


Biodiversity and Livelihoods

-The *Satoyama* Initiative Concept in Practice-

SATOYAMA
INITIATIVE





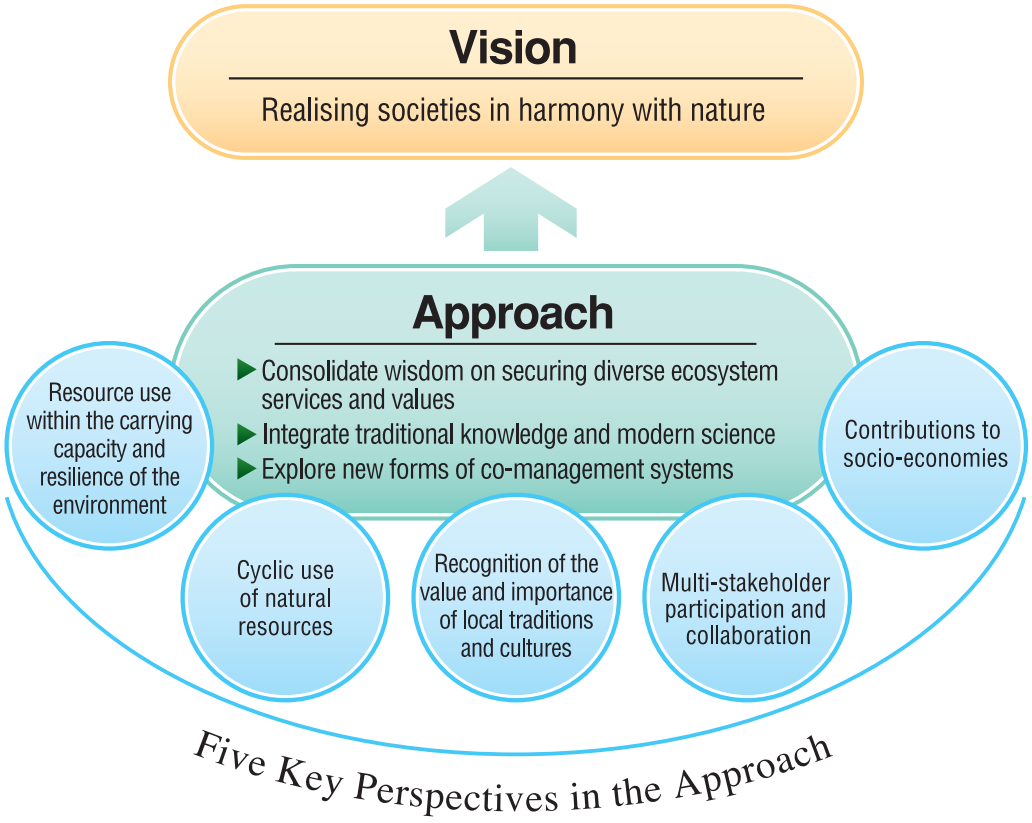
Introduction

People in various parts of the world have, for a long time, been finding ways to utilise and manage natural resources for their daily needs and activities such as agriculture, forestry and fisheries, in a way that takes into consideration the balance with nature. Humans have also been maintaining these ways of life while improving on them. However, in recent years, these human-influenced natural environments, which have been formed by the interactions between humans and nature, and their sustainable practices and knowledge, are threatened by urbanisation, industrialisation, and rapid population increase or decrease in many parts of the world.

The vision of the *Satoyama* Initiative is to realise societies in harmony with nature. In order to maintain and rebuild landscapes in which land and natural resources are used and managed in a sustainable manner, the Initiative proposes the following three-fold approach: consolidate wisdom on securing diverse ecosystem services and values; integrate traditional ecological knowledge and modern science to promote innovations; and explore new forms of co-management systems or evolving frameworks of "commons" while respecting traditional communal land tenure.

In achieving the above aim, the Initiative looks into the relationships between humans and nature in human-influenced natural environments from the social and scientific viewpoints, and collects numerous case studies applicable to various crises and socio-economic changes, in order to share them widely. As part of the effort, in 2008 and 2009, the Ministry of the Environment of Japan and United Nations University Institute of Advanced Studies (UNU-IAS) conducted case studies[1] on the interactions between humans and nature and related activities around the world. This booklet introduces sixteen selected case studies from the ones gathered, and highlights key points from the five perspectives of the Initiative (see diagram below). Please refer to the website URL on each page for more details on each case study.

1 Study sites were selected by taking into consideration regional balance, diversity of landscapes and activities, and feasibility of conducting case studies.



■List of case studies and perspectives featured in each case study

Region	Name of case studies		Perspectives featured in each study				
			1) Resource use within the carrying capacity and resilience of the environment	2) Cyclic use of natural resources	3) Recognition of the value and importance of local traditions and cultures	4) Multi-stakeholder participation and collaboration	5) Contributions to socio-economies
Asia	Case1 (p.4)	Sustainable use and management of natural resources through traditional land use (Ifugao Province, Philippines)	●				●
	Case2 (p.5)	Multi-cropping and compost technology for sustainable agriculture (Kampong Cham Province, Cambodia)	●	●			
	Case3 (p.6)	Homegardens: sustainable multi-strata land use systems (Kerala State, India)	●		●		
Europe	Case4 (p.7)	Landscape management through sustainable agriculture, stock farming, and forestry (Bavaria (Bayern) State, Germany)		●			●
Africa	Case5 (p.8)	Small-scale catchment management by fishermen and farmers (Northern Region, Malawi)	●		●	●	
North America	Case6 (p.9)	Sustainable agriculture and biodiversity conservation in large-scale paddy fields (Louisiana State, U.S.)	●				●
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	Case13 (p.16)	Environmentally friendly agriculture to restore the Crested ibis in the wild (Niigata Prefecture, Japan)	●				●
	Case14 (p.17)	Reintroduction of white storks in the wild and promotion of agriculture (Hyogo Prefecture, Japan)	●				●
	Case15 (p.18)	Village revitalisation through unique natural landscapes and local tradition (Ishikawa Prefecture, Japan)			●		●
	Case16 (p.19)	Forests are Lovers of the Sea campaign to restore healthy connected basins (Miyagi Prefecture & Iwate Prefecture, Japan)	●			●	

No.1

Sustainable use and management of natural resources through traditional land use

Asia - Ifugao Province, Philippines

Outline

Forests have been preserved in relatively good condition in the Cordilleras mountain range of northern Luzon in the Philippines. Here, the Ifugao people, a minority mountain tribe, have been living and farming rice terraces for generations. The Ifugao landscape is shaped by common forests, privately owned forests (*muyong*), cultivated land for vegetables, swidden, rice paddies and terraces, communal grasslands, and settlement areas. The Ifugaos obtain livelihood resources through multiple land use such as rice terrace farming, swidden cultivation, collection and harvesting of products such as firewood, materials for housing construction and woodcarving tools, food, and medicine from *muyong*. These practices also contribute to the sustainability of the region.

In the context of the five perspectives of the *Satoyama* Initiative

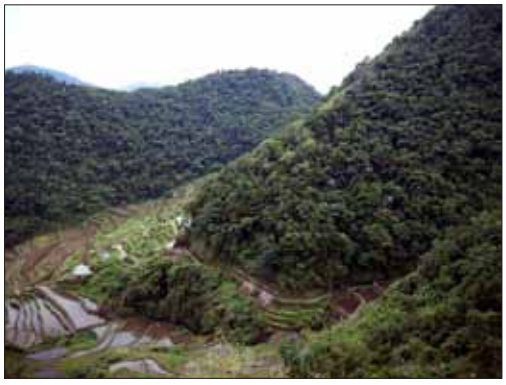
Perspective 1: Resource use within the carrying capacity and resilience of the environment

Common forests located near the top of mountains play an important role as a water source. *Muyong* spreads in areas below this, forming mosaics with rice terraces and settlement areas, and serves to reduce surface water runoff, restrict erosion and limit the accumulation of dirt in the rice paddy fields. Furthermore, people manage *muyong* through various ways which help revegetation after cutting. The sustainable use and management of natural resources have been maintained in this region through land use in consideration of natural conditions such as altitude and location.

Perspective 5: Contributions to local socio-economies

Numerous layers of rice terraces that have been supported through sustainable use and management of natural resources spread across the steep v-shaped slopes of the valley, creating a magnificent landscape. The area was included on the World Heritage List in 1995 and has become a popular tourist attraction, attracting a large number of visitors.

Panoramic view of Bagaan settlement



Rice terrace and *muyong* in Bagaan settlement

Overview of multiple land use in Bagaan village

Source: Noboru Matsushima and Yasuhiro Tojo "Use and Management of "Muyong" in Ifugao Province, Northern Luzon Island in the Philippines"
http://satoyama-initiative.org/en/case-studies/asia/agriculture/philippines

No.2

Multi-cropping and compost technology for sustainable agriculture

Asia - Kampong Cham Province, Cambodia

Outline

In Cambodia, the rapid development of agricultural technologies has significantly increased the amount of agricultural products particularly in the last decade. However, the majority of farmers use agricultural chemicals, such as chemical fertilizers, herbicides or pesticides to maintain high levels of crop yields, and this affects the ecosystems in various ways. In addition, farming systems dependent on mono-cropping and plant residue burning have been pointed out as non-sustainable. Attention has therefore been focused on achieving sustainable land use and appropriate natural resource management.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

Some upland fields in Wat Chas village are suitable for growing vegetables. In recent years, four farmers have converted their farming systems from mono-cropping to multi-cropping. Multi-cropping system is the practice of growing two or more crops in the same area during a single growing season. It is an efficient way of using agricultural land, which also ensures year-round usage of land, and can reduce soil erosion and sustain humus topsoil. Multi-cropping systems increase the competitiveness of cash crops and, in some cases, reduce the amount of herbicides required for weed control.

Perspective 2: Cyclic use of natural resources

Composting techniques have been introduced to the farmers in Wat Chas village in the hope that it will contribute to decreasing the use of burning practices and the expense of chemical fertilizers. Compost is organic fertilizer made from plant residues and farmyard manure. It helps increase soil organic matter, enhance aggregation and conserve soil moisture. Currently, 24 compost boxes and ten organic farms have been set up in Wat Chas village.

Multi-cropping field in Wat Chas village

Farmer collecting rice straw for composting in Wat Chas village

Compost box filled with plant residues in Wat Chas village

Source: Lalita Siriwattananon, Machito Mihara and Kaoru Ichikawa "Land Use and Natural Resource Utilization and Management in Kampong Cham, Cambodia" http://satoyama-initiative.org/en/case-studies/asia/agriculture/kampong-cham-cambodia

No.3

Homegardens: sustainable multi-strata land use systems

Asia - Wayanad District, Kerala State, India

Outline

In Wayanad District of Kerala State, large numbers of homegardens owned by small and marginal farmers are found. Homegarden is a system of multi-strata land use where plants of various heights are placed near a residential area imitating natural forests to provide products such as food, fodder, fuel, timber, medicines and/or ornamentals. In traditional agroforestry systems composed mainly of homegardens, the native tree composition of farmlands are largely left intact, while only the understory plants are replaced by crops. This system is contiguous with natural forests and provides unhindered habitat for wildlife species in the area due to the diversity in plant species and high shade.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

A typical homegarden of Wayanad District represents an operational farm unit which integrates trees with field crops, livestock, poultry and/or fish, and contributes to nutrient recycling and soil protection. It increases the value of output per unit of land through spatial or inter-temporal inter cropping of trees and other species.

Perspective 3: Recognition of the value and importance of local traditions and cultures

In addition to production value, homegardens have important social and cultural functions. At times they serve as a status symbol. Plant species that are necessary for religious ceremonies and most traditional medicinal plants are encountered in homegardens, often providing the last refuges for species that are useful but not commercially viable for cultivation.

View of landscape of Wayanad with its traditional lowlands, which were used to grow paddy, and uplands with homesteads (Photo by A.V. Santhoshkumar)

Traditional homegarden
(Photo by A.V. Santhoshkumar)

Source: A.V. Santhoshkumar and Kaoru Ichikawa "Homegardens: sustainable land use systems in Wayanad, Kerala, India"
http://satoyama-initiative.org/en/case-studies/asia/agriculture/wayanad-kerala-india

No.4

Landscape management through sustainable agriculture, stock farming, and forestry

Europe - Bayern State, Germany

Outline

In Europe, farmland accounts for more than half of the total land use making it a target area for biodiversity conservation. In southern Germany, most woodlands have been converted into farmlands over many centuries and the present countryside is said to have remained unchanged since medieval times. At present, landscape management is carried out through sustainable agriculture, stock farming, and forestry by farmers who are the managers of the rural environment, and they are supported by government policy.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 2: Cyclic use of natural resources

A cattle farm in the region has been converting the byproducts of cattle manure into bio-gas and liquid fertilizer which is a quality fertilizer for grass. Bio-gas, on the other hand, is used for electricity generation, and the electricity is used for lighting, refrigeration, and heating. There is no odour which is often associated with stock farming. During winter when there is snow accumulation, the cattle are kept in the shed, where their manure can be accumulated and recycled; and owing to this, the farm is almost entirely self-sufficient in electricity.

Perspective 5: Contributions to local socio-economies

Local farms in the Bayern State have difficulty in earning profit from farm products alone, and therefore attempt to diversify their management, for instance by selling value-added processed products or by partnering with tourism. In addition, the number of farmers practising organic farming has increased in recent years. Although more time and effort are required for organic farming, products can be sold at a higher price in the market.

German countryside

Broadleaf forest in southern Germany

Source: Noboru Matsushima and San'ei Ichikawa “Landscape Management in Germany” http://satoyama-initiative.org/en/case-studies/europe/agriculture/germany

No.5

Small-scale catchment management by fishermen and farmers

Africa - Northern Region, Malawi

Outline

Lake Malawi is world-renowned for its great variety of endemic fish species and is a biodiversity conservation hotspot. Fishing for human consumption and income, habitat degradation as a result of soil erosion from deforestation and cultivation are affecting fish fauna, and drawing major concern. However, the community of Chindozwa village adjacent to Lake Malawi, has always been seeking to balance the use of the land and lake based on their beliefs.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment & Perspective 3: Recognition of the value and importance of local traditions and cultures

The community of Chindozwa village sees the limnological unit as the unit for production and society. This belief has been shown in various rituals and practices. Its central tenet is that trees on the top of mountains are the closest to the gods, hence cutting is forbidden, and that trees must be preserved to protect the path of rainwater runoff from the top of mountains to the lakes. The ritual for success in fishing, for example, needs various plants from within the village. In the 1980s, when crop fields had to be abandoned and forests cleared due to an outbreak of the cassava mealy bug, villagers attempting to decrease the pressure on the forest switched from using fire torches in fishery to paraffin lamps.

Perspective 4: Multi-stakeholder participation and collaboration

Concerned by the deforestation, a group of villagers made up of a majority of fishermen started reforestation activities in 1988. For instance, instead of using natural broadleaved tree for making canoes, the fast growing *Gmellina* trees are used and planted around the houses. Activities that began at the household level became an organisation in 2009 with rapidly expanding partnerships with neighbouring villages, government agencies and institutes, and local NGO/NPOs.

Landscape of Chindozwa village and its surroundings (Photo by Setsuko Nakayama)

Rock-dwelling cichlids of the mbuna group of Lake Malawi (highly prized in the ornamental fish industry but vulnerable to sedimentation) (Photo by Setsuko Nakayama)

Gmellina planting in the residential area

Source: Setsuko Nakayama "Small Scale Catchment Management in Malawi" http://satoyama-initiative.org/en/case-studies/africa/agriculture/malawi

No.6

Sustainable agriculture and biodiversity conservation in large-scale paddy fields

North America - Louisiana State, U.S.A

Outline

In the Louisiana State, USA, views toward nature and ways of utilisation have reportedly been changing over the past two decades. Planting of multiple crops in the same area, reduced use of pesticides and agro-chemicals are some examples of sustainable farming systems taken up by even large scale farmers. In the wetlands (paddies) called working wetlands in Louisiana, multiple activities such as rice production, crawfish farming and waterfowl habitat provision have been carried out.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

In St. Martin Parish, Louisiana, farmers cultivate rice and farm crawfish simultaneously in working wetlands. Crawfish in the paddies are fed on by migrating birds, and thus, the biodiversity of the area is preserved. Released crawfish feed upon aquatic insects and tadpoles in the paddies. The use of pesticides has been minimized to ensure that there is sufficient food for crawfish.

Perspective 5: Contributions to local socio-economies

Working wetlands allow the production of two products from a single paddy. Such efforts have been prompted by the unstable price of rice in recent years, and help reverse the risks of cultivating only rice. After the first rice harvest, farmers would take into account the price of rice and crawfish to make decisions on whether to have the second harvest of rice in the autumn, or to harvest the crawfish.

A working wetland

Crawfish that live in the paddy field

Source: Mitsuhiko Toda and Takashi Inoue “The sustainable use and biodiversity of paddies fields of Louisiana” http://satoyama-initiative.org/en/case-studies/americas/agriculture/louisiana

No.7 Community-based sustainable forest management

North America - Oaxaca State, Mexico

Outline

The State of Oaxaca in Mexico is recognised as the most important area for biodiversity conservation in the country. Community-based forest conservation activities integrated with traditional governance systems have been successfully implemented in the last few years. Community-based forest management (CBFM) in Ixtlan de Juarez does not only ensure the sustainable use of forest resources, but also provides socio-economic benefits to the community.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 3: Recognition of the value and importance of local traditions and cultures

The Ixtlan de Juarez community has adopted a traditional indigenous governance system, distinct from the state or national governing systems, that gives particular importance to elders, open assemblies, and consensus. Such a governance system that gives priority to the community has contributed to the efficient utilisation and management of natural resources, including access to forest resources, timber production and the obligation of the community to participate in forest conservation activities.

Perspective 4: Multi-stakeholder participation and collaboration

The community of Ixtlan de Juarez cooperates with the government and various non-governmental organisations (NGOs). The World Wildlife Fund (WWF) is one of the international NGOs that has provided training for local forest technicians and helped promote and develop community-based ecotourism.

Ixtlan de Juarez

Timber factory managed by the communities in Ixtlan de Juarez

Source: Kana Matsuzaki and Bernard Yun Loong Wong “Forest management through community-based forest enterprises in Ixtlan de Juarez, Oaxaca, Mexico” http://satoyama-initiative.org/en/case-studies/americas/forest/mexico

No.8

Sustainable use and management of natural resources in the Potato Park

South America - Cusco Region, Peru

Outline

The Potato Park is located in the centre of origin of potatoes in the Andes mountains. The Park cultivates diverse species of crops besides potatoes, with multi-stakeholder participation. This is a landscape conservation initiative based on the deeply rooted philosophy of the Quechua people.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 3: Recognition of the value and importance of local traditions and cultures

The Park incorporates the Andes *ayllu* philosophy in the use and management of natural resources. Among its activities are the development and management of databases of traditional herbal medicines and treatments for future generations, and the operation of a traditional recipe restaurant and handicraft centre.

Perspective 5: Contributions to socio-economies

By conserving and sustainably using biological resources, several creative economic collectives have been established, including the seed repatriation and conservation collective, the gastronomy collective, the women's traditional knowledge recording collective, the handicraft collective, the eco-guide collective, and the medicinal plant collective. Activities of these collectives have also contributed to the improvement of the social status and income of women in the communities.

A village in the Potato Park

Seed repatriation and conservation centre in the Potato Park

Women participating in a workshop at the Potato Park

Source: Alejandro Argemudo and Bernard Yun Loong Wong "The Ayllu System of the Potato Park, Cusco, Peru" http://satoyama-initiative.org/en/case-studies/americas/agriculture/ayllu-system

No.9

Sustainable use and management of natural resources based on mosaic-patterned land use

South America - Misiones Province, Argentina

Outline

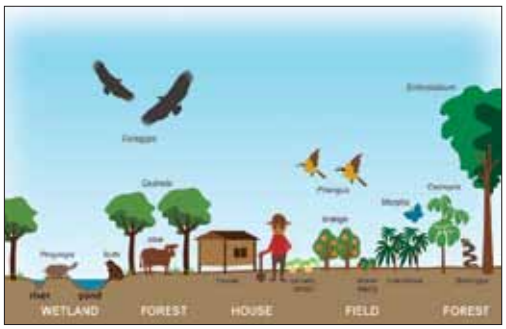
Chacra refers to mosaic land use patterns centreing on agricultural lands commonly seen in Argentina. A chacra consists of a piece of land managed by a single family unit, centreing on the house and agricultural lands, which include secondary forests, plantations, and water bodies. The chacra in Misiones is located between the urban area and nature reserve, and functions as a buffer zone.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

In the Cabure-i area of Andresito, Misiones, a chacra covers a land area of about 15 hectares per site, where agricultural fields spread around the house, and are surrounded by secondary forests. *Mandioca* (*Manihot esculenta,* or cassava/manioc) is mostly cultivated in the fields, in addition to a wide variety of other crops. The secondary forests surrounding the fields are sometimes used for firewood and charcoal. While chacra cannot be compared to primeval forests, it contains diverse environments in mosaic pattern, which sustains a high level of biodiversity.

Landscape of a chacra in Andresito



Cross section of chacra

Perspective 5: Contributions to local socio-economies

In order to foster a self-sustaining economy for the local community, the development of marketing mechanisms for agricultural products derived from chacra remains an issue. A cooperative has been established in the Cabure-i area that regularly supplies processed manioc, vegetables and other products to the targeted neighbouring tourist region of Iguazú. These efforts which are not feasible for individual farmers have been made possible through a union.

Source: Mitsuhiko Toda and Ginzo Aoyama "Land Use and Biodiversity Patterns on Chacras in Northeast Argentina" http://satoyama-initiative.org/en/case-studies/americas/agriculture/argentina

No.10

Large-scale nature-friendly agriculture incorporating biodiversity conservation

Oceania - State of Queensland, Australia

Outline

The State of Queensland, located in the northeastern part of Australia, has the world's oldest rainforest and is one of most biologically diverse regions of the country. However, the agriculture and forestry that began there in the latter half of the 19th century have fragmented the rainforest, and together with agricultural chemicals and soil erosion, have hindered its biological diversity. To deal with such problems, nature-friendly agriculture through efforts including preserving forest patches in farms and creating artificial lakes and wetlands have been practised.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

At a certain tropical fruit farm, more than two-thirds of the 89-hectare property remains as tropical rain forest. Retaining the tropical rain forest within the fruit farm conserves biodiversity. This has the added merit of housing many beneficial organisms such as pollinators or animals that feed on pests.

In addition, at a certain sugar cane farm, artificial lakes and wetlands were used to prevent soil erosion and outflow of nutrients by recycling accumulated nutrients into the fields. Such efforts improve soil fertility and contribute to the conservation of river and coastal ecosystems.

Remaining forest beside the fruit farm (Photo by Stefan Ottomanski)

Artificial wetland

Perspective 4: Multi-stakeholder participation and collaboration

Some of the activities of nature-friendly agriculture involve entities such as environmental organisations or research agencies. For example, the manager of the sugar cane farm has had the support of an environmental NGO, Terrain Natural Resource Management- Herbert Team, and of the Bureau of Sugar Experiment Stations (BSES), which is a research agency on sugar cane production.

Source: Masatoshi Sasaoka and Ryutaro Ohtsuka "Nature-Friendly Agriculture in the State of Queensland, Australia"
http://satoyama-initiative.org/en/case-studies/oceania/agriculture/nature-friendly-agriculture-in-the-state-of-queensland-australia

No.11

Sustainable use and management of natural resources rooted in traditional rules

Oceania - Western Province, Solomon Islands

Outline

In addition to subsistence activities such as farming, fishing, and gathering food from forests, in recent years under the influence of the market economy, residents of the Solomon Islands have been making a living through activities such as selling marine resources and crops. Mechanisms of traditional land use and natural resource use are still a part of these activities. In Olive village on New Georgia Island of the Western Province, various land uses including diverse types of forest for different purposes are distributed in a mosaic pattern, and each forest type has different flora and fauna.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

The residents use both the land on New Georgia Island (main island) and on barrier islands located off the coast for cultivation in different ways. On the main land, cyclic land use such as shifting cultivation has been carried out and various vegetation types spread like a mosaic. Cultivation periods last from two to three years, and fallow periods for about 30 years. Diverse forest products such as medicinal plants and trees for building house are gathered from modified forests which have been established in fallow land. In contrast to the main land, fields on the barrier islands are cultivated almost all the time. The barrier islands, whose agricultural productivity is much higher than the main island's, are intended to be used differently from the main island, where people may grow new types of cash crop, to minimise the risk to residents' livelihoods.

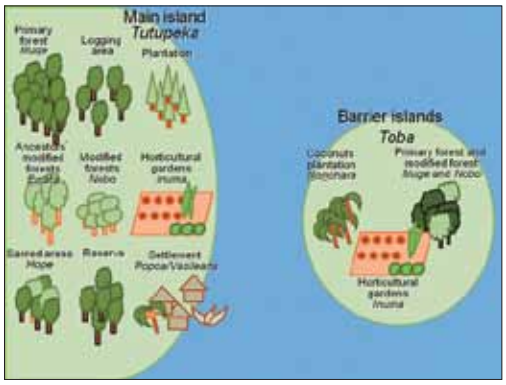


Illustration of classification of land use in Olive village

Carving a canoe out of a large white beech trunk (Photo by Takuro Furusawa)

Perspective 3: Recognition of the value and importance of local traditions and cultures

There are various traditional rules for the conservation of local ecosystems and to enhance sustainability of the use of natural resources by the community. One example of such rules concerns the use of a scarce tree, the white beech (*Gmelina moluccana*). When a person knows that a new canoe will need to be made, he has to find a young tree and make a mark on it to inform the other residents of its future use. Then, when it is time to make the canoe, he has to ask for the chief's permission as is the custom.

Source: Takuro Furusawa, and Ryutaro Ohtsuka and Masatoshi Sasaoka "Living by Utilizing Various Modified Natural Resources in the Solomon Islands" http://satoyama-initiative.org/en/case-studies/oceania/agriculture/solomon-islands

No.12

Beef and horsemeat production following traditional *makihata* system

Nishinoshima Town, Oki District, Shimane Prefecture, Japan

Outline

Nishinoshima Town used to have extensive *makihata*, a four-field farming system that combines grazing and field farming. Although *makihata* itself is not practised in Nishinoshima today, breeding and production of beef cattle and horses remains the primary industry of the region, and the system of sustainable use and management of land and natural resources originated in *makihata* is still maintained in the industry. Continuation of grazing contributes to maintaining the unique landscape of the region comprising turf grasslands and sparse woods, terraced fields, stone fences that divide land, and other features, as well as to preserving the rare grassland ecosystem.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment &
Perspective 3: Recognition of the value and importance of local traditions and cultures

These divisions into pasture lots are still maintained today, and the number of grazing cattle and horses and the frequency and timing of grazing are managed according to the 19 divided pasture lots. Oki Dozen Agricultural Cooperative Union, which manages the pastures, makes the necessary adjustments when the grazing volume of a specific pasture lot is high, for example by asking some farmers to transfer the grazing location to lots that are grazed less.

Perspective 3: Recognition of the value and importance of local traditions and cultures &
Perspective 4: Multi-stakeholder participation and collaboration

A stockbreeding farm pays a fee of 5,500 yen per animal per year for grazing in a public pasture. The fee is not paid to the landowner but is appropriated into the common expenses for managing and maintaining *makihata*. Landowners of public pastures accept the use of pastures for grazing by others as in the past *makihata* days regardless of whether or not the owners are engaged in grazing of cattle and horses. Such efforts have preserved a cooperative management system unaffected by landownership.

In addition to following the *makihata* stockbreeding practice based on traditional knowledge and technology, new activities have started in recent years: a new voluntary group comprising local residents, called Group to Pass On *Makihata* to Future Generations has been formed and community revitalisation activities are ongoing.

Public Pastures in Nishinoshima Town

Aigaki, the stone fences that divide each pasture lot, still existing today

Source: "Beef and horsemeat cattle farming inheriting traditional "makihata" in Nishinoshima Town, Oki Islands, Shimane Prefecture, Japan"
http://www.env.go.jp/nature/satoyama/syuhourei/pdf/cje_1.pdf

No.13

Environmentally friendly agriculture to restore the Crested Ibis in the wild

Asia - Sado City, Niigata Prefecture, Japan

Outline

The Crested ibis was widely distributed in Eastern Asia up until the 19th century. However, the number has declined rapidly since the first half of the 20th century, and in 2003, the species was declared extinct in Japan. In 2008, the Ministry of the Environment started a captive breeding and reintroduction programme for the Crested Ibis in Sado Island, its last habitat in Japan. The birds for reintroduction were captive bred from Crested Ibis from China. As a part of the effort, environmentally friendly agriculture has been promoted to conserve its paddy-field habitat.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

The environmentally friendly agriculture of paddy fields in Sado is called *"Ikimono wo hagukumu nouhou"* (Agricultural methods that nurture life). These methods not only require the reduced use of pesticides and chemical fertilizers, but also to create paddy fields with conditions that are favourable for organisms that the Crested Ibis feeds on. Specifically, these include either the installment of *e* (deep spots) in paddy fields and waterways, or flooded paddy fields in winter, biotopes, or designing waterways to include fish ladders to aid fish migration.

In 2010, agricultural methods that nurture life involves 700 farming households, covering 1,200 hectares; and both figures have tripled since the start of the initiative in 2008. As a result of this effort, crested ibises released in 2008 and 2009 have been spotted visiting and feeding in the farmlands and biotopes that incorporate agricultural methods that nurture life.

Perspective 5: Contributions to local socio-economies

A certification system called *"Toki to kurasu sato dsukuri"* (Creating villages coexisting with Crested Ibises) has been introduced in Sado, where rice produced meeting certain standards is labelled with the certification mark. As the Crested ibis is one of the representative birds of Japan, its reintroduction programme is widely known in Japan; rice with this certification mark is traded at higher prices than uncertified rice. Efforts such as these foster environmentally friendly agriculture and help the revitalization of declining agriculture.

A crested ibis feeding in a paddy field in Sado City

A biotope which a local organisation developed in an abandoned paddy field

Rice certified by the Creating villages coexisting with Crested Ibises certification system.

Source: "Agriculture coexisting with crested ibises in Niigata Prefecture, Japan" http://www.env.go.jp/nature/satoyama/syuhourei/pdf/cje_2.pdf

No.14

Reintroduction of White Storks in the wild and promotion of agriculture

Asia - Toyooka City, Hyogo Prefecture, Japan

Outline

The White Stork, a bird that was commonly seen in Toyooka city, feeds in paddy fields. However, due to hunting and modernisation of agricultural practices, wild populations that bred in Japan went extinct in 1971. Citizens of Toyooka city responded to the crisis and started a captive breeding and reintroduction programme. *"Kounotori hagukumu nouhou"* (Farming method that foster White Storks) has been promoted as a part of this programme. As a result, numbers of wild and released individuals that breed in Japan have increased to 47 in total (as of August 2010).

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

Farming methods that foster White Storks is a programme to reestablish the White Stork population in the wild by nurturing living organisms in paddy fields which the storks feed upon. In addition, it aims to use these organisms to build a reciprocal relationship between humans and nature. For example, through this practice, use of agricultural chemicals and chemical fertilizers is reduced and water is managed in consideration of the habitat of these organisms.

Perspective 5: Contributions to socio-economies

Rice that meets the standard of Farming methods that foster White Storks is certified as the *"Kounotori no mai"* (Dance of White Storks brand.) Organic rice is sold at a 50% higher price and rice cultivated with a reduced amount of agricultural chemicals is sold at a 20% higher price than conventional rice. In many cases agricultural practice that considers biodiversity is less productive than conventional practice and this tends to hinder the propagation of such practices. However, in Toyooka, as the value of biodiversity conservation was added to the price through the brand certification system, the number of farmers participating in this activity has increased steadily. In 2008, 520 tons of certified rice were produced and approximately 200 hectares of land was certified.

Paddy field in which Farming Methods that Foster White Stork" has been implemented

Paddy fields visited by white storks during winter flooding (winter flooded or early flooded paddy fields are expected to provide feeding grounds for white storks and spawning grounds for frogs and toads during the off-season)

Crucian carp caught in a paddy field (Large numbers of fish inhabit paddy fields where Farming methods to foster White Storks are carried out.)

Source: "Agriculture aiming for coexistence with white storks in Toyooka City, Hyogo Prefecture, Japan" http://www.env.go.jp/nature/satoyama/syuhourei/pdf/cje_3.pdf

No.15

Village revitalisation through unique natural landscapes and local tradition

Asia - Kanakura, Wajima City, Ishikawa Prefecture, Japan

Outline

In Kanakura of Wajima City in Ishikawa Prefecture, efforts are being made to promote ecotourism, local specialities, and other activities that make the most of the local landscape and culture. The Kanakura School, a local NGO, is taking a major role in these activities. The Kanakura School focuses on the history of the community and aims to restore the prosperity of the past.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 3: Recognition of the value and importance of local traditions and cultures

Kanakura used to have temples with a large number of supporters from outside the region, whose visits contributed to the area's prosperity. Similarly, in order to attract visitors to revitalise the community, Kanakura School has installed information boards and signs to explain the local history, published a Kanakura walking map, and planted azalea and cherry trees. As a result of these efforts, the number of visitors has increased. Approximately 8,000 visitors come to Kanakura, a city with a population of 160, annually.

Perspective 5: Contributions to local socio-economies

The rice harvested in the terraced rice paddies of Kanakura has values associated with its traditional cultivation method and historical background. Historically, the rice grown here was not taxed and was considered as a rare type of rice never to be taken away from the region. For this reason, the rice, branded as *Koshihikari Kanakura-mai*, is gaining popularity. In addition, specialty products such as sake and snacks produced from the rice have been developed and marketed. A café named *Ki no Koe* (voice of trees) provides meals using local products in the corridor of Keiganji Temple in Kanakura.

A Temple in Kanakura

A café in the Keiganji Temple in Kanakura

Terraced rice paddies of Kanakura

Source: Takako Matsui, Taito Kawashima and Takehiro Kasahara "Town revitalization making the most of natural landscape and traditions of Kanakura Wajima City, Ishikawa Prefecture, Japan" http://satoyama-initiative.org/en/case-studies/asia/agriculture/kanakura-wajima-city-ishikawa-prefecture-japan

No.16

Forests are Lovers of the Sea campaign to restore healthy connected basin

Asia - Kesennuma City, Miyagi Prefecture & Murone Town, Ichinoseki City, Iwate Prefecture, Japan

Outline

Fishermen affected by the degradation of water quality in the Kesennuma Bay and the damage to fisheries started the Forests Are Lovers of the Sea Campaign in 1989. This campaign including afforestation efforts in Murone Village, Iwate Prefecture in the upper basin of Ohkawa River that flows into Kesennuma Bay, and environmental education for children. 30,000 deciduous broad-leaved trees have been planted so far and the over 10,000 children have participated in the environment education efforts. Encouraged by this activity, tree-planting in the upper basin of Ohkawa River is gaining interest both within Japan and abroad.

In the context of the five perspectives of the *Satoyama* Initiative

Perspective 1: Resource use within the carrying capacity and resilience of the environment

Fishermen working in Kesennuma Bay have always known that fish and seashells do not grow well when there is little snow or rain. Forests Are Lovers of the Sea Campaign requested an expert to conduct research to scientifically demonstrate the forest-river-sea relationship. The results showed that, of the total 2 billion yen annual catch in Kesennuma Bay, approximately 1.8 billion yen worth of catch is actually derived from nutrition coming from Ohkawa River. The research results provided the necessary proof and the appeal to plant trees in upper basins grew.

Perspective 4: Multi-stakeholder participation and collaboration

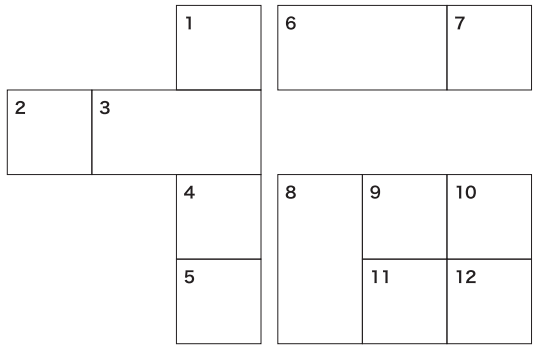
Murone Shrine, located in the upper basin of the Ohkawa River, has long been the subject of prayers for safe sailing among fishermen working in Kesennuma Bay. Because of this old regional connection, land for planting trees in the upper basin was obtained through consultations with Murone Town, Ichinoseki City.

A forest management system in the upper basin of Kitakami River, famed for its seed oyster production, was started in April 2010.With the expansion of the activities, started for the Ohkawa River, to the largest river in the northeastern region of Japan– Kitakami River–, greater forest-river-sea relationship is anticipated.

Floating Culture Rafts

Scene of environmental education for children
(Photos by Nakai Junior High School, Kesennuma City)

Source: "Forests are Lover of the Sea" campaign in the basin of the Ohkawa River in Miyagi Prefecture and Iwate Prefecture, Japan
http://www.env.go.jp/nature/satoyama/syuhourei/pdf/cje_13.pdf



1. Japanese tree frog*
2. Paddy fields and children (Echizen, Fukui Prefecture, Japan)*
3. Beef Cattle Grazing (Taketomi Town, Okinawa Prefecture, Japan)
4. Tohoku salamander*
5. Sheep Grazing (England)
6. Fields of beans (Rift Valley Province, Kenya)*
7. A weeping cherry tree and Rape Blossoms (Koriyama City, Fukushima Prefecture, Japan)
8. Person carrying firewood (Thailand)*
9. Japanese thistle and bumblebees*
10. Secondary forest (Western Province, the Solomon Islands)*
11. Improvement of bamboo forests by local residents* (Kanazawa, Ishikawa Prefecture, Japan)
12. Terraced Rice Paddies (Motegi Town, Thochigi Prefecture, Japan)

(*Photo: Japan Wildlife Research Center)

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