIAHS candidate sites for application to FAO. These three sites, “The Ayu of Nagara River System” of Nagara River Region, Gifu Prefecture, “Minabe-Tanabe Ume System” of Minabe-Tanabe Region, Wakayama Prefecture and “Takachihogo-Shiibayama Mountainous Agriculture and Forestry System” of Takachihogo-Shiba Region, Miyazaki Prefecture, are then successfully designated as GIAHS on December 15, 2015. Subsequently in December 2017, “Osaki Kodo Traditional Water Management Agricultural System” of Miyagi Prefecture was designated as GIAHS, making a total number of nine GIAHS sites in Japan thus far as at December 2017.

iii. Korea

In Korea, the national programme was established before its first GIAHS designations in 2014. The Korea Nationally Important Agricultural and Fishery Heritage Systems (hereafter referred to as Korea-NIAHS) was implemented in March 2012 by the then Ministry for Food, Agriculture,

⁶ The MAFF GIAHS Experts Meeting comprises of seven experts with expertise in green tourism, lifestyles of health and sustainability (or LOHAS), environmental economics, UNESCO Man and the Biosphere (MAB), sustainability sciences, rural planning and fisheries, including two female experts.

Forestry and Fisheries (or MIFAFF) (MIFAFF, 2012a). The Korea-NIAHS is a national system to designate resources of rural areas that is in need of conservation, inheritance and utilization as agricultural and fisheries heritage so as to effectively utilize them through regional branding and tourism resources. It is to note that MIFAFF was succeeded by Ministry of Agriculture, Food and Rural Affairs (MAFRA) for agriculture and forestry matters and Ministry of Oceans and Fisheries (MOF) for fisheries under the institutional restructuring in March 2013. As a result, the management of agricultural heritages, or Korea National Important Agricultural Heritage Systems (KIAHS) falls under MAFRA and fishery heritages, or Korea National Important Fishery Heritage Systems (KIFHS) under MOF. For simplicity purpose, both NIAHS and NIFHS will be collectively referred as Korea-NIAHS.

According to the MIFAFF press release dated on April 4, 2012, agricultural and fishery heritages are the creation of the local people which have evolved over a long period of time while adapting to changes in the environment, and these traditional agriculture and fisheries systems and its landscapes formed by these systems are worth conserving and maintaining. The identification of Korea-NIAHS was then conducted in July 2012, after applications from the municipalities were submitted to MIFAFF (in April) and went through the assessment process by the research team and deliberative body formed by experts. Among these selected Korea-NIAHS, the unique heritage systems that are representative of Korea were then selected as candidates for FAO GIAHS application.

Then in December 2012, it was announced in a MIFAFF notice that the "Guideline of Management and Designation Criteria of Nationally Important Agricultural and Fishery Heritage Systems" has been enacted and enforced (MIFAFF, 2012b). Two Korea-NIAHS sites, "Traditional Gudeuljang Irrigated Rice Terraces in Cheongsando" of Wando, South Jeolla Province and "Jeju Batdam Agricultural System" of Jeju Province were then identified in January 2013 and subsequently also designated as Korea's first GIAHS at the FAO GIAHS Steering/Scientific Committee Meeting held in Rome in April 2014.

In addition, two sites of "Gurae Cornelian Cherry Farming" and "Damyang Bamboo Field Landscape " of South Jeolla Province in June 2014, and two more sites of "Geumsan Ginseng Farming" of South Chungcheong Province and "Hadong Traditional Tea Farming" of South Gyeongsang Province were also identified as new KIAHS in March 2015. "Hadong Traditional Tea Farming " was then designated as Korea's third GIAHS in December 2017. Subsequently in 2016 the "Uljin Geumgang Pine Tree Forest Agricultural System" of North Gyeongsang Province, and in

2017 two sites of the “Puan Sericulture System” of North Jeolla Province and “Ulleung Volcanic Island Mountainous Agricultural System” of North Gyeongsang Province were also designated as KIAHS. On the other hand, three KIFHS sites of “Haenyeo Women Divers” of Jeju Province, “Boseong Mudboat Fishing” of South Jeolla Province and “Namhae Jukbangnyeom Fishing” of South Gyeongsang Province are officially designated as Korea’s first batch of KIFHS on 16 December 2015 (MOF,2015). Subsequently, two more sites from of South Jeolla Province, the “Salt Farm in Shinan-gun” in 2016 and “Seaweeds of Wando-gun” in 2017 were designated as KIFHS. Thus, as at December 2017, Korea has a total of nine KIAHS sites and 5 NIFHS sites, out of which three sites are GIAHS.

It should be noted that “Special act on improving the quality of life for farmers and fishers and promoting development of rural areas” was amended in February 2015 in Korea, where the conservation and utilization of Nationally Important Agriculture Heritage Systems (NIAHS) are added to Act 2 of Article 30, and conservation and utilization of Nationally Important Fishery Heritage Systems (NIFHS) has been established in Act 3 of Article 30 (Korea National Legal Information Center, 2015). This law was enforced effective from August 4, 2015, six months after its promulgation. This act was amended in view of the current challenges faced by the agricultural heritage resources that were formed over a long period history of farming culture, such as rapid industrialization and urbanization which threaten to damage and destroy these heritages. Hence there is a need to establish a management system to conserve and effectively utilize these valuable agricultural heritage resources through introducing appropriate measures of development while maintaining the rural way of life that will contribute to the rejuvenation of rural areas.

2. Designation Criteria

i. China

The evaluation and designation criteria of China-NIAHS is listed in the *Circular of the Ministry of Agriculture on discovering and exploiting important agricultural heritage systems of China* (MOA, 2012) under its “*Annex I. Criteria for China Nationally Important Agricultural Heritage Systems*” (Refer to Table 5.1). The China-NIAHS selected based on these criteria should bear the six characteristics of active, adaptable, composite, strategic, versatile and endangered. Quantitative criteria are also stipulated, such as historical duration of at least 100 years of history and a participation rate of more than 50 percent support from inhabitants. As compared to the designation criteria of FAO, China-NIAHS also emphasizes historical value, inhabitants’ support, as well as the

organizational and institutional support which guarantee the success of conservation and management of NIAHS.

Table 5. 1 China Nationally Important Agricultural Heritage Systems Designation Criteria

Category	Criteria	Features
Basic Criteria	Historical criterion	Historical origin, History length:
	Systemic criterion	Substances and products, Ecosystem services, Technical knowledge and system maintenance, Landscape and aesthetics, Spirit and culture
	Persistent criterion	Natural adaptation, Human Development
	Endangered criterion	Trends, Stress factors
Secondary criteria	Demonstration criterion	Participation, Accessibility, Reliability
	Supportability criterion	Organization construction, System Construction, Preparation of Planning

Source: “Criteria for China National Important Agricultural Heritage Systems” translated by author

ii. Japan

The set of “GIAHS Designation Criteria and Evaluation Perspectives” (refer to Table 5.2) used by the Japan GIAHS Experts Meeting is formulated based on the FAO’s designation criteria but broken down into some further points for more comprehensive assessment. This set of designation criteria and evaluation perspectives were developed by MAFF, based on the research outcomes of UNU’s “Developing a Comprehensive Assessment Method for Agri-Cultural Systems in Japan” project with MAFF Policy Research Institute from 2012 to 2015 and in which I was involved as project researcher.

Table 5. 2 GIAHS Designation Criteria and Evaluation Perspectives (Excerpt)

FAO Designation Criteria	Evaluation Perspectives
Characteristics of the proposed GIAHS	Globally unique, traditional, distinctive agriculture and farming methods representative of Japan
	Building a sustainable system (agricultural system) through traditional, distinctive agriculture and farming methods.
	The interrelationship amongst the FAO 5 Key Criteria and a well-balanced content of each criteria
	Appropriate selection of the site and naming a good title that well reflects the concept of the agricultural heritage system
Food and livelihood security	Traditional, distinctive agriculture and farming methods and its related industries, forming important means of livelihood of local residents, maintaining the sustainability of small-scale farmers and family agriculture
	Traditional, distinctive agriculture and farming methods and those related industries creating stable industries which contribute to the local economic and employment
	Co-operation amongst various industries related to agriculture, forestry and fisheries
Biodiversity and ecosystem function	Inhabitation of animal and plants, such as rare and endemic species, and conservation of biological diversity
	Conservation of genetic resources through farming
	Agricultural diversity (farm crops, scale, etc.)
	Relationship between agricultural system and ecosystem function (ecosystem services)
Knowledge systems and adapted technology	Remarkable knowledge and skills related to the utilization of land and water resources that are adapted to and overcome the limitations of the local environment
	Inheritance of traditional knowledge and technology
	Practices carried out for appropriate access to and benefit sharing of the resources, the presence of social organization and institutions for inheritance of knowledge and technology
Cultures, values systems and social organizations (Agri-culture)	Local traditional, cultural, spiritual, religious and social initiatives
	Inheritance of culture related to the agricultural system such as agricultural festivals and rituals
	Presence of social organization for the inheritance of agricultural culture and values, and implementation of educational activities and social events targeted at the local residents
Remarkable landscapes, land and water resource management features	Aesthetically remarkable landscape integrated with the agricultural system and its surrounding environment
	Effective use of land and water resources that make up the landscape, its recreational value and historical value, for educational purposes and fostering such sense of unity in the community
	Dynamic conservation of remarkable landscape and its related biodiversity through farming

Source: (Yiu et.al, 2016) Constructed by authors based on meeting documents of the MAFF GIAHS Experts Meeting

In addition, the optional criteria which also take into consideration of the perspectives from Japan's agriculture (refer to Table 5.3) include the three following aspects, (i) environmental aspects of "Resilience against changes", (ii) social aspects of "Multi-stakeholders participation" and (iii) economic aspects of "New business models (or sometimes termed in Japanese as "sixth industries"). As the current FAO designation criteria were set principally intended for developing countries, which do not always meet the needs and situation of developed countries such as Japan, the optional criteria were proposed for more holistic and comprehensive assessment of GIAHS in Japan. For instance, while developing countries may be overwhelmed in coping with current developmental challenges, developed countries like Japan could consider about how to enhance its resiliency against possible future changes.

Moreover, while farmers make up the majority of rural population in developing countries, rural population in Japan has a relative more diversified demographics coupled with an increasing trend of depopulation and aging, making rural revitalization difficult without involving various stakeholders such as both local and urban residents. In addition, while developing countries usually sell their agricultural products as crops or after simple processing through the middle men or directly to the market, Japanese farmers now face an impending need to also take on processing and marketing roles to increase their profitability. All these abovementioned reasons explain the background for the need of adding optional criteria to reflect the current situation faced by agriculture in Japan. In near future, these optional criteria could also be considered and applicable to Korea, already a non-developing country, and also China who faces similar aging and depopulation trends in rural areas.

Table 5.3. GIAHS Designation Criteria and Evaluation Perspectives (Excerpt from “Points to be considered” from the perspectives of Japan’s agriculture)

Points to be considered	Perspectives
Resilience against changes (Ecological Aspects)	Capability of early recovery from natural disasters and changes in ecosystem of local traditional, ingenious farming systems
	Capability of early recovery to natural disaster and changes in ecosystem that may arise in the future
	Mechanisms that ensure that the agricultural system is reliably inherited by the next generations and conserved in face of natural disasters and changes in ecosystem
Local multi-stakeholders participation and promoting institutions (Social Aspects)	Participation of various local stakeholders and cooperation amongst these entities, including women and young people
	Adequate framework and organizational arrangements for the conservation of agricultural system, such as active involvement local governments and academic support from universities and research institutions
	Create conducive environment and initiatives to facilitate easy participation of various stakeholders
New business models (Economic Aspects)	Promotion of new business models associated with the agricultural system
	Active inter-industries collaborations of agriculture, forestry and fisheries with other industries such as tourism and the service industry
	Enhance branding of agriculture, forestry and fishery products

Source: (Yiu et.al, 2016) Constructed by authors based on meeting documents of the MAFF GIAHS Experts Meeting

iii. Korea

Under Article 1 "General Provisions" of the "Guideline of Management and Designation Criteria of Nationally Important Agricultural and Fishery Heritage Systems", its purpose is to conserve the biodiversity of the agricultural and fisheries heritage, along with the improvement of quality of life and revitalization of rural areas. In addition, the "agricultural and fishery heritage" is defined as the tangible and intangible agricultural and fisheries system and its current situation that farmers and fishers have built over a long period of time while adapting to the local environment, society and customs.

Under Article 2 “Selection of Nationally Important Agricultural and Fishery Heritage Systems”, it is stated that the Korea-NIAHS sites will (1) possess multifaceted resources that have heritage value of more than 100 years of tradition worthwhile for conservation, preservation and transfer to future generations, and is a (2) special biodiversity site of conservation, preservation and effective utilization value, that could be in the form of tangible form, or combination of tangible and intangible forms, or combination of tangible/intangible forms with village, mountains and rivers with landscapes. Worth noting here is while GIAHS is basically intended for agricultural systems, Korea-

NIAHS also targets at “tangible heritages”. Thus in the selection criteria, it is specified that (1) the Korea-NIAHS should have inherent characteristic such as distinctive and historical value, (2) the Korea-NIAHS site and category should be representative, (3) if the owner of the Korea-NIAHS exists, voluntary participation and agreement of the organization representative of the owner and local residents should be obtained, (4) public order and morality should be uphold and fit with public benefit. As such, it can be derived that a main characteristic of Korea-NIAHS is that it includes the concept of ownership.

Moreover, in Article 4 of "Management of Nationally Important Agricultural and Fishery Heritage Systems" it is stipulated that (1) the mayor of the city or county who has jurisdiction over the Korea-NIAHS should establish a management plan, (2) as a general rule the heritage should be managed by residents' council including the owner, (3) period monitoring and checks of the heritage should be conducted. As such, from this concept of “restoration and repair of heritage”, it suggests that the targeted heritage is assumed to be tangible object.

The designation criteria of the Korea-NIAHS is as listed in Table 5.4.

Table 5.4. The Key Criteria for Korea Nationally Important Agricultural and Fishery Heritage Systems

Classification	Criteria	Features
Value of Heritage	Historical Value	Formed more than 100 years ago for the agricultural-fishery activities of farmers or fishermen
		Extent and worth of sustainability into the future
	Representativeness	Representative of the region and field- International, national and regional level of representation
		Possess remarkable landscape and has tourism, recreation and merchandizing potential
	Characteristics	Possess unique and striking feature in the fields of land use and water resource management etc (1-2 items of the following) - Communal agro-fishery knowledge system and technology - Food or other products from agro-fishery activity - Use of land and water resources and conservation of biodiversity, etc.
Partnership	Cooperation	Existence of maintenance management plan from municipalities and residents indicating their commitment to cost sharing, etc.
	Participation	Active participation and activity by community (including NGO) for the preservation, maintenance and transmission of the heritage
Effectiveness	Branding	Ability to contribute to the improvement of brand value and regional image upon the designation of the national agricultural and fishery heritage
	Revitalization & Biodiversity	Ability to contribute to the local economy through urban and rural exchanges and increase in tourists upon the designation of the agricultural heritage
		As a result of traditional farming methods, biodiversity was improved in relation to other areas and producing of unique agricultural products.

Source: “Management standards for Agricultural and Fishery Heritage Systems”(MIFAFF Notice No. 2012-285, December 6, 2012) translated by author

In addition to FAO GIAHS criteria, it is notable that the Korea-NIAHS emphasis on multi-stakeholder participation by including partnership as a key criterion. Other characteristics include the emphasis on improvement of brand value and regional image, and rural revitalization through enhancing the rural-urban exchange.

Subsequently in 2015 the MOF set out its own designation criteria and evaluation perspectives for KIFHS, as listed in Table 5.5 and Table 5.6 respectively.

Table 5.5 Designation Criteria for Korea Important Fishery Heritage Systems

Classification	Criteria	Features
Characteristics of fisheries heritage	Fishery products	Degree of role in providing fishery products and local livelihood
		Use of fishery products as fishery resources
	Biodiversity	Conservation and enhancement of biodiversity and ecosystem function
	Knowledge system	Knowledge system and technology of fisheries heritage
		Management technology for protection and conservation of fisheries heritage
	Traditional culture	Culture and consciousness formation related to fisheries heritage
		Transfer of technology to next generations
	Landscape formation	Beautiful or remarkable landscape formation
		Harmony with surrounding fishing village, natural environment and fishery heritage
Historical value		Over 60 years of history or equivalent history
		Possibility to survive in the future and hold value
Locality	Local Government Policy	Policy support such as establishment of maintenance and management plan of local government
		Whether ordinances of local governments are established for the maintenance of fishery heritage, etc.
	Recognition	Awareness, pride, and self-esteem about local fishery heritage
	Sustainable	Possibility of use as future fishing activity
		Possibility to use as an activation element outside fishing area
	Increase value	Establishment of post management and conservation management plan for fisheries heritage and validity of plan

Source: “Nationally Important Fisheries Heritage System Description Document” (Fishing Village Fishing Port Department, Ministry of Ocean and Fisheries, December 29, 2016) translated by author

Table 5.6. Evaluation Perspectives for Korea Important Fishery Heritage Systems

Perspective	Evaluation factor
Eminence	It meets the designation requirements of each criteria; It is excellent value as the heritage; and There is a need for its succession into the future.
Excellence	It is necessary to designate it as a legacy.
Commonality	There is no difference from other regions and if the any criterion is insufficient

Source: “Nationally Important Fisheries Heritage System Description Document” (Fishing Village Fishing Port Department, Ministry of Ocean and Fisheries, December 29,2016) translated by author

According to *MOF’s Article 30 (Protection and Utilization of Important Fishery Heritage) of the Special Act on the Improvement of the Quality of Life of Farmers and Fishermen and Promotion of Development of Rural Areas*, a KIFHS is a traditional fishery system that has long been formed and evolved and is worthy of the tradition. It also collectively refers to all the tangible and intangible resources such as fishing villages, landscapes and cultures. The MOF promotes the KIFHS project on the objectives to increase the number of visitors to the fishing villages and revitalize the local economy by discovering the unique culture of the disappearing fishing villages.

The criteria of “Characteristics of fisheries heritage” are basically adaptations of the FAO GIAHS five key criteria, but also added other criteria to place emphasis on historical value and to meet the local needs. In particular, for the historical value, “at least 60 years of history” is required as eligibility. This is considerably shorter than the “norm” for GIAHS which is commonly regarded to should have at least 100 years of history, as like the standards promulgated by the Chinese. However, this 60 years requirement is a reflection of the national situation of Korea; traditional fisheries that have continued, revived or started since the early years after the Korean War ended in 1953 would having a history of about 60 years. While it seems that the KIFHS does not really emphasis fishery specific criteria, it is of hope that it could in future, as the first country in the world to have a separate national programme for fishery heritages, Korea can provide insights and perspectives pertinent to fisheries heritage for FAO’s reference, where GIAHS designation of fisheries system has just started.

3. Application Procedure

i. China

According to the *Circular of the General Office of the Ministry of Agriculture on discovering and exploiting third batch of important agricultural heritage systems of China* (MOA, 2014d), the People's Government of the respective candidate sites of the agricultural systems shall follow the instructions as stated in the above-mentioned *Circular of the General Office of the Ministry of Agriculture on printing and distributing two documents as A Guide to Filing Application for Induction into List of Nationally Important Agricultural Heritage Sites (NIAHS)* and *A Guide to Planning of Conservation and Inheritance of Agricultural Heritage Systems*, prepare and submit the application proposal, along with relevant documents of conservation and management plans to the agricultural management departments at the provincial level. Each of the provincial agricultural administrative department will then assess the applications based on the national standards to select no more than 3 potential candidates and submit the nominations to the Leisure Agriculture Division of Agricultural Products Processing Bureau by September 2014. As for GIAHS applications, the People's Governments at the county level will follow almost the same procedure as China-NIAHS and submit their applications to MOA Department of International Cooperation International Organization Division which is in-charge of the recruitment of potential GIAHS candidate sites. While the application conditions and requirements will be based on FAO GIAHS designation criteria, the GIAHS potential candidate will be selected from the pool of existing China-NIAHS sites, and thus indirectly yet in reality the China-NIAHS designation criteria are also applied in the process of choosing the GIAHS candidate sites for China.

In China, both GIAHS and China-NIAHS place great emphasis on the cultural aspect of the agricultural heritage, as reflected in its Chinese naming “*zhongyao-nongye-wenhua-yichan*” which literally translates into “Important Agricultural *Culture* Heritage”. Thus agricultural history and culture is one important area within China's GIAHS and China-NIAHS Experts Committee where agricultural history and culture experts are highly regarded, and which is a unique characteristic in China's perspective to agricultural heritage.

ii. Japan

The MAFF GIAHS Experts Meeting held its first meeting in April 2014 where the assessment methodology was discussed. UNU provided the proposed assessment criteria and application guidelines developed based on the research outcomes from its project consigned by MAFF Policy Research Institute as reference materials to this first meeting. Subsequently, seven applications for GIAHS were received during the period of recruitment from May to July the same year. The second meeting was then held in September 2014, where experts gave the first round of assessments based on presentations made by the potential sites and made decision on whether assessment field visits were necessary. Following the assessment field visits by the experts, the third meeting was held in October 2014 where the second round of assessments decided that the three candidate sites (Gifu, Wakayama and Miyazaki prefecture) were selected and recommended for GIAHS application to FAO after endorsement by MAFF.

iii. Korea

In Korea, the MAFRA Rural Policy Bureau Rural Development Division is in charge of the agricultural heritages and the MOF Fisheries Infrastructure and Aquaculture Policy Bureau Fishing Community and Port Development Division is responsible for fishery heritages. It is however unclear about the positioning of the roles of their respective international relations departments, and GIAHS related international meetings are represented by rural development division officers but not officers in charge of FAO matters. Also, the Korea agricultural and fisheries heritages related personnel includes many experts from regional development and rural planning, with each KIAHS or KIFHS site supported by their respective groupings of experts. It remains to be seen how the management of both KIAHS and KIFHS will be coordinated between MAFRA and MOF, especially with regards to the selection of Korean candidate sites for applications of GIAHS.

For KIFHS, the application proposal received is evaluated in stages;

Step 1 (Document Evaluation): Valuation as an inheritance based on the application received

Step 2 (on-site evaluation): Proposal evaluation and review

Step 3 (final evaluation): After the review of the on-site evaluation, final evaluation and selection

4. Implementation Structure

i. China

Initially, the CAS-IGSNRR has been leading the development of GIAHS in China. At the Ministry of Agriculture, GIAHS is under the supervision of the International Organization Division (Department of International Cooperation while the Leisure Agriculture Division (Agricultural Products Processing Bureau) is responsible for China-NIAHS. For this reason, the GIAHS related international conferences are represented by officers of the International Organization Division and CAS-IGSNRR experts. Similarly, the International Organization Division is in-charge of the GIAHS Experts Committee while the Leisure Agriculture Division is responsible for the China-NIAHS Experts Committee. In this way, the clear separation of administrative responsibility for the promotion of global and domestic agricultural heritage is a notable characteristic of China's management system of its agricultural heritage.

ii. Japan

GIAHS is under the supervision of the MAFF Rural Development Bureau Rural Environment Division Biodiversity Conservation Office. In other words, in the case of Japan, GIAHS is positioned as part of its rural revitalization policy that effectively utilizes biodiversity. Nonetheless, the Biodiversity Conservation Office also works closely with the FAO liaison at International Affairs Department International Cooperation Division as GIAHS is a FAO initiative. Thus international meetings related to GIAHS are customarily attended by both officers from Rural Development Bureau and International Affairs Department.

Also, unlike China and Korea, Japan has not yet established its own national designation scheme for agricultural heritages as at February 2016, only later to introduced it officially in April 2017. The reason for this delay seemed to be to prevent GIAHS from becoming a temporary fad and to maintain the high quality of GIAHS sites. Nonetheless, as there was increasing interests domestically shown in applying in GIAHS with its rising popularity, Japan implemented a system where GIAHS candidate sites will be selected from its own national designation scheme, so as to expand the horizons of agricultural heritage and enable traditional agricultural systems to contribute effectively to rural revitalization. The MAFF GIAHS Experts Meeting then proposed the need to established a national programme for agricultural heritage in Japan in February 2016, in which MAFF has accepted the recommendation and implemented the Japan Nationally Important Agricultural Heritage Systems (J-NIAHS) in April 2017.

iii. Korea

Under Article 3 “Agricultural and Fishery Heritage Council” of the “Guideline of Management and Designation Criteria of NIAHS”, the Agricultural and Fishery Heritage Council shall comprise core council members of Director-General of Rural Policy Bureau, MAFRA, Director of Rural Environment National Institute of Agricultural Sciences Korea Rural Development Administration, Head of Rural Research Institute, Korea Rural Community Corporation, and not exceeding 20 commissioned council members, which will deliberate on matters related to selection of Korea-NIAHS. The commissioned members come from various specialized fields, with four members in traditional culture, two from landscape, three from ecological environment, two from rural development, two from tourism and one from fisheries.

With regards to the details of the application procedure, Article 5 “Application for GIAHS”, it is stipulated that the mayor of the city or county shall submit the explanatory documents, field survey report and application proposal through the provincial governor to Minister of MAFRA or Minister of MOF, and will be selected by the Agricultural Heritage Council for NIAHS and Fishery Heritage Council for NIFHS respectively after deliberation.

5. Comparison and Analysis of the Agricultural Heritage Systems of China, Japan and Korea

The comparison of the Agricultural Heritage Systems of China, Japan and Korea according to the background of developments, designation criteria, application procedure and implementation structure are described in Table 5.7.

**Table 5.7. Comparison of the Agricultural Heritage Systems of China, Japan and Korea
(based on developments as at December 2017)**

	China	Japan	Korea
Background of Developments	<u>GIAHS</u> : First designation in 2005 13 sites designated	<u>GIAHS</u> : First designations in 2011 9 sites designated	<u>GIAHS</u> : First designations in 2014 3 sites designated
	<u>China-NIAHS</u> : Implemented in 2012 91 sites designated	<u>Japan-NIAHS</u> : Implemented in 2016. 8 sites designated	<u>Korea-NIAHS</u> : Implementation in 2012 Legalized in 2015 9 KIAHS sites, 5 KIFHS sites designated
Designation Criteria	<u>GIAHS</u> : Same as FAO GIAHS criteria	<u>GIAHS</u> : In addition to FAO GIAHS criteria, 3 Japanese perspectives - Resilience to change, multi-stakeholders participation, new business models promotion	<u>GIAHS</u> : Same as Korea-NIAHS
	<u>China-NIAHS</u> : I.Basic Standards - Historical Value, Systemic, Persistency, Endangered II.Secondary Standards - Demonstration, Supportability	<u>Japan-NIAHS</u> : Same as GIAHS	<u>Korea-NIAHS</u> : I.Value of Heritage - Historical Value, Representativeness, Characteristics II. Partnership - Cooperation, Participation, III. Effectiveness - Branding, Effective Use and Biodiversity <u>KIFHS</u> - Locality: Local Government Policy, Recognition, Sustainability, Increase value

Application Procedure	<u>GIAHS</u> : The People's Government of county level or above will apply, through provincial agricultural administrative department, to the International Cooperation Division of Ministry of Agriculture(MOA), and selected by Experts Committee	<u>GIAHS</u> : Applications will be received and selected by the Experts Meeting set up by the Ministry of Agriculture, Forestry and Fisheries (MAFF) through first round of evaluation and field survey and second round of evaluation	<u>GIAHS</u> : Selected from Korea-NIAHS where the provincial governor will apply to Minister of Ministry of Agriculture, Food and Rural Affairs (MAFRA) or Minister of Ministry of Oceans and Fisheries(MOF), and selected by the respective Agricultural or Fishery Heritage Council
	<u>China-NIAHS</u> : The People's Government of county level will apply, through provincial agricultural administrative department, to Agricultural Products Processing Bureau of MOA, and selected by Experts Committee	<u>Japan-NIAHS</u> : Same as GIAHS	<u>Korea-NIAHS</u> : Applicant will be city or county mayor who will apply through the provincial governor will apply to MAFRA or MOF, and selected by the respective Agricultural and Fishery Heritage Council
Implementation Structure	Institute of Geographic Sciences and Natural Resources Research at the Chinese Academy of Sciences was leading in initially, now GIAHS is under the supervision of MOA International Cooperation Division and China-NIAHS under MOA Agricultural Products Processing Bureau	GIAHS is under supervision of MAFF Rural Development Bureau Biodiversity Conservation Office, and coordination with FAO is assisted by International Cooperation Department	MAFRA Rural Policy Bureau Rural Development Division is in charge of both GIAHS and KIAHS, while MOF Fisheries Infrastructure and Aquaculture Policy Bureau Fishing Community and Port Development Division is responsible for KIFHS

Source: (Yiu et.al, 2016) Created by authors based on related documents from China, Japan and Korea.

i. Background of developments

The efforts of GIAHS started earliest in China in 2005, followed by Japan around 2010 and Korea in 2011. In China, Qingtian County of Zhejiang Province was first selected as a GIAHS pilot site in 2005 and subsequently the China-NIAHS was introduced in 2012. However, in Korea it was the opposite case where the Korea-NIAHS was first implemented, following which efforts were undertaken for GIAHS. Moreover, in Korea, the National Important Agricultural Heritage Systems and Nationally Important Fisheries Heritage Systems are legalized from August 2015. On the other hand, Japan only has GIAHS and has not implemented a national designation scheme as like the NIAHS of China and Korea.

ii. Designation Criteria

As the GIAHS sites in both China and Korea are selected from their respective NIAHS sites, the designation criteria comprise of a combination of FAO's designation criteria and their own criteria. China emphasizes on the historical value of the system and requires at least a 100 years of history and places importance on whether the system is endangered. Interestingly, China also takes into account of "demonstration", which is the potential of the system concept being replicated and disseminated in other places within or out of the GIAHS site area. This emphasis on "demonstration" shows that China viewed GIAHS as conceptual "system" in which could be replicated as role models, instead of confining with an area-based site. In contrast, Japan focuses more on site-based conservation and have three additional perspectives of resilience to change, multi-stakeholders participation, new business models promotion. Korea, shares the emphasis on historical value with China, and promote partnership and branding through GIAHS as like Japan. Korea also places "representativeness" as criteria so as to choose those systems that the Korean people could relate to.

iii. Application Procedure

In China, potential GIAHS were initially identified by experts in traditional agriculture. From 2012, since the national designation scheme for agricultural heritage systems was introduced, GIAHS candidate sites are now selected from the China-NIAHS sites. In Korea, the national designation scheme for agricultural heritage was implemented in 2012, and GIAHS candidate sites are selected from the Korea-NIAHS sites. In the case of Japan, it was similar to that of China whereby experts (i.e. United Nations University), MAFF Regional Agricultural Administration Offices and municipal governments worked together in identifying GIAHS candidate sites in 2010, but MAFF took over the application procedures from 2014. In all three countries, a selection committee formed by experts

to select NIAHS designated sites or GIAHS candidate sites are established. However, the membership size of the committee varies from 30 members from various fields in China, to that of seven members in Japan from specific areas of expertise, and with Korea in between the scale of China and Japan.

iv. Implementation Structure

While the department in charge of NIAHS and GIAHS is evidently separated in China, both NIAHS and GIAHS are under the supervision of the same division in Korea under MAFRA (KIFHS are under MOF). In Japan, there is no department in charge of agricultural heritage at the national level since there is no NIAHS, but both the Rural Development and International Cooperation Departments of MAFF are promoting GIAHS together.

v. Other observations

A large difference in the thinking amongst China, Japan and Korea is seen relating to financial support and regulatory measures for GIAHS designated sites. In China and Korea, certain financial support will be given to the GIAHS designated sites, while in Japan specialized financial support for GIAHS is very limited although GIAHS designated sites will receive general budget support. In China and Korea, the GIAHS will be subjected to certain regulatory measures while in Japan GIAHS sites are not subjected to GIAHS specific regulatory measures but only the general regulatory measures.

III. Chapter Analysis

The study compared the agricultural heritage conservation schemes of China, Japan and Korea, in particular implementation under Food and Agriculture Organization of the United Nations (FAO)'s Globally Important Agricultural Heritage Systems (GIAHS) and the national programmes. It is found that GIAHS and the national programmes embrace integrated multi-sectoral approach and value multiple livelihoods. Through this comparison, the background of developments, designation criteria, application procedure and implementation structure of GIAHS and their respective domestic programmes against the differences in national circumstances of Japan, China and South Korea has become clear: The sequence of implementation of GIAHS and national programme differ in each of these three countries; China introduced national programme after GIAHS designation, Japan has GIAHS but no national programme and Korea implemented national programme before its GIAHS designation. Thus, the selection of GIAHS candidate sites in China and Korea now are selected from its pool of national agricultural heritage sites.

On the other hand, commonalities can be seen in their perspectives towards agricultural heritage conservation through the common emphasis placed in the designation criteria; historical significance, cultural value, fostering partnership, rural revitalization and biodiversity conservation associated with the agricultural heritage systems etc. Yet amongst these commonalities, i.e. in particular of partnership (social), resilience (ecological), rural revitalization (economic), also implied that the three countries well recognise the vulnerability of agricultural heritage systems being replaced by modernization and development and thus emphasized these perspectives to conserve holistically and sustainably from the social, ecological and economic aspects.

However, fishery is still not major feature in GIAHS or the national programmes, with the exception of Korea that has a separate fishery heritage system programme, i.e. KIFHS. However, Korea's separation of its national programme for agricultural and fishery heritage system can be understood as more of a matter of administrative convenience; its Ministry for Food, Agriculture, Forestry and Fisheries was separated into Ministry of Agriculture, Food and Rural Affairs (MAFRA) for agriculture and forestry matters, and Ministry of Oceans and Fisheries (MOF) for fisheries, under the institutional restructuring in March 2013. Thus, it makes administrative sense to have separate management programmes of agricultural heritages and fishery heritages to be overseen by the respective ministries. Hence, one cannot conveniently conclude nor assume that Korea places more priority on fisheries than Japan and China just by the fact that it has a separate, specific national

programme for fisheries. Nonetheless Korea's effort is a good start and attempt to capture the traditional fishery specific features and contribute to the development of conserving fishery heritages in the field of agricultural heritage systems conservation.

Thus, East Asian experience and cooperation could drive global efforts to revalue agricultural heritage systems. The cooperation amongst China, Japan and Korea and their perspectives will be important to propose improvements to the FAO designation criteria for GIAHS which could be comprehensively applicable to both developing and developed countries.

In fact, the cooperation amongst these three countries are already underway, with the agreement of establishing of the East Asia Research Association for Agricultural Heritage Systems (ERAHS) reached on October 2013, marking an important milestone of this close cooperation. The first ERAHS Conference then took place in April 2014 in Xinghua City, Jiangsu Province of China and the second ERAHS Conference was held in Sado City of Japan on June 2015. The third conference is scheduled to be conducted in Geumsan County of Korea in June 2016. Although some deep-rooted political and diplomatic problems amongst the three countries remain, one hopes that through platforms such as the agricultural heritage systems that the respective countries could share, understand and learn from one another and forge stronger ties of mutual cooperation. Moreover, it is of hope that with the close cooperation among China, Japan and Korea, the network of GIAHS which is currently concentrated in East Asia could be further expanded to other countries in Asia, Africa, Latin America and even to developed Western nations, so as to strike a geographical balance to better capture the important agricultural heritages in the world.

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6. FINDINGS SYNTHESIS AND POLICY RECOMMENDATIONS

From the above findings from the three studies, it can be concluded that traditional coastal fishers diversify livelihoods not only economic motives but also for social reasons and personal aspirations. Through their multiple livelihoods, coastal fishers act as connectors of their natural environment, linking up fisheries with agriculture, forestry and other local industries, and through which they are custodians to the management of resources. However, the labour shortage in coastal fisheries in recent year implies that the multiple roles that fishers play are not valued by the society, nor well understood by the fishers themselves. As seen the Noto island case study, even with an increasing number of young fishers the problem of having no access to fishing rights pose uncertainties on their continuity and commitment to fishing as a lifetime occupation.

Fishing rights (or *Gyogyoken* in Japanese) in Japan apply only to coastal fisheries but is difficult for individuals, especially non-locals, to gain access to. The Fishery Law enacted in 1901 first gave legal status to communal territorial claims over coastal waters as fishing rights and granted these rights to Fishery Societies, which later in 1949 became Fishery Cooperative Associations (FCAs) and along with the administration of these rights were also transferred to the FCAs (Uchida and Wilen, 2004). By the Fishery Law, fishing rights are granted only to FCAs and so individual FCA members do not own these rights but are given permission in the form of license to fish within the FCA's administered waters. The fishing right is also non-transferable, its leasing prohibited and creation of mortgage rights restricted (Yagi, 2002). There are three types of fishing rights namely common fishery right, demarcated fishery right, and set-net fishery right. For an individual to gain access to the common fishery right, the approval by a majority of two-thirds of existing FCA members are required; for demarcated fishery right, individual fishers have the second priority after FCA; but for set-net fishery right have the lowest and moreover for individual's priority is granted to those who belong to the local community and have previous experience. Thus, for non-locals to become coastal fishers owning fishing rights, they would have to spend a considerable amount of time and effort to win the trust and recognition of other FCA members and need to start as apprentices as their only way to set sail on a fishing boat.

On the other hand, as mentioned in Chapter 3, most fishers of retired age still continue to hold on to their fishing rights and exercise this rights for fishing in their pastime. Many of them would hold on to their fishing rights for a lifetime. Apart for their love for the sea, another pragmatic reason for them holding on to their fishing rights could be that there is little resale value of their fishing boats and equipment, and even may costly for them to step down their boats and pay the disposal costs. Although the fishing right license usually has a duration for five to ten years and subjected to renewal, there is no age limit or stringent requirements from the individual, and renewals are hardly revoked. So unless the individual gives up on their own accord, it is likely that their fishing right licenses will be renewed as long as their fishing boats seem to be in good enough condition for fishing.

Thus, to bridge this gap between the younger aspiring fishers and the retired fishers, a co-sharing system of fishing rights, fishing boat and gear can be introduced. For instance, if we are to assume that a retired fisher will only be fishing for about 70 percent of the time as compared to his/her heydays, then the “savings” in fishing effort of 30 percent from three retired fishers will amount to approximately 90 percent of fishing effort, which theoretically can be shared with one new fisher. This illustrated hypothesis based on simple arithmetic may not seem to be an accurate representation of the actual needed ratio, yet nonetheless could provide the possibility to explore such co-sharing arrangements. Perhaps in the ratio of for every five retired fishers one new fisher can have access to this co-sharing fishing right system is a more realistic representation. Retired fishers can share or loan their fishing rights in return for a small fee with a upper limit up to a certain number of days per month. The new, aspiring fishers can then “rent” these fishing rights (days) and if necessary the fishing boats and gear from not only one but from several retired fishers, so that they will more availabilities to choose from and increase their daily chances to set out for fishing. Also, the new fishers can “hire” the services of the retired fishers whom can teach them about the ropes of fishing at the same time. However, such as co-sharing arrangement should only last for the first three years, and not more than five years, after which the new fishers should be granted of fishing rights so as to keep them motivated in continuing their profession. Moreover, this co-sharing system makes it conducive for new fishers to have time to take on multiple livelihoods and through which helps broaden their social networking with the local community in their initial years which in turn increases their likelihood to permanently stay in the community.

In order to encourage multiple livelihoods of fishers, some form of work-sharing mechanism could also be established at the municipality level for its labor policies. In a separate research, I have found that some farmers in Suzu city in Noto Peninsula will work on construction or roadwork jobs during the non-farming seasons from late autumn to end of winter, and then return to farming from early spring to summer. The construction industries on the other hand, often faces labor shortages during its peak period in winter. Thus, if there could be some NPO or local recruitment company that can manage such workshare arrangements, then communities with depopulation pressures could effectively overcome such labor shortage. This does not mean that there is not already self-initiated “workshare” arrangements at the individual level by engaging multiple livelihood. Rather the proposal is to better capture institutionally these labor force and their workshare patterns by establishing a department, outsourcing to other organizations or collaborating with recruitment companies. To incentivize this workshare culture, income tax reduction and other supportive measures could also be implemented to back up this workshare arrangements. Also, participants in these workshare arrangements need not be limited to local residents, but can be extended to those from neighboring towns and cities and even urbanites from the major cities. In this case, inter-municipalities cooperation on labor and taxation measures, or even coordination on the prefectural level is necessary to promote the workshare participation on a wider scale. This workshare can also

enhance the interlinkage between the rural with the urban, facilitating urbanites to play a more contributive role in sustaining of the rural community, environment and economy.

However, first there is a need to have agricultural statistical data and population census to be designed to capture situation of multiple livelihoods. Currently the labor count for each respective industry are counted separately and there is no data to show how proportion of the workforce holding multiple jobs. Statistical data on multiple jobs, if could be taken or derived, could shed light on the interdependency between industries, and also formulate the “degree of livelihood diversification” that would demonstrate also the resilience of its economy towards labor supply shocks, or vice versa the workforce resilience towards economic shock.

Findings from both case studies in Noto island and Himeshima island have shown that fisheries and other primary industries are interrelated and dependent on one another, in particular from the individual level who hold multiple livelihoods. To the individual, he or she is subjected to the administration of different sectoral authorities, which can be confusing and troublesome in terms of the adhering to the administrative demands and handling of different sets of paper work. Also, on a wider scale from the ecological perspective, the terrestrial and marine environments are interconnected yet segmented utilization of these environments through sectoral based administrative approach has failed to capture the importance and impact of this interconnectedness, as shown in Himeshima’s case where the declining of the primary industries seemed closely interrelated. The following could be considered to facilitate and promote more integrative approaches to agricultural policies and administration structure: (i) merger of fisheries, agricultural and forestry cooperatives, especially in places with diminishing population, (ii) enhance cooperation and collaborative efforts amongst fisheries, agriculture and forestry departments in municipal governments and (iii) establishing an interagency committee chaired by MAFF and represented by Fishery Agency and Forestry Agency to formulate policies that promote interagency and sectoral collaboration.

Conserving traditional fisheries systems need a holistic and integrative policy approach yet sectoral-based administrative structure and policies of today could not well capture its diversity and resilience. There is a need for integrated multi-sectoral approach to value these traditional, sustainable practices and creating new employment model and labour environment to value and utilize multifunctional roles that an individual could play. Such integrative policies that value the diversity of traditional agriculture, fisheries and forestry, unfortunately, are few today. The Less-Favoured Area (LFA) categorization under European Union’s Common Agricultural Policy (CAP) is a leading example of championing the conservation of traditional, small scale farming but unfortunately does not really take into account nor set out to promote sectoral interactions. Thus, programmes like GIAHS and the domestic systems such as those in Japan, China and Korea as

reviewed in this study should be given more emphasis, encouraged, prioritized and mainstreamed into national policies and strategies. Such programmes could set as model cases to highlight the importance of integrative and intersectoral approach in agricultural policies.

The findings of this thesis study have also shed light on other possible areas for future research. With regards to livelihood diversification, further research could explore the trade-offs, generation differences and attitudes towards holding primary vis-à-vis non-primary sector jobs. On management of traditional fisheries, more in depth study could be explored on the consensus building mechanisms between Himeshima and other fishing villages, also the interrelationship amongst fish species from analysing fishing seasons stated in *Fishery Season Rules*, as well as research on other case studies to further develop the “Forest-Land-River-Sea-Island” model case studies. As for policies in conserving traditional fisheries, perspectives specific to the conservation of fishery heritage systems could be explored, comparison could be made with non-Asian countries and constructing indicators or evaluation model in understanding the value of traditional agricultural (and fishery) systems.

7. CONCLUSION

The thesis examined the diversification strategies of livelihoods taken by fishers and how traditional coastal fisheries are managed in developed countries of East Asia through examining: (i) why fishers engage in multiple livelihoods, (ii) how are coastal fisheries managed traditionally, and (iii) how traditional fisheries are valued in existing policies.

On livelihood diversification, through the study of Noto island, Ishikawa Prefecture, Japan, it was found that factors and motivations affecting livelihood diversification strategies of fishers included historical background, personal aspirations (self-actualization), sense of satisfaction (spiritual wealth) and the valuing of rural, traditional livelihoods for its cultural and social importance. These factors provide new perspectives in understanding the motivations of livelihood diversification as part of the livelihood strategies positioned in the Sustainable Livelihood Approach Framework. Fishers with diverse livelihoods often serve the important yet neglected role as connectors to link up different sectors of the local economy.

On management of traditional coastal fisheries, through the study of Himeshima island, Oita Prefecture, Japan, it was found that the management of fisheries resources are not necessarily limited to the purpose of controlling fishing effort and amount of fish catch, but also about maintaining healthy marine environment to raise fish. Also, traditional communal rules in coastal fisheries that have been formed and passed on for generations are reviewed. The traditional fishery resource management of Himeshima based on co-management principles has shown that fisheries do not necessarily always cause a “tragedy of commons”. Moreover, as demonstrated by the Himeshima’s *Fishery Season Rules*, where the local communal rules and traditional knowledge on fishing seasons, methods, grounds and gear are shared with neighboring fishing communities in Kunisaki peninsula, it has shown that these traditional and local wisdom are not only kept exclusively to the insiders, but this could also be shared with outsiders of adjacent fishing grounds to ensure sustainability of marine resources.

However more interestingly in the case of Himeshima island, it is worth noting that as like the fishers in Noto island, households of Himeshima fishers also used to be agricultural farming. In other words, they engaged in multiple livelihoods. However, from the 1960s with the advent of fishing gear technology and a rising demand for fish in the growing economies of Japan, Himeshima households gave up on the laborious farming. As they turned more specialized in their fishing profession, agriculture started to vanish. However, as agriculture disappears, so do fish stocks. Without multiple livelihood options, fishers become vulnerable to shocks. Thus, while fisheries in Himeshima is still surviving today, thanks to the resource management practices such *Fishery*

Seasonal Rules, it alerted the fact that fishing communities without traditional management practices would probably be as less resilient as Himeshima.

The study found that rural economies were more integrated than generally thought and that primary industry were often interlinked and dependent on each other even they seemed like very different specializations. Especially in the case of traditional systems of agriculture, forestry and fisheries, in which these systems tend to exist on unfavorable or confined landscapes that are not suitable for large-scale modern farming. Within these confined landscapes there often exist the effective mosaic land uses for agriculture, forestry, inland and coastal fisheries, and their traditional systems that have continued for decades if not centuries. Yet the administrative structure and policies for primary industries of today are sector-based and do not place much importance in conserving traditional agricultural systems, instead of capturing holistically their integrated nature in a multi-sectoral approach and revaluing traditional, sustainable practices of agriculture, forestry and fisheries.

The study further examined the existing schemes and policies in East Asian countries on conserving value traditional agricultural heritage systems. Particularly, the study compared the policy developments of conservation of Globally Important Agricultural Heritage Systems (GIAHS), designated by Food and Agriculture Organization of the United Nations (FAO). The GIAHS sites are distributed in worldwide and several sites exist in China, Japan and Korea. Apart from the 5 key criteria of GIAHS – Food and livelihood security; Agro-biodiversity; Local and Traditional Knowledge; Culture, value systems and social organizations; Landscape and Seascape features - historical value, demonstration, resilience to change, multi-stakeholders participation, new business models promotion and representativeness are the main collective perspectives that the three countries take into consideration when selecting candidates for applying to FAO for GIAHS designation. This could suggest that these governments do not regard traditional agricultural systems as “dying industries” which need to keep alive by financial aid or subsidies, but rather recognized their marketing potential in generating higher value-added incomes for their products. Also, their commonalities, i.e. partnership (social), resilience (ecological), rural revitalization (economic), implied that the three countries well recognise the vulnerability of agricultural heritage systems in face of modernization and development. The three countries also regard traditional systems as resilient to stand the test of time and changes, and they are the best practice models that should be encouraged for dissemination. The GIAHS embraces the multi-sectoral approach and it values highly a system for diversity in the types of agriculture. It is thus one of the model case to conserve traditional agricultural (including fisheries) systems.

Hence, livelihoods in coastal fisheries are usually diverse and fishers often also engage in other occupations in agriculture or forestry, effective traditional fisheries management are interlinked with other primary sectors. Moreover, as traditional fisheries management are often interlinked with other primary sectors, effective management requires policies like GIAHS, which embraces the multi-sectoral integrated approach, to be implemented and mainstreamed in national policies for conservation and sustainable development of these traditional management systems. Hence, the study concludes that coaster fishers with diversified livelihoods play multiple roles to connect and sustain other industries, thus an integrated multi-sectoral approach in policies is needed to promote sustainable management of traditional coastal fisheries and create conducive environment for multiple livelihoods.

APPENDIX 1. (in Japanese)

Questionnaire for interview survey of fishers in Noto island, Nanao City, Ishikawa Prefecture

国連大学「能登の里山里海のつながり」研究 ーアンケート調査へのご協力をお願いー

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この調査は、国連大学の「持続可能な農林水産業」における「里山と里海の連携」に関する研究の一環として、主として能登半島の農業、林業、漁業に関する質問にお答えいただくものです。所要時間は25～30分程度です。質問の内容は主としてあなたのご意見やご感想をうかがうものです。考え過ぎることなく、お気軽にお答えいただければと思います。何卒ご協力のほど、よろしくお願いいたします。

(回答について)

- (1) アンケートはこの表紙を含め全部で16ページあります。
- (2) ご記入は鉛筆または黒や青のボールペンなどをお願いします。
- (3) このアンケートのほとんどの質問は、選択肢に○を付けて頂く形式のものです。ご自分で最も当てはまると思うものに○を付けてください。
- (4) 「その他」や自由記述の欄には、具体的にご記入ください。
- (5) なるべく全ての質問にご回答下さい。どうしても答えたくない質問がある場合は、飛ばして次の質問にお進みいただいてもかまいません。
- (6) 既に本アンケートにお答えいただいたことのある方は、ご回答をなさらないようにお願いいたします。

(データの取り扱いについて)

この調査は、個人情報の取り扱いに細心の注意を払って行なっております。アンケートにお答え頂く際に氏名、住所等の情報を伺うことはありません。提供して頂いた情報は統計処理を行い、個人を特定する形で用いることはありません。また、研究上の解析を行なうため以外には利用しません。

質問は次のページから始まります。

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1. あなた自身のことについてお聞かせください。

当てはまる番号に1つだけ○を付けて下さい。

1.1 あなたの性別は？ 1. 男 2. 女

1.2 あなたの年代は？

1. 10代 2. 20代 3. 30代 4. 40代
5. 50代 6. 60代 7. 70代 8. 80代以上

1.3 あなたの住んでいる町はどこですか。

1. 能登地方（市・町 地区）
2. （能登地方以外）石川県（市・町）
3. 県外（道・府・都・県）

1.4 あなたの出身地はどこですか。

1. 能登地方（市・町 地区）
2. （能登地方以外）石川県（市・町）
3. 県外（道・府・都・県）
4. 海外（国）

1.5 あなたは両親との続柄は何ですか。

1. 長男・長女 2. 次男・次女 3. 三男・三女以上

1.6 あなたは世帯主ですか。 1. はい 2. いいえ

1.7 あなたはこの町にずっと住んでいましたか。

1. はい 2. いいえ（_____年からここに来た・帰ってきた）

1.8 あなたはこの町に合計して何年間住んでいましたか。

1. 10年間以下 2. 10～19年間 3. 20～29年間 4. 30～39年
5. 40～49年 6. 50～59年 7. 60～69年 8. 70年間以上

1.9 あなたの仕事形態は、下記のどれに当たりますか。

(複数のお仕事をお持ちの場合は、**当てはまる全部の番号に○つけて**お答え下さい。)

- | | |
|------------------------|-------------|
| 1. 正規の社員、職員 | 7. 専業主婦・主夫 |
| 2. パート、アルバイト、契約社員、嘱託 | 8. 学生 |
| 3. 派遣、請負 | 9. 無職 |
| 4. 事業を営んでいる | 10. 退職・年金生活 |
| 5. 家業を手伝っている | 11. その他 () |
| 6. 家で仕事をしている (内職、自由業等) | |

1.10 あなたの業種は下記のどれに当たりますか。

(複数のお仕事をお持ちの場合は**当てはまる全部の番号に○つけて**お答え下さい。)

- | | |
|----------------|-------------|
| 1. 農業 | 7. 公務 |
| 2. 林業 | 8. 製造業 |
| 3. 漁業 | 9. 運輸業 |
| 4. 民宿経営 | 10. サービス業 |
| 5. 観光案内 | 11. 建設業 |
| 6. 卸売業、小売業、飲食店 | 12. その他 () |

1.11 上記の質問で選んだ業種のうち、収入の多い順番に1位から3位まで、その番号をお答え下さい。

- | | |
|--------------------------|--------------------------|
| 1位 (番) | 2位 (番) |
| 3位 (番) | |

2. あなたの世帯についてお聞かせください。

当てはまる番号に1つだけ○を付けて下さい。

2.1 現時、あなたを含めて同居 (同一敷地内を含む) している家族構成はどれですか。

- | | | |
|--------------------|-----------------------------|----------------|
| 1. 一人暮らし | 2. 夫婦のみの世帯 | 3. 親と子どもの2世代家族 |
| 4. 祖父母と親と子どもの3世代家族 | 5. その他 () | |

2.2 あなたを含めて同居している家族の人数は？

- | | | | |
|-------|-------|-------|-------|
| 1. 1人 | 2. 2人 | 3. 3人 | 4. 4人 |
|-------|-------|-------|-------|

5. 5人 6. 6人 7. 7人以上

2.3 あなたが知っている限り、あなたはこの町に住み始めて何代目になりますか。

1. 一代目 2. 二代目 3. 三代目 4. 四代目
5. 五代目 6. 六代目 7. 六代目以上（ 代目）

2.4 現在、あなたの世帯で働いている家族の人数は？

1. 1人 2. 2人 3. 3人 4. 4人
5. 5人 6. 6人 7. 7人以上

2.5 世帯全体の昨年度の年収は、仕事による収入と仕事外の収入（年金、資産など）を合わせて、おおよそどのくらいですか。

1. 世帯の収入はない 9. 800万円～1,000万円未満
2. 100万円 未満 10. 1,000万円～1,200万円未満
3. 100万円～200万円未満 11. 1,200万円～1,500万円未満
4. 200万円～400万円未満 12. 1,500万円以上
5. 400万円～600万円未満 13. わからない・答えたくない
6. 600万円～800万円未満

2.6 世帯全体の40年前の年収（当時の金額）は、仕事による収入と仕事外の収入（年金、資産など）を合わせて、おおよそどのくらいですか。

1. 世帯の収入はない 9. 800万円～1,000万円未満
2. 100万円 未満 10. 1,000万円～1,200万円未満
3. 100万円～200万円未満 11. 1,200万円～1,500万円未満
4. 200万円～400万円未満 12. 1,500万円以上
5. 400万円～600万円未満 13. わからない・答えたくない
6. 600万円～800万円未満

2.7 40 年前と現在あなたの世帯全体の収入源（年収）割合で教えてください。

収入源	1975 年（昭和 50 年）以前	2015 年現在
農業（米、野菜、家畜等）	割	割
林業（木材、シイタケ、山菜等）	割	割
漁業（魚、海藻、貝類等）	割	割
加工品（自家生産又は工場勤務）	割	割
工芸（自家生産又は工房勤務）	割	割
観光（民宿経営、農作体験、地域案内等）	割	割
資産運用（投資等）	割	割
年金	割	割
それ以外の仕事（本業の収入）	割	割
その他	割	割
合計	10 割	10 割

2.8 あなたの世帯全体の 40 年前と現在に所有土地面積を教えてください。

（単位をご明記ください）

所有土地面積	1975 年（昭和 50 年）以前	2015 年現在
水田		
畑		
山林		
住宅		
作業場		
宿泊施設（旅館や民宿）		
水産養殖水面		
その他		

3. あなたの世代の農林水産業についてお聞かせください。

当てはまる番号に1つだけ○を付けて下さい。

【農業・農作業】について

(※農業 —生産販売、 農作業 — 生産販売せず自家消費の田んぼ・畑のお仕事のみ)

3.1 あなたの世帯はどのように農業に関係していますか。

- | | |
|-------------------------|---------------------|
| 1. 販売のための農産物生産(農業) | 3. 他人の農業・農作業を手伝っている |
| 2. 自家消費だけのための農作物栽培(農作業) | 4. 全くしていない |

3.2 あなたの世帯が生産している農畜産物について、過去1年間の生産量が第1位から第3位までのものの番号を下欄に記入してください。

- | | |
|-------|----------------|
| 第1位 (| 番、品目名: _____) |
| 第2位 (| 番、品目名: _____) |
| 第3位 (| 番、品目名: _____) |

- | | |
|--------------|---------------------------|
| 1. お米 | 5. 花卉 |
| 2. 露地野菜 | 6. 果樹(ぶどう、なし、かき、くり、みかんなど) |
| 3. 施設野菜(ハウス) | 7. 畜産物 |
| 4. 植木・造園 | 8. その他 |

3.3 あなたの世帯又は過去1年間に農産物のみの総販売額はいくらでしたか。

- | | |
|------------------|--------------------|
| 1. 15万円未満 | 6. 400万円～600万円未満 |
| 2. 15万円～60万円未満 | 7. 600万円～800万円未満 |
| 3. 60万円～100万円未満 | 8. 800万円～1,000万円未満 |
| 4. 100万円～200万円未満 | 9. 1,000万円以上 |
| 5. 200万円～400万円未満 | 10. 販売していなかった |

3.4 あなたも含めて家族の中で、年間30日未満、年間30～59日(2ヵ月未満)、年間60～149日(2～5ヵ月未満)、150日(5ヵ月)以上、農業に従事している方の人数を記入してください。

	男性（うち 65 才未満）	女性（うち 65 才未満）
年間 30 日未満	人（ 人）	人（ 人）
年間 30～59 日	人（ 人）	人（ 人）
年間 60～149 日	人（ 人）	人（ 人）
年間 150 日以上	人（ 人）	人（ 人）

3.5 あなたの世帯は、農家だと思っていますか。

1. 全く思わない 2. あまり思わない 3. どちらともいえない 4. まあまあ思う 5. そう思う

3.6 上記の質問で「4」と「5」をを選んだ方にお聞きします。あなたはなぜ農家になりましたか。（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|---------------------|--------------------------|
| 1. 家業を継いでいるため | 6. 他の仕事がないから |
| 2. 農地・土地を引き相続しているから | 7. 農村に住みたいから |
| 3. 農業が好きだから | 8. 自然と関わる仕事をしたいから |
| 4. 農村が好きだから | 9. その他（理由を教えてください：_____） |
| 5. 食べ物を自分で作りたいから | |

【林業・山仕事】について

（※林業 — 生産販売のための木材やシイタケなどの林産物生産と山菜の採集、
山仕事 — 生産販売せず山の手入れ、シイタケなど林産物栽培、薪や山菜の採集のみ）

3.7 あなたの世帯はどのように林業に関係していますか。

- | | |
|--------------------------|-----------------|
| 1. 販売のための林産物生産・採集（林業） | 3. 他人の林業を手伝っている |
| 2. 実家消費のための林産物栽培・採集（山仕事） | 4. 全くしていない |

3.8 あなたの世帯が山で栽培し、あるいは山から採っている林産物について、過去1年間の生産量が第1位から第3位までのものの番号を下欄に記入してください。

第1位 (番、品目名: _____)

第2位 (番、品目名: _____)

第3位 (番、品目名: _____)

1. 木材	4. 花
2. キノコ類（栽培も含む）	5. 動物類
3. 山菜	6. その他

3.9 あなたの世帯又は過去1年間に林産物のみの総販売額はいくらでしたか。

- | | |
|------------------|--------------------|
| 1. 15万円未満 | 6. 400万円～600万円未満 |
| 2. 15万円～60万円未満 | 7. 600万円～800万円未満 |
| 3. 60万円～100万円未満 | 8. 800万円～1,000万円未満 |
| 4. 100万円～200万円未満 | 9. 1,000万円以上 |
| 5. 200万円～400万円未満 | 10. 販売していなかった |

3.10 あなたも含めて家族の中で、年間30日未満、年間30～59日（2ヵ月未満）、年間60～149日（2～5ヵ月未満）、150日（5ヵ月）以上、林業に従事している方の人数を記入してください。

	男性（うち65才未満）	女性（うち65才未満）
年間30日未満	人（ 人）	人（ 人）
年間30～59日	人（ 人）	人（ 人）
年間60～149日	人（ 人）	人（ 人）
年間150日以上	人（ 人）	人（ 人）

3.11 あなたの世帯は、林家だと思っていますか。

1. 全く思わない 2. あまり思わない 3. どちらともいえない 4. まあまあ思う 5. そう思う

3.12 上記の質問で「4」と「5」を選んだ方にお聞きします。あなたはなぜ林家になりましたか。（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|------------------|--------------------------|
| 1. 家業を継いでいるため | 6. 他の仕事がないから |
| 2. 林業が好きだから | 7. 農村に住みたいから |
| 3. 山が好きだから | 8. 自然と関わる仕事をしたいから |
| 4. 林産物を自分で作りたいから | 9. その他（理由を教えてください：_____） |
| 5. 山を引き継いでいるから | |

【漁業・海仕事】について

（※漁業 — 販売のための水産物漁獲・養殖、

海仕事 — 販売せず自家消費のための水産物漁獲・養殖のみ）

3.13 あなたの世帯はどのように漁業に関係していますか。

- | | |
|--------------------------|-----------------|
| 1. 販売のための水産物漁獲・養殖（漁業） | 3. 他人の漁業を手伝っている |
| 2. 実家消費のための水産物漁獲・養殖（海仕事） | 4. 全くしていない |

3.14 あなたの世帯が漁獲している水産物について、過去1年間に生産量が第1位から第3位までのものの番号を下欄に記入してください。

- | | | |
|-----|---|--------------|
| 第1位 | （ | 番、品目名：_____） |
| 第2位 | （ | 番、品目名：_____） |
| 第3位 | （ | 番、品目名：_____） |

- | | |
|----------------|--------------|
| 1. 魚類 | 4. 海産ほ乳類（鯨等） |
| 2. 貝類 | 5. 海藻類 |
| 3. 水産動物類（甲殻类等） | 6. その他 |

3.15 あなたが養殖している水産物について、過去1年間に生産量が第1位から第3位までのものの番号を下欄に記入してください。

- | | | |
|-----|---|--------------|
| 第1位 | （ | 番、品目名：_____） |
| 第2位 | （ | 番、品目名：_____） |
| 第3位 | （ | 番、品目名：_____） |

- | | |
|----------------|--------|
| 1. 魚類 | 4. 海藻類 |
| 2. 貝類 | 5. その他 |
| 3. 水産動物類（甲殻類等） | |

3.16 あなたの世帯又は過去1年間に水産物のみの総販売額はいくらでしたか。

- | | |
|------------------|--------------------|
| 1. 15万円未満 | 6. 400万円～600万円未満 |
| 2. 15万円～60万円未満 | 7. 600万円～800万円未満 |
| 3. 60万円～100万円未満 | 8. 800万円～1,000万円未満 |
| 4. 100万円～200万円未満 | 9. 1,000万円以上 |
| 5. 200万円～400万円未満 | 10. 販売していなかった |

3.17 あなたも含めて家族の中で、15歳以上の方で、年間30日未満、年間30～59日

【2ヵ月未満）、年間60～149日（2～5ヵ月未満）、150日（5ヵ月）以上について漁業に従事している方の人数を記入してください。

	男性（うち65才未満）	女性（うち65才未満）
年間30日未満	人（ 人）	人（ 人）
年間30～59日	人（ 人）	人（ 人）
年間60～149日	人（ 人）	人（ 人）
年間150日以上	人（ 人）	人（ 人）

3.18 あなたの世帯は、漁業者だと思っていますか。

1. 全く思わない 2. あまり思わない 3. どちらとも言えない 4. まあまあ思う 5. そう思う

3.19 上記の質問で「4」と「5」を選んだ方にお聞きします。あなたの世帯はなぜ漁業者になりましたか。（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|------------------|---------------------------|
| 1. 家業を継いでいるため | 6. 他の仕事がないから |
| 2. 漁業が好きだから | 7. 漁村に住みたいから |
| 3. 海が好きだから | 8. 自然と関わる仕事をしたいから |
| 4. 水産物を自分でとりたいから | 9. 現金収入が得られるから |
| 5. 収入源を増やしたいから | 10. その他（理由を教えてください：_____） |

3.20 あなたの世帯は漁業権・漁業許可を取得していますか。

1. はい（種類：_____） 2. いいえ

【農林水産業の全般】について

3.21 あなたの世帯の1年間の仕事・作業を教えてください。

例えば農業・農作業の場合、農耕から収穫までの時期を矢印線で引き、その線の上に収穫物をできるだけ書いてください。お米、野菜、果物、木材は品種名あるいは作物名、水産物は魚介類・海草類の名前、分かる範囲でお書きください。

	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	11月	12月
農業 (農作業)	例. 中島菜、能登金時 ←————→											
林業 (山仕事)												
漁業 (海仕事)												
その他の 仕事												

3.22 あなたの世帯はいつから農業、林業、または漁業をしていますか。

- | | |
|-------------|-------------|
| 1. 10年未満前から | 4. 30年前から |
| 2. 10年以上前から | 5. 40年前から |
| 3. 20年前から | 6. 50年前以上から |

3.23 農業、林業、漁業のうち、2つ以上されている方にお聞きします。あなたはなぜ2つもの職業をしていますか？（複数回答可。最も該当する番号に◎つけてお答え下さい。）

1. 収入を増やしたいから
2. 先祖代々に受け継がれている資産と伝統があるから
3. 自家消費・自給自足の暮らしを送りたいため
4. 海が見える沿岸地域で暮らしたいから
5. 家族の間に仕事を分担できるから
6. その他（理由を教えてください：_____）

3.24 2015年現在、あなたの農林漁業形態は次のどれですか。

- | | |
|----------------------|-------------------------|
| 1. 専業農家（農林漁業収入のみ） | 3. 第2種兼業農家（農林漁業収入以外が多い） |
| 2. 第1種兼農家（農林漁業収入が多い） | 4. 販売していない（自家消費のみ） |

3.25 40年前の1975年以前に、現在住んでいる家が農業・林業・漁業をされていた世帯の方にお聞きします。当時、あなたの世帯の農林漁業形態は次のどれですか。

- | | |
|----------------------|-------------------------|
| 1. 専業農家（農林漁業収入のみ） | 3. 第2種兼業農家（農林漁業収入以外が多い） |
| 2. 第1種兼農家（農林漁業収入が多い） | 4. 販売していなかった（自家消費のみ） |

3.26 上記の質問2.23と2.24に違う番号のお答えを選んだ方にお聞きします。なぜ40年前と現在を比べると、あなたの世帯の農林漁業形態が変わりましたか。下の欄にその理由を教えてください。

3.27 農林水産物を販売していない方にお聞きします。農林水産物を販売しない理由は次のどれですか。（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|--------------------|----------------------|
| 1. 価格が自分で決められなくて安い | 4. 高齢・労働力が不足のため |
| 2. 生産量が少なくて、不安定なため | 5. 直送や販売ルートの確保が難しいため |
| 3. 趣味・自家消費でやっているため | 6. その他（_____） |

3.28 あなたの農林漁業経営に後継者はいますか。

- | | | |
|-------|--------|-------|
| 1. 未定 | 2. いない | 3. いる |
|-------|--------|-------|

3.29 上記の質問に「いる」と答えた方にお聞きします。後継者の年代は？

- | | | | |
|--------|----------|--------|--------|
| 1. 10代 | 2. 20代 | 3. 30代 | 4. 40代 |
| 5. 50代 | 6. 60代以上 | | |

3.30 上記3.26の質問に「未定」と「いない」と答えた方にお聞きします。後継者がいてほしいですか？

- | | |
|------------------------|-----------------------|
| 1. はい、自分の子供に引き継いでほしい | 3. いいえ、後継者がいなくてもかまわない |
| 2. はい、他人でもいいので引き継いでほしい | 4. わからない |

4. あなたのご意見・ご感想をお聞かせください。

当てはまる番号に○を付けて下さい。

4.1 あなたはなぜここで暮らしていますか。

（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|------------------------|--------------------------|
| 1. 農村の暮らしが好きだから | 6. この地区・集落の人情と結束力が強いから |
| 2. ここの暮らしが豊かだと感じるから | 7. ここは仕事があるから |
| 3. 先祖・親の家と土地を引き継いでいるから | 8. 都会の生活が好きではないから |
| 4. 自給自足の暮らしを送りたいから | 9. その他（理由を教えてください：_____） |
| 5. ここで子育てしたいから | |

4.2 今の暮らしについてどう感じていますか。

(複数回答可。最も該当する番号に◎つけてお答え下さい。)

- | | |
|-------------------------|------------------------------|
| 1. 自給自足の暮らしで満足している | 5. いくつかのもの仕事をしないと生活が苦しい |
| 2. 経済的に大きな不安がないので満足している | 6. 経済的な不安があるので生活が苦しい |
| 3. 自然の中の暮らしで安らぎを感じている | 7. 特に何も感じていない |
| 4. ここの住民が減っているのはさびしい | 8. その他(理由を教えてください：
_____) |

4.3 今暮らしているこの町について好きなところは何ですか。

(複数回答可。最も該当する番号に◎つけてお答え下さい。)

- | | |
|-----------------------|------------------------------|
| 1. 自然が素晴らしい | 5. 伝統文化が素晴らしい |
| 2. 農林水産物が美味しい | 6. 特に何も感じていない |
| 3. 地域の人々が優しくて絆が強い | 7. その他(理由を教えてください：
_____) |
| 4. 人が多すぎなくて町が混み合っていない | |

4.4 今暮らしているこの町について嫌なところは何ですか。

(複数回答可。最も該当する番号に◎つけてお答え下さい。)

- | | |
|---------------|------------------------------|
| 1. 交通が不便 | 6. 雪や風などが大変 |
| 2. 医療機関が少ない | 7. お店や娯楽施設が少ない |
| 3. 仕事の選択肢が少ない | 8. 特に何も感じていない |
| 4. 社会が狭い | 9. その他(理由を教えてください：
_____) |
| 5. 人が少ない | |

4.5 農村・漁村の将来についてどう思っていますか。

(複数回答可。最も該当する番号に◎つけてお答え下さい。)

1. 都会からの移住者が増えていく
2. 今までどおり特に問題がない
3. 高齢化が進んで後継者が不足し、耕作放棄地が増える
4. 地域を支える担い手がいなくなる
5. その他：_____

4.6 「森・里・川・海のつながり」について、現在の暮らしの中で実感していますか。

1. 全く実感していない 2. あまり実感していない 3. どちらといえない
4. まあまあ実感している 5. そう実感している

4.7 上記の質問で「4」と「5」を選んだ方にお聞きします。あなたはどのように

「森・里・川・海のつながり」を実感していますか。（複数回答可。最も該当する番号に◎つけてお答え下さい。）

1. 森の手入れをすると、湧き水・川の水がキレイになって海の魚が増えたように感じる
2. 森、里、川、海は生活を支えるためにどれ一つも欠けてはならないと感じる
3. 森、里、川、海の幸と恵みをいただいている
4. その他：_____

4.8 農業・農村がどんな役割・機能を果たしていると思いますか。

（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|-------------------|--------------------|
| 1. 洪水の発生を防ぐ | 7. 生きもののすみかをつくる |
| 2. 土砂崩れを防ぐ | 8. 農村の景観を維持する |
| 3. 土の流出を防ぐ | 9. 文化を伝承する |
| 4. 河川の流れと水量を安定させる | 10. 癒しや安らぎをもたらす |
| 5. 地下水をつくる | 11. 体験学習と教育の場を提供する |
| 6. 暑さをやわらげる | 12. 医療・介護・福祉に役立つ |

4.9 林業・森林がどんな役割・機能を果たしていると思いますか。

（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|------------------|------------------|
| 1. 生きもののすみかになる | 5. 快適環境をつくる |
| 2. 地球の環境を守る | 6. 健康づくり、休養や娯楽の場 |
| 3. 水を保つ | 7. 景観の維持や文化の継承 |
| 4. 土砂災害と土壌の流出を防ぐ | 8. 物質の生産（木材等） |

4.10 漁業・漁村がどんな役割・機能を果たしていると思いますか。

（複数回答可。最も該当する番号に◎つけてお答え下さい。）

- | | |
|----------------------|------------------|
| 1. 海中と沿岸域の環境を守る | 6. 災害時の救援活動 |
| 2. 沿岸域の環境を美しく維持する | 7. 海域の環境監視 |
| 3. 河川・湖沼の内水面の環境を維持する | 8. 密輸や密入国など国境の監視 |
| 4. 沿岸域の環境と生き物のすみかを守る | 9. 安ぐらぎと学びの場 |
| 5. 海難事故時の救助 | 10. 伝統文化の創造 と継承 |

4.11 最後に、この町に対する思い、ここで暮らして感じる事など、能登の里山里海の自然と生活に関して補足したいことがあれば、ご自由にお聞かせください。

アンケートへのご協力、ありがとうございました。

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APPENDIX 2. Oita Prefecture Fishery Resource Management Regulations Table (in Japanese)

Degree of Strictness of Fishery Resource Management of Oita Prefecture									
資源管理 レベル	資源管理項目	罰 則	事 業	対象魚種	回遊	種苗支援率 地元：県	地 域	課 題 等	
<div>High</div> <div>強い</div> <div>↑</div>	法的規制 海洋生物資源の保存 及び 管理に関する法律 (TAC・TAE)	3年以下の懲役若しくは 200万円以下の罰金等 (アジ・サバ・マイワシ は対象外)	資源管理推進事業	第1種指定海洋生物 アジ、サバ、マイワシ 第2種指定海洋生物 マコガレイ、サワラ		資源量調査 標本船日誌 生物調査 データ整理収集	豊後水道 豊前海／瀬戸内海	県計画の見直し 国への報告義務	
	漁業調整委員会 指 示 (漁業者からの 要望が必要)	違反者 1年以下の懲役若しくは 50万円以下の罰金 →随時、機動的な罰 則可 違反者所属支店 上乗せ支援削減		タチウオ サワラ		資源量調査等 種苗放流補助(国)	豊後灘 豊前海／瀬戸内海	隣県共同の取組み	
				アワビ、アカウニ クルマエビ(13cm) マコガレイ(15cm) イ サ キ(20cm)	地先	1 : 1	全県(一部※ 除く) 豊後灘以南 豊後水道北部	全県への拡大 規制のレベルアップ	
	資源管理計画	違反者所属支店 上乗せ支援削減	資源管理実践支 援事業	イ サ キ(20cm) クルマエビ(11cm) マコガレイ(15cm) ガ ザ ミ(15cm) カ サ ゴ(10cm) ヒ ラ メ(25cm) アワビ(10cm) タチウオ	広 域 地先	1 : 3/4	豊後水道南部 豊前海 全 県 杵築、佐伯 豊後水道	漁業者の同意が必要 福岡・山口・大分3県 の調整が必要 委員会指示発出を 検討するための 科学的根拠が不足 ※禁漁区設定困難 隣県共同の取組み	
<div>Low</div> <div>弱い</div> <div>↓</div>	資源管理 遵 守 (前提)	違反者 6ヶ月以下の懲役若しくは 10万円以下の罰金 違反者所属支店 上乗せ支援削減	全 県	クルマエビ アワビ ガ ザ ミ	全長10cm以下採捕禁止 全長10cm以下採捕禁止 禁漁期設定 甲幅15cm以下採捕禁止				

Himeshima's
Fishery Season
Rules

※
アワビについては、国東・杵築・佐伯地区においては漁場となる磯が少ないため、禁漁区の設定が困難。
アカウニについては、名護屋のみ28年度試験的に初めて放流に取り組むため、禁漁区の設定を見送っているが、他地区では禁漁区の設定を行い、資源管理に取り組んでいる。

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Nov 2006 – Sep 2010	Assistant Director of International Relations, International Relations and Security Division, Ministry of Transport Singapore
Aug 2005 – Aug 2006	Coordinator of International Relations, International Affairs Division, Miyazaki Prefecture Hall, Japan
Aug 2003– Jul 2005	Assistant Language Teacher, Miyazaki City Board of Education, Japan

EDUCATION

Apr 2015 – Mar 2018	Doctor of Philosophy, Agricultural and Life Sciences (Global Fisheries Science), Graduate School of Agricultural and Life Sciences, The University of Tokyo
Oct 2010 – Sep 2012	Masters in Public Policy, Graduate School of Public Policy, The University of Tokyo Recipient of the Japanese Government MEXT Scholarship
Jul 2002 – May 2003	Degree in Bachelor of Arts with First Class Honours, National University of Singapore Top achiever for the Faculty of Arts of 2002/2003 cohort.
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HONORS/ACHIEVEMENTS

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- Honorary Mention, Japanese Essay Writing Contest, The JET Journal 2005-2006
- Mitsui Toatsu Medal and Book Prize for Top Achiever of Department of Japanese
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RESEARCH RESULTS RELATED TO THESIS:

1. **【Web Published Report】** Yiu, E. and Yagi, N. (2017) “Examining the role of Himeshima island in Kunisaki Peninsula Usa GIAHS through its traditional fishery resource management”, FY2016 Research Project on Conservation of Kunisaki Peninsula Usa GIAHS, The Kunisaki Peninsula Usa GIAHS Promotion Association Website, March 2017, pp.48 (in Japanese)<http://www.kunisaki-usa-giahs.com/news/detail.php?id=201704121354026163>
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4. **【Newspaper Commentary】** Yiu, Evonne (2017) Potato chip panic: why Japan’s future food security depends on solutions from its past. The Japan Times.29 May 2017.
5. **【Publication Editor】** Yiu, E. & Nagai, M (eds) (2016). Noto Satoumi Movement: Passing on Wisdom of Living with the Sea. UNU-IAS OUIK Biocultural Diversity Series 3. United Nations University Institute for the Advanced Study of Sustainability Operating Unit Ishikawa/Kanazawa, Japan. 80pp.
6. **【Web Article】** K. Ichikawa, E.Yiu(2016) Conserving Resilient and Multifunctional Sustainable Landscapes, OurWorld2.0, 08.04.2016. <https://ourworld.unu.edu>
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