

The Ayu of Nagara River System

-The Connection Between Ayu and the People of the *Satokawa*-

Conservation of the Registered GIAHS / Action Plan



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The Nagara River Agriculture, Forestry and Fisheries Promotion
Association



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I . Introduction

This document was written as a companion to the application of “The Ayu of Nagara River System, -The Connection Between Ayu and the People of the *Satokawa*-” which is seeking to be recognised as a Globally Important Agricultural Heritage System (GIAHS) by the Food and Agriculture Organisation (FAO) of the United Nations. The application has already been approved by the Ministry of Agriculture, Forestry and Fisheries. In order to ensure the conservation and promotion of this agricultural heritage, the “Nagara River Agriculture, Forestry and Fisheries Promotion Association” as well as the “Pristine Nagara River Agriculture, Forestry and Fisheries Sector Players” have formed close ties together and this document lays out in detail the numerous efforts of the various members of these groups and other related parties.

The Nagara River, which flows through the southern region of Gifu Prefecture, supports a population of 860,000 on its basin and despite flowing through urban areas boasts bountiful and pristine waters of immaculate quality. Its clear waters have given rise to one of Japan’s highest yields of ayu sweetfish (*Plecoglossus altivelis altivelis*) forming a powerful brand. Moreover, the water, in tandem with agricultural, forestry and fisheries, is the source for traditions such as Mino *Washi* Japanese paper and other traditional crafts. Water also plays a role in religious practice and traditional forms of entertainment etc. The combination of all of this together creates a unique history and culture which continues to live on today.

The Nagara River is not simply a fixture which seems to conserve itself in the natural environment without ever being touched by human hands. Through the efforts of the people in the fields of forest management, flood prevention and sanitation the river flows through residential and urban areas. It has clear economic value providing water to local citizens, as well being a rich fishing grounds and supporting agriculture. It is also a source of leisure, with beautiful scenery, and a history and culture which gives it a sentimental and spiritual value. All of these factors, coupled with the biodiversity it supports, transform the river into what is known as a “*satokawa*”.

This system, which entwines the daily lives of the people, the environment surrounding the water and the exploitation of fisheries resources is something which is worthy of presenting to

the world.

Ayu, which may be found outside of Japan only in China, South Korea, Taiwan and other parts of East Asia, have a life span of one year and also, given that they are migratory fish, are susceptible to changes in the environment. In Taiwan, due to overexploitation and environmental pollution they had been declared extinct for a period. The extinction of the subspecies of ayu (*Plecoglossus altivelis ryukyuensis*) occurred in Okinawa's main island of the Ryukyu archipelago in Japan in the late 1970s.

Moreover, along the primary rivers of Japan, due to changes in the environment, cold water diseases, the emergence of predators such as the wild birds and for a host of other reasons, the yield of fish has severely reduced.

Another issue facing the site is that of the passing on of the traditional fishing techniques and culture. Due to changes in societal structures, there is a lack of young people entering relevant fields such as the provision of supplies necessary to pass on traditional crafts, skills and fishing tools. For this reason the passing on of these traditions is currently experiencing a crisis.

In response to this situation, relevant parties in the fisheries industry are engaging in efforts to conserve ayu reserves. From the viewpoint of genetics, disease prevention and reproduction, the river is being stocked with the hatchlings of ayu originally born there. In order to foster in children a sense of pride in the Nagara River and its ayu as well as an awareness of the importance of their conservation, this stocking of the river is carried out by elementary school children living in the area.

Moreover, the Gifu Academy of Forest Science and Culture which specialises in forest planning and woodworking techniques is forming the core of a group of those related parties in the fields of forestry, culture and craftwork who have come together and began efforts to ensure the continuation of traditional fishing techniques and culture.

Recognition as a Globally Important Agricultural Heritage System will give a sense of pride and confidence to the local people and will lead to the development of an environment conducive to the conservation of the system for future generations. It can also be expected that

an expansion of the efforts in wide scale environmental conservation being made by the entire prefecture as part of the creation of the image of Gifu as “Gifu, the Land of Clear Waters” would accompany GIAHS status.

II. The Upper and Middle Courses of the Nagara River

1. Geographical Summary

The upper and middle courses of the Nagara River (image 1) flow through an area containing four cities in the heart of the southern Gifu Prefecture, itself situated almost in the centre of Japan.



Image 1: The Nagara River, Mt. Kinka and Castle Town Area (Important National Cultural Landscape)

The river rises on Mt. Dainichigatake (which climbs to a height of 1,709 m) and flows a total distance of 166 km from there to Ise Bay.

As well as being a fast flowing river, it is thought that it maintains the quality of its water from a combination of the purifying effect of underground streams, the fact it was not dammed and also the continuous plain of farms and settlements which line the banks of its main stream. Moreover, the mountainous region of the basin receives an annual rainfall of about 3,000 mm, making it one of the wettest in the entire country. The city of Gujo on the upper course of the river is filled with bountiful forests which store this water and enrich the local farming areas.

2. Outline of the Fisheries Industry



Image 2: Ayu (*Plecoglossus altivelis altivelis*)

For those living in Gifu Prefecture that has no maritime border, fish caught in the river have come to be thought of as a valuable source of protein. This led to the development of a rich fisheries industry in Gifu led by ayu. Even today ayu is the second most caught freshwater fish in Japan, making it an extremely important breed in general (image 2). The total yield of

ayu across the prefecture is 216 tonnes, with 871 tonnes being bred, making Gifu the prefecture with the highest output of ayu in the entire country.

Moreover, the “Gujo Ayu” caught in Gujo City on the upper course of the river are fostered by a steep gradient and pristine waters. This naturally gives them a beautiful shape, as well as a firm body and a highly praised scent and taste. In 2007, they were granted a regional collective trademark by the Japan Patent Office as a product of the river and having won the grand prize at the Clear Water Ayu Tasting Festival in 2008, “Gujo Ayu” continues to grow as a brand.

Apart from ayu seventeen other types of fish are caught on the river; whitespotted char (*Salvelinus leucomaenis*), red spotted masu trout (*Oncorhynchus masou ishikawae*), Japanese eel (*Anguilla japonica*), Japanese dace (*Tribolodon hakonensis*), pale chub (*Zacco platypus*), common carp (*Cyprinus carpio*), Japanese barbell (*Hemibarbus barbus*), crucian carp (*Carassius* spp.), the weather loach (*Misgurnus anguillicaudatus*), delicate loach (*Niwaella delicata*), Japanese minnow (species complex of genus *gnathopogon* or *squalidus*), Japanese catfish (*Silurus asotus*), the freshwater goby (*Rhinogobius* spp.), the Japanese sculpin (*Cottus* spp.), freshwater prawn (*Macrobrachium nipponense*) and Japanese mitten crab (*Eriocheir japonica*).

3. Outline of the Agricultural and Forestry Industries

The alluvial soil of the Nagara River drains well, making the area ideal for the production of fruit trees and vegetables. Examples of more unique vegetables leveraging the arable soil include the *moriguchi* radish (*Raphanus sativus* L.), with a length of 1.5 metres, as well as the *fuyu* persimmon (*Diospyros kaki* 'Fuyu') (image 3) which was originally found along the Nagara River. It is now the most common variety of persimmon grown in the entire country, with the Nagara River region accounting for the third highest output of the fruit nationwide.



Image 3: Fuyu Persimmon (*Diospyros kaki* 'Fuyu')

Gujo City, on the upper course of the river, is an area rich in forest resources with 90% of its land area being covered in woodlands. As such, it is a region in which timbre production and

the production of wood based products is flourishing. Specifically, production using Japanese cedar (*Cryptomeria japonica* [L. f.] D. Don) is plentiful along the banks of the Nagara River. This type of wood is known as Nagara cedar and has gained a reputation for the beauty of its grain.

4. Summary of Biodiversity

(1) Diversity of Aquatic Life and Products

Rising in the highlands, throughout each of the stages of the river a great number of species inhabit the Nagara River with 17 of these subject to fishing.

On the upper course water temperatures are low, with fast flowing waters giving rise to continuous rapids and trenches along the river channel. For this reason these waters are inhabited by whitespotted char or red spotted masu trout, a native salmonids fish species which enjoys colder waters. In contrast to this, in the middle course of the river the volume of water increases and the temperature of this water is slightly higher. At this stage, the river is comprised of a mixture of rapids, flats, trenches and pools and is home to ayu, as well as the Japanese dace, the pale chub and delicate loach amongst others.

Ayu is a migratory fish which moves between the river and sea. Other valuable fish caught in the Nagara River include the amphidromous type of red spotted masu trout (image 4) a fish which spends six months maturing in Ise Bay before swimming upstream and also Japanese mitten crab, which travels to the sea in autumn in order to breed.



Image 4: Red Spotted Masu Trout
(*Oncorhynchus masou ishikawae*)
[Courtesy of: Aqua Totto Gifu]

(2) Diversity in Agricultural Produce

Owing to the fact that the lands along the Nagara River have seen a great accumulation of sand and soil due to many floods, the land has excellent drainage and is perfectly suited to growing vegetables and fruits such as *fuyu* persimmons. As well as spinach (*Spinacia oleracea* L.), radishes (*Raphanus sativus* L.), green soybeans (*Glycine max* L.), strawberries (*Fragaria* × *ananassa* Duch.) and taro (*Colocasia seculenta* [L.] Schott), a total of 10 types of vegetables as well as flowers and other plants are



Image 5: Moriguchi Radish
(*Raphanus sativus* var. *longipinnatus*)

cultivated along the basin.

Moreover, the area is also rich in the cultivation of traditional vegetables with the *moriguchi* radishes (image 5), *shima* burdock (*Arctium lappa* L.) and *sengoku* beans (*Lablab purpurea* [L.] Sweet) all being certified by the prefecture under the Hida and Mino Traditional Vegetable Certification System. Accompanying their emergence as brands a number of efforts are being made to ensure the continuation of their cultivation.

(3) Biodiversity

From the standpoint of topography the Nagara River region contains plains as low as 10 meters above sea level to plateaus over 1,700 meters in height. Climates include warm temperate zones, moderate temperate zones, cool temperate zones and subalpine zones, with the combinations of geography of climates making it possible for a wide variety of species to inhabit the area.

More specifically focusing on aquatic life the Nagara River is an important piece of the *Kisosansen* (the name given to the group of rivers encompassing the Kiso River, the Nagara River and the Ibi River) which contains the largest amount of freshwater in the entire country. This gives the river one of the richest rates of biodiversity to be found on any river in Japan, especially in the fish community. Another important factor is the historical perspective of the region.

It once lay at the southern extremity of a glacier while on the other hand lies immediately east of the Fossa Magna (Tectonic line). This gives the area a mix of creatures from both the north and south. The *Kisosansen* does not simply boast a various number of species, it also is home to rare and endemic species such as the bagrid catfish (*Pseudobagrus ichikawai*), the three spined stickleback (*Gasterosteus aculeatus leiurus*), the dwarf topmouth minnow (*Pseudorasbora pumila* subsp. 2), the golden venus chub (*Hemigrammocypris rasborella*).

There is also a diverse range of amphibians inhabiting the area which species such as the Japanese giant salamander (*Andrias japonicu*) (image 6) and the clouded salamander (*Hynobius nebulosus*) being observed there.



Image 6: Japanese Giant Salamander (*Andrias japonicus*)

5. Knowledge Systems

Many traditional techniques for catching ayu are still practiced today on the Nagara River, including cormorant fishing, Gujo fishing, shoal net fishing and night net fishing.

One of the unique features of cormorant fishing is how it involves the cooperation between humans and birds. Already being practiced by the Muromachi period (1392-1573), it remains almost unchanged to this day.

As the cormorant birds catch all of the ayu which enter their line of vision, when compared with other fishing techniques the number of fish which escape is quite small and moving along the shallow waters in which ayu live makes for their efficient capture compared to net fishing which occurs in set locations when the boat is stationary.

In the city of Gujo a type of fishing for ayu with a live decoy which is known as Gujo fishing is widely practiced (image 7). This technique was born in the Taisho period (1912 - 1926) so that fishermen would be able to catch fish in large quantities.



Image 7: Gujo Fishing

One of the traditional techniques of net fishing practiced on the river is that of shoal net fishing (image 8). This method involves startling ayu with a rope in the shallows as they head downstream in the autumn to spawning grounds with a net. As they are confused a large group of fish can be caught at once by using a handheld net. Night net fishing is, of course, aimed at targeting ayu at night, just like cormorant fishing. It involves startling ayu with the bright light of torches and the sound of smacking oars against the edge of the boat, chasing them into nets spread across the river.



Image 8: Shoal Net Fishing

As well as the above mentioned fishing techniques, the largest type of fishing practised on

the river in terms of scale involves placing large slatted planks of wood in order to capture fish as they go downstream. It is known as *yana* fishing, named after the planks of wood used to trap the fish. All along the basin a variety of interesting fishing techniques are can be observed.

6. Culture and Values

The tradition of cormorant fishing (image 9) has a long history with people of the surname “Ukaibe” appearing in Japanese family registry records as far back as the 8th century. While it is practised in 12 places around the country at the present time, the Nagara River is the only river on which it can be found at two separate areas, at Gifu and Seki cities. Moreover, the cormorant fishing masters on the Nagara River are the only ones to have been designated as Cormorant Masters of the Imperial Household Agency’s Board of Ceremony, a title which they have held since the Meiji period (1868-1912).



Image 9 :
Cormorant Fishing on the Nagara River

The continuation of the practice of cormorant fishing is deeply linked to food culture. In the homes of cormorant fishing masters, a cuisine called ayu sushi made using fermented fish, salt and rice has been passed down throughout the ages, as a food to be eaten around the new year’s period.

The Nagara River rises on Mt. Dainichigatake which connects to Mt. Hakusan, a site of worship for the god Mikumari. The Nagataki Hakusan Shrine in Gujo City that is thought to have been established in 717 is home to many rituals surrounding Mt. Hakusan Worship, such as the Nagataki *En-nen* Festival (image 10) which is part of the area's Six Day Festival. Another important cultural practice in the same city is the Gujo *Odori* dance festival one of the three great *bon-odori* dance festivals in Japan. It is said to have been originally started as a way to encourage harmony between the different classes but is now a prominent feature of the local culture.



Image 10: Nagataki *En-nen* Festival

On the river’s middle course, the Katsuragake Shrine plays host to the “Ikenoue *Misogi* Festival” for purification, held every December. Through these various festivals and displays of worship we can see how greatly the rivers and mountains have been valued and protected throughout history.

7. Remarkable Landscapes, Land and Water Resources Management Features

In Gifu City which lies on the middle course of the river, Mt. Kinka which includes Gifu Castle, the Nagara River, the Ukaiya district conducting cormorant fishing, the Kawara-machi area and the old castle town all share a deep connection to the lifestyles and businesses of the area. Together, these areas form the Important Cultural Landscape of the Middle Course of the Nagara River and have been registered as an Important National Cultural Landscape.

Moreover, in Gujo City, where the river stretches to kilometres wide in some places, an uninterrupted line of agricultural settlements runs along the river bank creating a picturesque rural portrait. In the summer, the area is packed with people who wish to enjoy activities like fishing for ayu and receive the blessing of the river which nestles close to this rustic scene and provides them with a tranquil and soothing peace of mind.

Along the basin people are continuing to pass down a way of thinking that values the importance of and spiritual relationship with the water. One of the ways this is achieved is through the leveraging of traditional features used in the transportation of water. They are called *mizubune* (image 11), and each takes the form of a box like tank having two or three levels. The top level is for drinking water, the middle for rinsing and the bottom for washing. Carps are bred in the ponds underneath the bottom level ensuring no water is wasted. *Mizubune* are still used today for the purpose of delivering clear and clean water downstream.

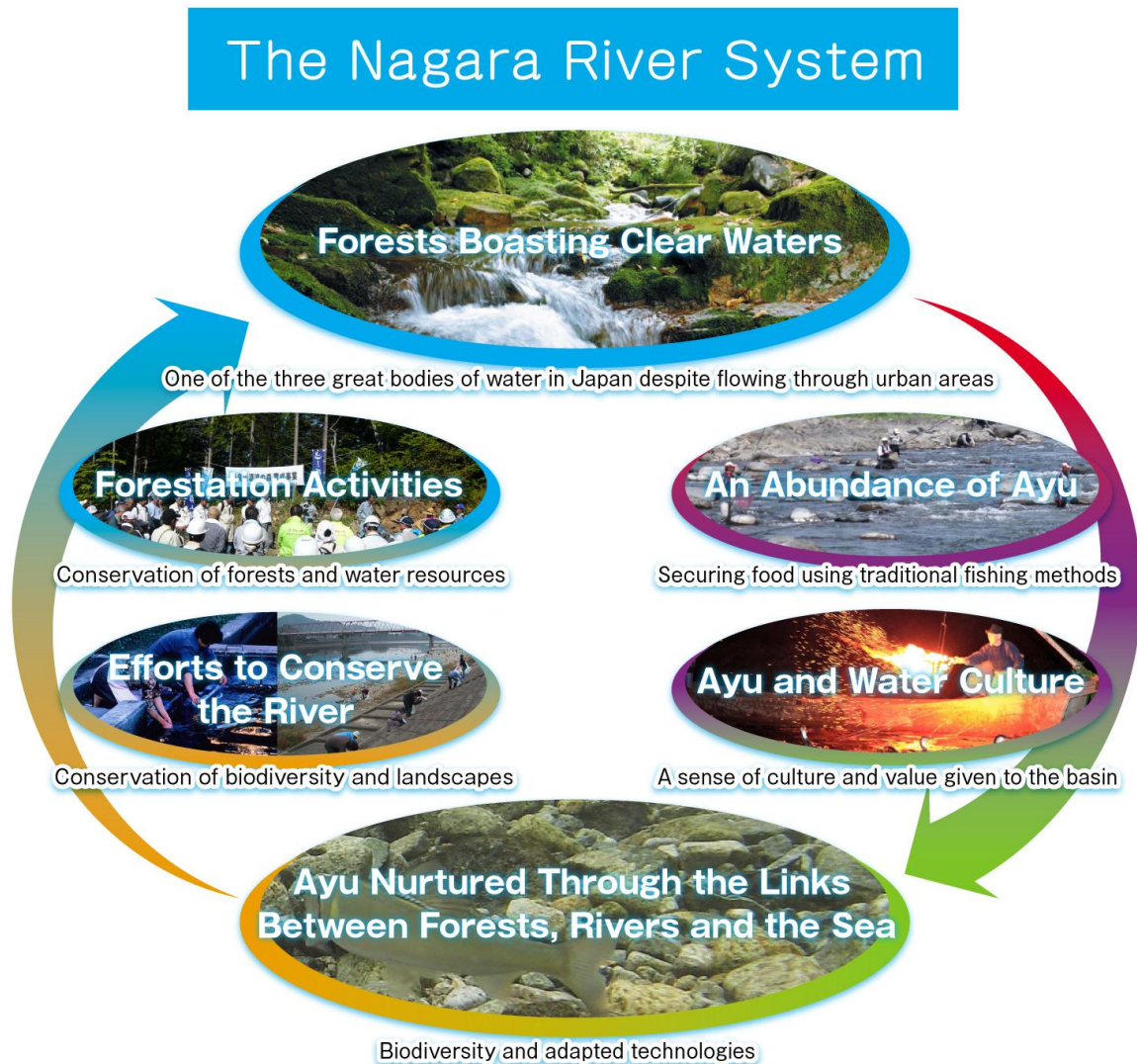


Image 11: *Mizubune*

III. Background to the GIAHS Application

Uniqueness of the Nagara River System

The Nagara River flows through the centre of the lives of the people, raising the ayu. Its clear waters and the ayu swimming through its pristine streams are deeply linked to the economy and historical culture.



Pristine Waters

The Nagara River basin is home to a population of 860,000 people and despite flowing through urban areas its upper stream was awarded a rating of “AA” by the Ministry for the Environment, with the lower course being given the status of “A” class. In addition to this, the river has also been named one of the hundred most beautiful waters in the country and one of the 88 Best Bathing Spots by the same ministry.

Beginning with ayu, the Nagara River sustains a wide variety of life and also provides the local people with a bounty of blessings such as drinking and irrigation water for the agricultural areas along the basin.

Ayu

The Nagara River boasts one of the highest yields of ayu in the entire country with a strong brand name. The practice of cormorant fishing and the related food culture, both of which ayu is deeply linked to combine with a wider range of what is known as “ayu industry”, a sector worth over 4 billion yen (\$33.3 million USD).

The Lives of the People

Along the basin, traditions with a long history such as agriculture, traditional culture supported by the water, worship of Mt. Hakusan which lies close to the source of the river could be observed in abundance. They have been transported to the present day along with the will of the people to conserve the forests, care for the pristine waters and ensure clean water is transported downstream.

Moreover, forestry and fisheries cooperatives have come together with the local people living along the basin in order to continue conserving and nurturing forests which cultivate clear water for the promotion of a better river environment.

Including ayu, this site is popular for inland fishing and through the concern of people for its sustainable use, the river environment is conserved. This region is an area which manages to maintain high levels of productivity while also conserving a rich biodiversity and natural rural landscapes. As such, it can be said to have not a local but also a distinct global importance.

(1) The Conservation and Maintenance of the Clear Waters of the Nagara River

The Nagara River provides a lifeline for all of the people living on its basin. Because of this, efforts to conserve its clear waters have a long history. For example, in the Edo period (1600 - 1867) in Gujo City special areas known as *mizuneyama* were created in which the free felling of trees was prohibited and streams conserved. A number of facilities and tools such as the *mizubune* were developed to make use of the water. These sentiments of carefully exploiting the water resources and ensuring they remain clean for everyone, continue to be felt today.

In recent years, the local governments in the city of Gifu on the middle course of the river and authorities in cities on the upper course have come together and planted as much as 70 hectares of forest and 170,000 trees to create what is known as the “Forest Carried in Your Hands”. Furthermore, in Gujo City, fishermen, forester workers and citizens in the area are collaborating together under the “Nagara River Source Area Forest Nurturing Project” (image 12) to expand tree planting efforts in forests which become the sources of water. Moreover, in all places touched upon by the river, companies, NPOs, government authorities and various other groups are participating in a wide range of efforts aimed at conservation of the environment and cleaning up the general river area.



Image 12: Forestation Activities near the Source of the Nagara River

(2) Conservation of Ayu Stocks

Inland fishing, when compared to saltwater fishing, is carried out over a much smaller area and as such, depending on the yield stocks may be more quickly depleted. The ayu, the second most caught inland fish in Japan, is migratory and thus, swims between the river and sea making it extremely susceptible to changes in the environment. In recent years the yield of ayu has reduced dramatically due to a number of factors. For example, changes in the living environments of the fish, breakouts of diseases and over fishing by the wild birds have all contributed to this steep decline.

On the Nagara River, as well as carrying out initiatives in order to conserve the local environment, the Gifu Prefectural Ayu Hatchery raises fry from ayu caught on the river and subsequently releases them back into the river. The fry raised at the hatchery are particularly strong against the cold water disease while, of course, ensuring genetic diversity is conserved.

As well as this, recently, in another effort to increase the stocks of indigenous ayu, fisheries cooperatives along the basin have been working together to take eggs from ayu they have caught and when they have developed eyed eggs attach them to the palm fibers (image 13, 14). Following this they are then placed in the path of the mouth of the river as part of the process of artificial hatching and releasing.



Image 13: Artificial Ayu Spawning Ground



Image 14: Fertilised Eggs

(3) Conservation of Biodiversity

The process of maintaining the clear waters is not solely linked to ayu but also to the conservation of other varieties of species. Two conserved species, bagrid catfish (image 15) and Japanese giant salamanders, as well as a number of other rare species are all found in the river and as such any effort to conserve or care for the ayu population will also have a welcome influence in conservation of these species.



Image 15: Bagrid Catfish
(*Pseudobagrus ichikawai*)
[Courtesy of: Aqua Tutto Gifu]

IV. Challenges Facing the Nagara River and its Future Prospects

The Nagara River Agriculture, Forestry and Fisheries Promotion Association has compiled a list of threats and challenges facing the proposed GIAHS as well as its prospects for the future. They are laid out in more detail in the action plan.

1. Threats and Challenges

(1) A Reduction in the Stock of Ayu

In 1992, 1,726 tonnes of ayu were caught in Gifu Prefecture, representing a peak for the industry. By 2012 this figure had fallen by 26.3%, or 454 tonnes. Reasons for this decrease include a change in fish habitat, the prevalence of cold water diseases and overfishing by the wild birds. Because of the uncertainty in fish stocks, the number of people fishing for leisure on the river has fallen.

There is a danger of falling into a trap;

[Small number of ayu → Being unable to fish for ayu →

Loss of focus on the ayu and rivers, subsequent declining consumption].

To prevent against this, initiatives must be put into place in order to secure stocks of ayu, create breeding grounds for the fish and ensure the continuation of the culture of fishing for leisure. At the same time, it is also required that efforts are made to preserve food culture and encourage the development of new cuisine and manufactured foods, as well as to maintain the will of the people to conserve the Nagara River.

(2) The Finding of Successors to Continue to Support the Use of Traditional Fishing Methods and Techniques

Cormorant fishing must be protected, developed and passed on to the next generation as something which is capable of telling the story of the ayu, the river in which they live and the local culture to those outside of the region.

This style of fishing is made successful not only by cormorant fishing masters and the birds themselves but also through the work of a number of specialised craftsmen who make goods such as boats and baskets, the work of the boatman steering the boat and the skills needed to catch cormorant birds. The problem of finding successors and in turn ensuring the survival of these traditional skills is of pressing concern. Furthermore there are challenges to secure the Japanese umbrella-pine (*Sciadopitys verticillata* [Thunb.] Siebold et Zucc.) needed to build cormorant and viewing boats.

(3) Successors and the Passing on of Traditional Culture

The river basin has long played home to high quality bamboo, Japanese *washi* paper and perilla oil. Thus, it has always been a hub of *wagasa* Japanese umbrella production. However, there is only one place in the entire country remaining which creates a specific part for the frame of these umbrellas, the runner. This factory is in Ginan Town and in 2012 it became unable to source the Japanese snowbell (*Styrax japonica* Sieb. et Zucc.) wood it needed for production of this part when the company it had been outsourcing collection to ceased trading. However, in Mino City bountiful and lush mountain forests are being conserved, and there are plans being made for the reconstruction of the supply system.

(4) Successors in the Agricultural Field

Through the problems of an ageing and shrinking population, as well as the decline of economic importance in the fields of agriculture and forestry, the Nagara basin, along with all other regions in the country, is experiencing a decline in the number of people seeking out careers in these traditional areas. As a result of this, upkeep of mountainous forest regions and the “*satoyama*” and “*satochi*” areas is continuing to cause concern.

- | |
|---|
| <p>1 Woodland areas in the mountains near human settlements; important as habitation zones and for natural resources.</p> <p>2 Regions consisting of farmlands and ponds in mountains and forests surrounding the settlements that manage them.</p> |
|---|

(5) Biodiversity

The Nagara River basin is an important area for biodiversity with a wealth of different fish species from the north and south, totalling 126. However, in recent years, the smallmouth bass (*Micropterus dolomieu*) which is popular for sports fishing and is able to live in the fast flowing streams of rivers has been confirmed in the ponds along the basin. This is one of the alien fish species to have been introduced to the river.

(6) Conservation of the Water Resources

Through global warming and the climate change that accompanies it, as well as the rising world population and the growth of rising economies, demands on water resources will continue to increase. Around the world approximately 700 million people are subject to water shortages. In the future it is expected that this problem will worsen.

(7) Scenery and Traditional Disaster Prevention Systems

Due to the ageing of the population involved in the forestry and agriculture sectors and the trouble in finding successors in these fields, there is a fear that the *satoyama* and *satochi* areas will cease to be properly maintained. Moreover, as those living on the basin continue to be mentally separated from the rivers, this will have a negative influence on the environment around the river. Residents may also lose knowledge of the local traditional disaster prevention systems which may be linked to the outbreak of future disasters.

2. Prospects

(1) The Promotion of Sustainable Agriculture, Forest and Fisheries Industries on the *Satokawa*

- The conservation of ayu stocks is linked to the secure release of ayu into the river and also the artificial stocking and hatching of ayu eggs which occurs at the river mouth. These efforts are tied to the conservation of the gene pool and also the breeding of fry which are less susceptible to disease.
- The increase in the number of indigenous ayu swimming upstream is linked to ongoing efforts being made in researching the accuracy of forecasting systems.

- Along with the development of the Wild Birds Damage Prevention Guide which lays out all of the cumulative efforts to be made in preventing overfishing by wild birds, initiatives are being put into place to suppress the effects of the birds through surveying numbers appearing in relevant areas and controlling population numbers.
- Agricultural products of the prefecture such as Hida Beef, *fuyu* persimmons and strawberries are currently being exported mainly to Southeast Asia. Going forward, while highlighting the exceptional nature of the environment as part of the sales strategy, efforts will be made to begin exporting ayu also.
- Related local authorities and interested groups have come together and are not solely making strides in the promotion of the trademarked “Gifu, the Land of Clear Waters” and the aquatic goods sector but also in the creation of the “Nagara River Brand”. This new brand initiative is being put forward as a method to promote production and includes a wide range of industry from forest, agricultural and manufactured products to tourism.

(2) Maintenance and Conservation of Biodiversity and the Water Environment on the *Satokawa*

- The spreading of “The Charter of Gifu, the Land of Clear Waters” has led to the development in the minds of the prefectural citizens of a mindset which recognises the need to conserve the clear waters of Nagara River as a *satokawa*. Accompanying this thought process, environmental groups, local citizens, companies and government bodies are cooperating with each other on a wide range of matters to actively expand efforts towards environmental conservation.
- Through the leveraging of traditional facilities like the *mizubune* people retain the idea of the importance of transferring water to the lower course of the river as well as actively ensuring that high quality water is conserved.
- Accompanying the conservation of water and forest resources which are linked to the creation of rivers which cultivate clean water, the area of forests which encourage fish breeding will also continue to expand.
- The river is being conserved in various ways through the expansion of the idea of river environment conservation and also through river cleaning initiatives led by environmental conservation groups.
- From the standpoint of ensuring the sustainability of the river, courses for fish to travel up and downstream have been placed on the Nagara River and its tributaries ensuring all aquatic life will be able to continue to travel smoothly through the water.

- In tandem with the rise in understanding of the importance of biodiversity on the Nagara River, efforts are being made to conserve rare species of plants and animals and exterminate invasive alien species.
- In order to conserve the biodiversity which occurs on the upper and middle streams of the Nagara River the necessary environmental charters and strategies are being drawn up.

(3) Traditional Ayu Fishing Methods and the Preservation of Traditional Ayu and Water Culture

- Exhibitions, lectures and seminars training curators are held in the Nagara River *Ukai* Museum, forming a part of efforts to transfer the culture of ayu on the Nagara River to the next generation.
- In order to ensure that there are still craftsmen capable of making boats and baskets necessary for cormorant fishing to take place and thus preserving these traditional crafts which were born on the river basin, the Gifu Academy of Forest Science and Culture is taking the lead in developing a training programme for development of successors in these fields.
- Efforts will be made to preserve henon bamboo (*Phyllostachys nigra* [Lodd. ex Loud.] Munro var. *henonis* [Bean ex Mitford] Stapf ex Rendle) stocks.
- Passing down the technique for catching young Japanese cormorants on the sea coast.
- In order to ensure the securement of stocks of the Japanese snowbell as well as preserving the area in which it grows the Gifu Academy of Forest Science and Culture has developed the “Snowbell Project”, which is researching the environment in which these plants are nurtured and also their life cycle.
- As well as researching how to improve the quality of mulberry trees (*Broussonetia kazinoki* × *B. papyrifera*) used in the production of Mino *Washi* Japanese paper and also how to secure local supplies, efforts are also being made to protect locally what is known as “*nebeshi*”, a sticky substance extracted from the root of the sunset hibiscus (*Abelmoschus manihot* [L.] Meddik.) and then used to make paper equally disperse underwater.

(4) The Conservation and Passing Down of Landscapes and Traditional Disaster Prevention Systems on the Satokawa

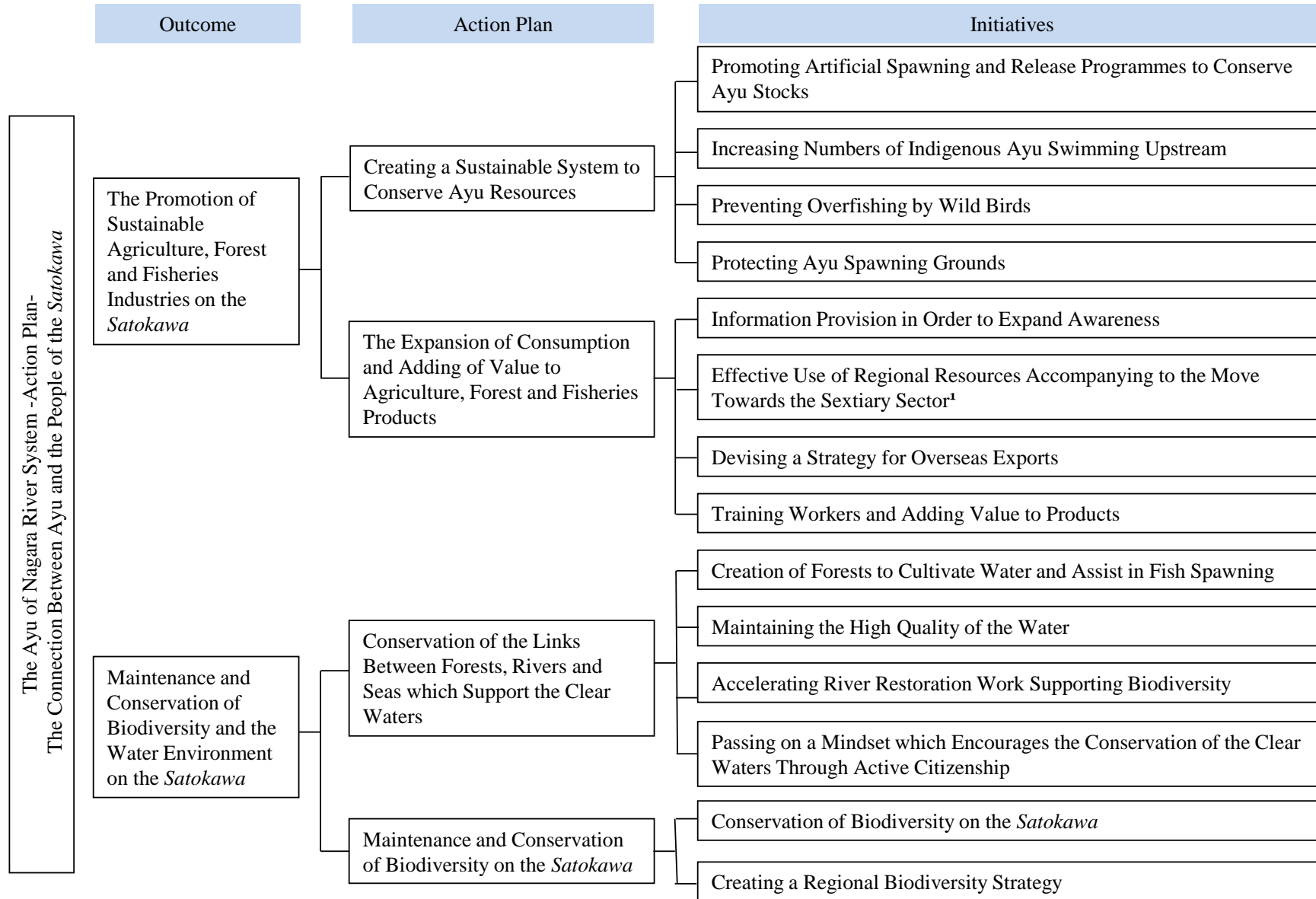
- Efforts are being made to conserve the river, one which people benefit from, that they feel close to and that they embrace, as well as the rural scenery that accompanies it and gives them a stillness and peace of mind.

- The three areas, the Kawahara-machi area of Gifu City, the Mino-machi area of Mino City and the old town area of Gujo City's Hachiman-cho are all coming together to engage in conservation efforts. The Kawahara-machi area is a part of the "Important Cultural Landscape of the Middle Course of the Nagara River", which has been registered as an Important National Cultural Landscape in 2014. Mino-machi and the old town of Hachiman-cho districts were designated as an Important Preservation District for Groups of Traditional Building in 1999 and 2012 respectively.
- The meaning and purpose of open levees and other traditional forms of disaster prevention is being recognised once again. Through passing these on to the next generation efforts are being made to strengthen the potential to prevent disasters in the region.

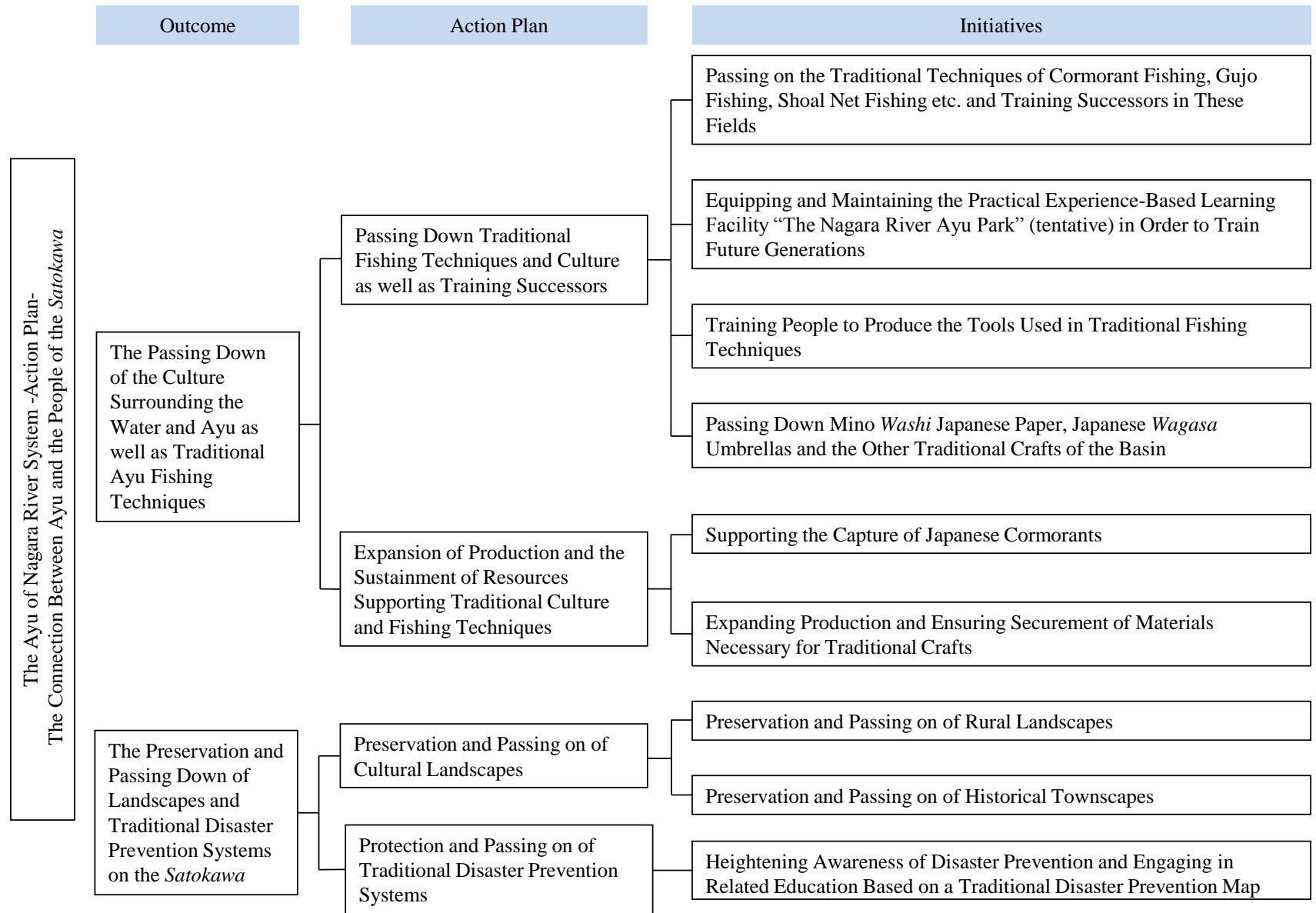
(5) Spreading Information about the Nagara River System Domestically and Globally

- While sharing with the world the *satokawa* system which conserves the environment and is being exploited sustainably, information will be spread about the importance of the links between the forests, rivers and seas.
- Ayu are extremely prone to changes in the environment and their numbers are decreasing globally. To combat this, as well as ongoing efforts aimed at conserving and maintaining stocks of ayu and their habitats along the proposed site, ayu based food culture will be developed and information exchanged with nations outside of Japan concerning the same.
- Leading with touristic resources based on the Nagara River like cormorant fishing and rafting, efforts in tourism will also be bolstered to attract visitors from overseas with traditional culture such as the Gujo *Odori* dance festival and eco tourism and green tourism in the form of opportunities to experience the agriculture, forestry and fishery fields first hand. We will combine these efforts with the promotion of existing tourist sites outside of the river basin; the World Heritage Site Shirakawa-go and the traditional town of Hida Takayama.

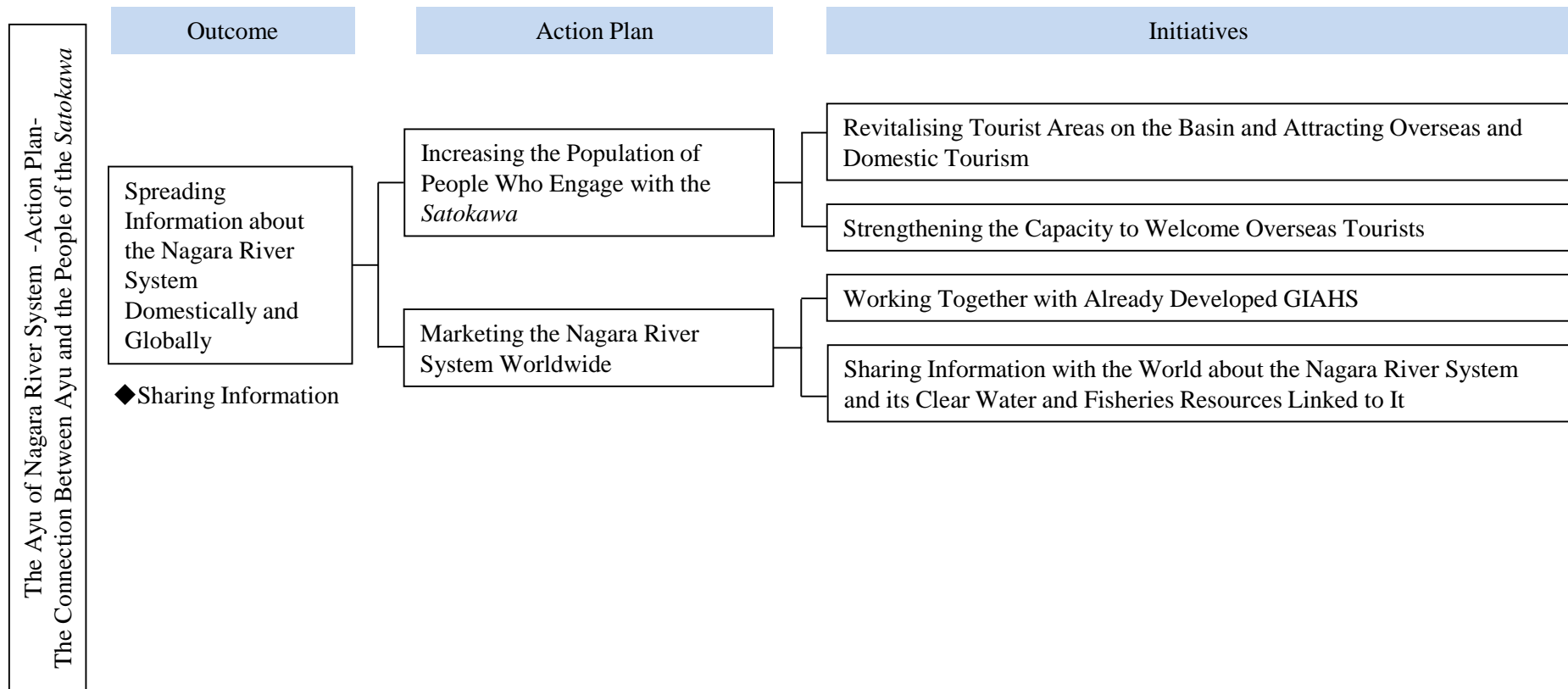
V. Summary of the Action Plan (1)



V. Summary of the Action Plan (2)



V. Summary of the Action Plan (3)



1 The sextiary sector involves the comprehensive involvement of workers in the agriculture, livestock and aquatic industries (the primary sector) in the manufacturing sector (the secondary sector) and the distribution and selling systems (the tertiary sector). Through doing this, it enables them to gain benefits previously only achieved by those in the secondary and tertiary sectors, thus giving new life to the field of agriculture as a whole. The use of the term sextiary, relating to the number 6, comes from the fact that it involves the cooperation between the primary (1), secondary (2) and tertiary (3) sectors, the corresponding numbers of which, when multiplied together, give an answer of 6.

VI. Action Plan

i) The Promotion of Sustainable Agriculture, Forest and Fisheries Industries on the *Satokawa*

Name	Creating a Sustainable System to Conserve Ayu Resources
Aims	<ul style="list-style-type: none"> • Promoting the restocking of the water with fry who are resistant to fish disease and descended from the indigenous ayu population, as well as the continuation of hatching and releasing efforts in the mouth of the river using eyed eggs from the point of view of the conservation of the ayu gene pool. • Accelerating research into the accuracy of the system for helping ayu to travel upstream which will affect the efficacy of ayu stocking efforts. • Strengthening population controls on predators of ayu such as wild birds. • Promoting environments conducive to breeding and habitation for fish species.
Present Challenges	<ul style="list-style-type: none"> • The most prominent causes in the decline in the yield of ayu have been the outbreak of cold water disease, the decrease in the numbers of fish being released into the river (7.18 million in 1995 compared with 3.55 million in 2013), over fishing by the wild birds and the decline in indigenous stocks of the fish. In order to overcome these problems it is necessary for comprehensive measures to be put in place. • In order to stop the outbreak of cold water disease and increase the number of native ayu, it is necessary to release into the water the fry of ayu who are not infected with the bacteria caused by this disease. At present, in the Nagara River itself, artificially created fry which fulfil both of these conditions are being released into the water. However, in one of the tributaries of the river, landlocked form fry from Lake Biwa in Shiga Prefecture are being released. From the point of view of preventing disease it is better that the activities carried out on the main river are extended to the entire basin to achieve better results. Thus, in order to ensure that stocks of artificially created ayu that are descendants from indigenous population are maintained, it is necessary to reorganise the system and increase numbers being produced.

- Moreover, in order to increase stocks of indigenous ayu, it is necessary to ensure offspring are sent to the sea. To avoid the loss of ayu between spawning grounds and the mouth of the river, fisheries cooperatives on the basin are taking charge in carrying out the artificial hatching and releasing of ayu. In order to ensure this results in the hoped for increase in native ayu reserves it is necessary to strengthen these efforts going forward.
- The number of ayu travelling upstream changes drastically every year. On a good year the number of fish swimming upstream may be five times the number released, however on a bad year this may fall to just 1/7th. In accordance with this, it is thought that based on the movement of ayu upstream it would be advisable to change the place where fish are released as well as the timing. However, in order to release ayu when they are travelling upstream, it is necessary to be able to accurately project ayu numbers before this occurs. This requires the development of new technologies. There have been developments in this field before, however, going forward it will be necessary to increase the accuracy of the forecasting while actually releasing the ayu and studying the results.
- Over fishing by wild birds and other predators has increased in recent years, with its influence particularly being felt immediately following the release of fish into the river. Thus, it will be necessary to study and manage the population size through the discouraging of spawning and active population controls.
- In order to increase the indigenous ayu population, it is necessary to conserve spawning grounds as well as caring for the number of mature fish who may produce young. To conserve these fish and ensure breeding can take place, two areas on the Nagara River have been declared as zones in which fishing is prohibited. As well as this, special spawning grounds which encourage the laying of eggs are being constructed. In the future it will be necessary to strengthen these efforts.

Initiative	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Promoting Artificial Spawning and Release Programmes to Conserve Ayu Stocks	• Promoting the release on the Nagara River and its tributaries of artificially created fry sourced from indigenous ayu (fisheries cooperatives).	○	○	○	○	○
	• Promoting the placing of artificially spawned eyed eggs at the mouth of the river (Nagara River Fisheries Policy Association).	○	○	○	○	○

	<ul style="list-style-type: none"> • Creating a plan dealing with the establishment of more sites which encourage the spawning of native ayu (Gifu Pref.). • Continuing with the development of facilities which ensure the conservation of mature fish and others which deal with the birthing of fry in order to secure the continuation of fish stocks sourced from ayu indigenous to the Nagara River (Gifu Pref.*, Gifu Prefectural Ayu Hatchery). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Increasing Numbers of Indigenous Ayu Swimming Upstream	<ul style="list-style-type: none"> • Promoting the development of techniques dealing with the release of fry based on forecasting the number of fish swimming upstream (Gifu Prefectural Research Institute for Fisheries and Aquatic Environments). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preventing Overfishing by Wild Birds	<ul style="list-style-type: none"> • Creating a plan to effectively prevent against damage by the wild birds (Gifu Pref.). • Carrying out effective surveying of the numbers of predatory birds in the area and thus carrying out population controls effectively limiting damage to the ayu population based on this plan (Gifu Pref.). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protecting Ayu Spawning Grounds	<ul style="list-style-type: none"> • Promoting the establishment of protected spawning grounds for ayu, thereby ensuring stocks of mature egg producing fish (fisheries cooperatives, Gifu Pref.*). • Preparing these grounds (fisheries cooperatives*, Gifu Pref.). • Expanding the scale of construction of these sites (fisheries cooperatives, Gifu Pref.*). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ii) The Promotion of Sustainable Agriculture, Forest and Fisheries Industries on the *Satokawa*

Name	The Expansion of Consumption and Adding of Value to Agriculture, Forest and Fisheries Products
Aims	<ul style="list-style-type: none"> • Beginning with “Gujo Ayu”, strengthening the brand recognition of Nagara River Ayu and expanding sales. • As consumption increases, sharing the art of ayu based cuisine with more people.

	<ul style="list-style-type: none"> • Strengthening the brands of Hida and Mino Traditional Vegetables and that of agricultural products on the river as well as expanding production and training of successors to continue working in related fields. • Accelerating the use of wood based biomass involving wood sourced from forest thinning, such as chips and firewood etc. • Accelerating the international export of ayu as part of Japanese food culture while establishing the necessary conditions to ensure this can take place.
Current Challenges	<ul style="list-style-type: none"> • The “Gujo Ayu” brand which has been developed by the Gujo Fisheries Cooperative has already received recognition of its high quality. However, it is necessary to plan for the expansion of the market of and the raising of the value of ayu from the entire river. • Currently ayu cuisine at home and in restaurants is based around grilling them with salt. In order to expand the market for ayu it is important to disseminate information about other ways of preparing the fish. • Due to the ageing of farmers and the lack of successors emerging to take their place, production in the agricultural field is declining and the value of the market is decreasing. Moreover, due to changing weather patterns and increasing damage caused by wild animal and crops are subject to increasing attacks which have lead to a general fall in the attractiveness of the sector as a whole. • Within the prefecture there are a large number of different brands such as Gifu Clean Agricultural products or Hida and Mino Traditional Vegetables Certification. Going forward it is important to add new value to these products leveraging the opportunity offered by recognition as a Globally Important Agricultural Heritage System. • Accompanying the sustained low valuation in the price of timbers, the forestry sector is stagnant. This has led to a drop off in numbers and the ageing of the population working in this field. As a result of this, there has been an increase in the number of forests failing to receive proper management. • There is also the challenge of expanding production and sales of the Japanese cedar grown on the basin known as the Nagara cedar which has been highly praised for the beauty of its grain.

- As awareness increases globally of Japanese cuisine which is now a UNESCO Intangible Cultural Heritage, there is a chance to expand exports of ayu internationally as a luxury food that is uniquely Japanese. As well as devising an export strategy for ayu as part of this family of Japanese cuisine, it is necessary to fulfil the conditions required to obtain a Hazard Analysis and Critical Control Point (HACCP) recognition.

Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Information Provision in Order to Expand Awareness	<ul style="list-style-type: none"> • Creating a unified mark for the products of the agriculture, forestry and fisheries sectors along the river basin and engaging in PR of the Nagara River Ayu along with them to achieve more effective results (Gifu Pref.). • Developing initiatives in large cities through connecting with major sellers and holding exhibitions in their stores in order to increase awareness of ayu bred along the entire river basin (Nagara River Agriculture, Forestry and Fisheries Promotion Association, henceforth referred to as the NRAFFPA). • Promoting the Hida and Mino Traditional Vegetables in a wide variety of ways while aiming for recognition as an Ark of Taste which will provide an opportunity to showcase these products on a worldwide scale (Gifu Pref.). 		○	○	○	○
		○	○	○	○	○
		○	○	○	○	○
Effective Use of Regional Resources Accompanying to the Move Towards the Sextiary Sector	<ul style="list-style-type: none"> • Planning various events in tandem with citizens groups and veteran sellers of ayu which showcase numerous new ways of preparing the fish and are linked to the expansion of ayu consumption (processors and distributors of fish, Gifu Pref.*). • Planning for the provision of machines and facilities necessary for the revitalisation of local agriculture as well as carrying out necessary management of these efforts. This will be done on a product by product and region by region basis by teams comprised of members of the prefectural government, local municipalities and the Agricultural Cooperatives (Gifu Pref.). 	○	○	○	○	○
		○	○	○	○	○

	<ul style="list-style-type: none"> • Developing new skills in food processing as well as the maintenance of existing facilities which are linked to an increase in the value of agricultural goods. Partnering with traditional Japanese inns, restaurants and schools in the area to promote the consumption of locally sourced goods (processors and distributors of fish, Agricultural Cooperatives, Gifu Pref.*). 	○	○	○	○	○
Devising a Strategy for Overseas Exports	<ul style="list-style-type: none"> • Dealing with the conditions and measures needed to export ayu on a country by country basis (Gifu Pref.). • Carrying out market research through communicating with sellers of Japanese food in overseas markets (Gifu Pref.). • Promoting ayu sourced in Gifu Prefecture by bringing it to food expos overseas and offering it to foreign markets on a trial basis (processors and distributors of fish, Gifu Pref.*). • Opening up the export market through consultation with overseas importers (processors and distributors of fish, Gifu Pref.*). • Surveying new routes for exports through large wholesale markets such as the Tsukiji Market (Tokyo Metropolitan Central Wholesale Market) (Gifu Pref.). • Promoting the refurbishment and development of facilities inside the prefecture in order to ensure the HACCP criteria are met (processors and distributors of fish, Gifu Pref. *). • Carrying out exports of ayu produced in Gifu Prefecture to overseas restaurants and markets (processors and distributors of fish). 	○	○			
		○	○	○		
			○	○	○	○
				○	○	○
				○	○	○
					○	○
Training Workers and Adding Value to Products	<ul style="list-style-type: none"> • Collaboration between Agricultural Cooperatives and the municipal and prefectural governments in efforts to ensure successors found on a product by product basis continue with the cultivation of crops such as strawberries and summer and autumn tomatoes (Gifu Pref.). • Managing programs for training the next generation in relevant skills (Gifu Pref.). • Accelerating efforts into creating new goods manufactured from agricultural products by the women's startups as well as emerging companies in the agricultural sector (Gifu Pref.). 	○	○	○	○	○
		○	○	○	○	○
		○	○	○	○	○

	<ul style="list-style-type: none"> • Training the new generation to be prepared for the increasing need for goods to be developed in the sextiary sector (Gifu Pref.). • Taking advantage of GIAHS recognition, using it as a crown on the brands of the “Nagara River” and “Gifu, the Land of Clear Waters”. These brands will find added value through leveraging aquatic goods such as ayu, as well as the traditional vegetables of Gifu Prefecture and the Nagara cedar (Gifu Pref.). • Developing a wood biomass energy system to encourage the generation of sustainable energy locally and accelerating the expanded use of chips and firewood sourced from forest thinning as a side business for foresters as part of a regional business model (Gujo City). 	○	○	○	○	○
			○	○	○	○
		○	○	○	○	○

ii) Maintenance and Conservation of Biodiversity and the Water Environment on the *Satokawa*

Name	Conservation of the Links Between Forests, Rivers and Seas which Support the Clear Waters	
Aims	<ul style="list-style-type: none"> • Making appropriate use of and conserving the land around river sources based on the Gifu Prefecture Relevant River Source Area Ordinance. Coupling this with the creation of forest areas around river sources to cultivate waters and conserve woodlands, as well as expanding fish breeding forest¹ areas which contribute to the wellbeing of fish. <div data-bbox="517 959 2004 1155" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>1 Fish breeding forest contributes to the protection and conservation of an ideal natural habitat for fish by supplying fallen leaves which aquatic insects feed off, trees and undergrowth which covers the ground and protects against the muddying of the water through soil erosions and also the surface of the water is shaded by trees insuring the temperature at the surface does not rise substantially.</p> </div> <ul style="list-style-type: none"> • Protecting and conserving the quality of water on the Nagara River and its tributaries. • The effective promotion of fishways placed on the Nagara River and its tributaries ensuring the fish are able to swim more freely between rivers and the sea as well as assisting in the conservation of the river environment from the viewpoint of biodiversity. 	

	<ul style="list-style-type: none"> • Making connections between environmental groups, citizens and government authorities with environmental conservation efforts being carried out in various ways and the continuation of the mindset amongst the people that the clear waters must be conserved. • Promoting Gifu Clean Agriculture along the basin of the river.
<p>Current Challenges</p>	<ul style="list-style-type: none"> • Regarding the current situation of forests, which give life to streams of water; as the price of lumber has fallen, the policy of depending on those who work in the forest to carry out thinning and forest management is facing a crisis. In remote mountains and in areas bordering rivers the number of neglected forest areas is increasing with a corresponding drop in the amount of cultivated fresh water. Moreover, there is only 4.5 hectares of so called fish breeding forest across the prefecture. • On the upper course of Nagara River people continue to recognise the importance of the water and believe in the need to deliver clear water downstream. Along the river and its tributaries environmental standards are continuing to be met and the BOD (Biochemical Oxygen Demand, the representative measure of organic water pollution) of the water is improving. This is all based on activities such as the management of sewerage systems and drainage regulation for factories etc. resulting from the Water Pollution Control Act. • Along the river and its tributaries a number of fishways have been created. However, due to the accumulation of sand and damage from falling rocks etc. the efficiency of these streams has been affected and the sustainability of the river from the perspective of diversity of the fish population is becoming an issue. • Due to the decline in the place of the river in the minds of local residents, the quality of the river environment is deteriorating. • A number of agricultural products are manufactured on the basin. It is necessary to make efforts to expand the number of products and manufacturers involved in the Gifu Clean Agriculture programme.

Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Creation of Forests to Cultivate Water and Assist in Fish Spawning	• Expanding existing specially protected fish breeding forest areas and the designation of new areas (Gifu Pref, Gifu, Seki, Mino and Gujo cities).	○	○	○	○	○
	• Carrying out forest maintenance such as thinning to conserve the multifaceted functions of the forest (forestry cooperatives).	○	○	○	○	○
	• Creating forests which are resistant to disaster through a regional forest plan (Gifu Pref.).	○	○	○	○	○
	• Measuring the cultivation of clear water and the conservation of various life forms in forest regions around source areas by groups such as NPOs, schools and companies through the use of what is known as the Forest Report Card. These same groups will plan and hold necessary study seminars in order to better understand these forests (NPOs).	○	○	○	○	○
	• Increasing public awareness of the importance of the thinning of mountain forest areas through the Tree Station Project (NPOs).	○	○	○	○	○
	• Promoting of the role of the forests through the National Arboriculture Festival and other such events (Gifu Pref.).	○	○	○	○	○
	• Planning for the expansion of forested areas by fisheries cooperatives and other parties through the Nagara River Source Area Forest Nurturing Project and trying to get more farmers and citizens involved in this project (fisheries cooperatives).	○	○	○	○	○
	• Promoting the nurturing of forest areas which form the sources for rivers through the promotion of participation by the citizens on the lower course, farmers groups and famers themselves (Gifu Pref.).		○	○	○	○
	• The giving of forest land to Gifu City by cities on the upper course of the river which in turn bears the cost of maintaining that land through the Forest Carried in your Hands project. This maintenance encompasses thinning and pruning efforts, sharing the burden of reforestation efforts (Gifu City).	○	○	○	○	○

Maintaining the High Quality of the Water	• Carrying out continuous monitoring of water quality in accordance with the Water Pollution Control Act and continuing to meet environmental standards in this area (Gifu Pref.).	○	○	○	○	○
	• Promoting drainage controls for everyday citizens and factories in order to ensure that water quality on the Nagara River and tributaries, which influences the ecosystem, meets environmental standards such as BOD, total zinc, LAS (Alkylbenzens Sulphonate, Liner, a measure of efforts made in the conservation of living organisms) and 4-nonylphenol (Gifu Pref.).	○	○	○	○	○
	• Expanding the area registered with the Prefectural Government under the Gifu Clean Agriculture initiative which aims to maintain soil condition and lessen the use of chemical fertilisers and synthetic chemicals (Gifu Pref.).	○	○	○	○	○

Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Accelerating River Restoration Work Supporting Biodiversity	• Raising skilled workers who can develop both the rivers themselves and surrounding areas in a sustainable way in tandem with the natural ecosystem and leveraging the Gifu Prefectural Guidelines for the Creation of Rivers which Promote Coexistence with Nature (Gifu Pref.).	○	○	○	○	○
	• Holding study seminars on an annual basis led by related officials and natural construction managers in order to plan for the increase in skills necessary to develop rivers while caring for the ecosystem (Gifu Pref.).	○	○	○	○	○
	• Teaching the young, the leaders of the next generation about the environment, in order to pass on a water environment which is inhabited by a wide variety of organisms (Gifu Pref.).	○	○	○	○	○
	• Carrying out viewings of spawning ayu in order to conserve the ecosystem, secure stocks of ayu and increase environmental awareness (NPOs).	○	○	○	○	○
	• Inspecting artificially created fishways in order to ensure ayu can smoothly move between the rivers and the sea (Gifu Pref.).	○	○	○	○	○

	<ul style="list-style-type: none"> • Repairing fishways and removing the sand particles accumulated in them based on the results of surveying, thus, once again, creating environments where ayu may move between rivers and seas comfortably (fisheries cooperatives, Gifu Pref.*). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Passing on a Mindset which Encourages the Conservation of the Clear Waters Through Active Citizenship	<ul style="list-style-type: none"> • Cultivating a legend through the use of traditional water features such as the <i>mizubune</i> which not only informs people of the importance which should be placed on the water but also of the spirit of ensuring clean water is delivered downstream (Gujo City). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<ul style="list-style-type: none"> • Heightening the concern of the people for the conservation of the water environment as well as the rich traditional culture linked to the clear waters and river cleaning efforts (NRAFFPA). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<ul style="list-style-type: none"> • Cooperating with local residents to create a fondness for the concept of river restoration and continuing to tie this concept to the idea of community development (Gifu Pref.). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<ul style="list-style-type: none"> • Promoting public awareness of the importance of giving thanks to the blessings of the water leveraging the water and passing on the traditions linked to it, through the spreading of the message of “Gifu, the Land of Clear Waters Prefectural Charter” (Gifu Pref.). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	<ul style="list-style-type: none"> • Accelerating efforts in the area of environmental conservation through the implementation of the Gifu Land of Clear Waters Forest and Environmental Tax, among other ordinances. Environmental groups, citizens, companies and government bodies are coming together to form the nucleus of a broad movement around these conservation efforts (Gifu Pref.). 	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ii) Maintenance and Conservation of Biodiversity and the Water Environment on the *Satokawa*

Action Plan	Maintenance and Conservation of Biodiversity on the <i>Satokawa</i>
Aims	<ul style="list-style-type: none"> • Increasing understanding of the importance of the rich ecosystem on the Nagara River basin and thus, the conservation of rare plant and animal species, as well as the exterminating of invasive alien species. • Devising a regional biodiversity strategy for the upper and middle courses of the Nagara River.

Current Challenges	<ul style="list-style-type: none"> • The Nagara River basin is an important area boasting a wealth of fish species from the north and south, 126 in total. In the ponds and reservoirs along the basin, threatened and endangered species such as the dwarf topmouth minnow can be found. However, with the presence of the smallmouth bass being confirmed in the fast flowing streams of the river, there is an urgent need to deal with the challenge of exterminating invasive alien species. • A Basic Survey of the Natural Environment has been completed and information on the distribution of living creatures is now being stored digitally in Gifu City. Going forward, red and blue lists showing the conservation status of species on the river as well as the status of alien species will be created. At the same time as the breadth of knowledge of biodiversity increases a Regional Biodiversity Strategy will be devised, showing the necessary initiatives which need to be enacted in order to conserve biodiversity.
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Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Conservation of Biodiversity on the <i>Satokawa</i>	<ul style="list-style-type: none"> • Promoting the exterminating of alien species and the conservation by agriculture and citizens' groups of rare species such as the dwarf topmouth minnow (NPOs). • Educating children about the environment by teaching about caring for and breeding rare species of fish (NPOs). • Supporting volunteer groups and others who carry out population controls on selected invasive alien species and also those who are endeavouring to conserve rare plant and animal species (Gifu Pref., Gifu, Seki, Mino and Gujo cities). 	○	○	○	○	○
Creating a Regional Biodiversity Strategy	<ul style="list-style-type: none"> • Creating red and blue lists (Gifu City). • Devising a Regional Biodiversity Strategy which shows the current state of biodiversity and the necessary environmental initiatives which will need to be enacted to ensure it is conserved going forward (Gifu City). • Promoting the Regional Biodiversity Strategy (Gifu Pref., Gifu City). 	○	○	○	○	○

- Investigating the need for the creation of Regional Biodiversity Strategies in other cities (Gifu, Seki, Mino and Gujo cities).



iii) The Passing Down of the Culture Surrounding the Water and Ayu as well as Traditional Ayu Fishing Techniques

Action Plan	Passing Down Traditional Fishing Techniques and Culture as well as Training Successors
Aims	<ul style="list-style-type: none"> • Training young people in traditional fishing styles such as shoal net fishing and Gujo fishing as well as finding and training people in the peripheral skills needed to produce the fishing goods necessary to carry out these types of fishing. • Proceeding with efforts to have the cormorant fishing of the Nagara River registered as an Important Intangible Folk Cultural Property. • Promoting efforts to increase the numbers of fishermen on the river who fish for ayu. • Training people to take on the responsibility of continuing to produce traditional culture and crafts on the basin such Mino <i>Washi</i> paper and Japanese umbrellas.
Current Challenges	<ul style="list-style-type: none"> • The success of cormorant fishing does not solely depend on the birds themselves or the cormorant masters, but is a collaborative effort combining a number of local skills. The baskets and boats used are made by a specifically trained craftsman. However, because there is only one of these craftsmen remaining in the prefecture the need to find a replacement is urgent. • Cormorant fishing on the Nagara River will continue to be promoted against this backdrop, as gaining the understanding from the people of its importance is imperative to ensuring its survival. In order to achieve this, local authorities will lead the drive to share information, joining forces with groups of local citizens and others to more effectively promote the practice and also speak to its cultural value.

- Accompanying a change in people's lifestyles generally, those along the basin are losing their connection to the river. This has led to the reduction in the numbers of people involved with traditional fishing techniques such as those in the fishing cooperatives. It has also led to the ageing of fishermen, those who pass on the skills necessary to sustain these fishing methods.
- The number of people involved in the preservation of traditional culture and the production of traditional crafts such as Mino *Washi* paper and Japanese umbrellas is reducing and therefore it is necessary to train new people in these fields to carry on these skills and at the same time revise the manufacturing process.

Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Passing on the Tradition Techniques of Cormorant Fishing, Gujo Fishing, Shoal Net Fishing etc. and Training Successors in These Fields	• Making efforts to create an organisation involving all of the people related to the cormorant fishing, not solely the cormorant fisherman but, for example, those who are involved in crafting products used in cormorant fishing (Gifu, Seki and Mino cities).	○	○	○	○	○
	• Protecting cormorant fishing on the Nagara River and ensuring it is passed on through the carrying out of two surveys, one dealing with Seki City specifically and the other dealing with the river as a whole. Through these surveys we will clarify the academic value of the practice and through the coming together of citizens group's efforts to protect, support and spread the culture of the basin will be developed (Gifu and Seki cities).	○	○	○	○	○
	• Leveraging the symposiums, public lectures and curator training offered by the Nagara River Ukai Museum to deepen the connection of citizens on the basin to cormorant fishing (Gifu City).	○	○	○	○	○

	<ul style="list-style-type: none"> Regarding the environment, daily life and culture along the river, through the carrying out of practical workshops on the environment aimed at children, the status of ayu fishing amongst citizens will be raised through giving people the opportunity to experience things like traditional fishing techniques directly (fisheries cooperatives). 	○	○	○	○	○
Equipping and Maintaining the Practical Experience-Based Learning Facility “The Nagara River Ayu Park” (tentative) in Order to Train Future Generations	<ul style="list-style-type: none"> Developing the “Nagara River Ayu Park” (tentative) (Gifu Pref.). 2014 Basic Design → 2015 Final Design → 2016 - 2017 Equipping the Facility → 2018 Opening to the Public Drafting plans for the kinds of practical experiences to be offered (Gujo City*, Gifu Pref.). Educating people through hands on experiences at the facility (Gujo City). 	○	○	○	○	○
Training People to Produce the Tools Used in Traditional Fishing Techniques	<ul style="list-style-type: none"> Carrying out a survey to grasp the present circumstances in order to plan for the training of successors to produce the specialised products used in cormorant fishing (Gifu and Seki cities). Holding seminars to train people to carry on the work of cormorant fishing basket craftsmen as well training people in the production of bamboo ware (Gifu Academy of Forest Science and Culture). Finding young people with a passion for creating cormorant boats and investigating how to create new demand for them (Gifu City). Considering the establishment of the Fishing Techniques and Tools Research Group (tentative) which comprises of members of various fisheries cooperatives, with the aim of passing on traditional fishing techniques (fisheries cooperatives). 	○	○	○	○	○

	<ul style="list-style-type: none"> • Preserving through exhibitions the production methods and knowledge of how to use traditional fishing tools such as the Gujo fishing rod, which is known as a product of industrial art (Gujo City). 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Passing Down Mino <i>Washi</i> Japanese Paper, <i>Wagasa</i> Japanese Umbrellas and the Other Traditional Crafts of the Basin	<ul style="list-style-type: none"> • Spreading information about the application of <i>Washi</i>, Craftsmanship of Traditional Japanese Hand-Made Paper to be recognised as a UNESCO Intangible Cultural Heritage (Mino City). • Offering economic support to young people entering the field as well as aiding people in acquiring necessary skills in order to protect the culture and skills related to handmade Japanese paper. Moreover, carrying out a survey into the cultural landscape of fields tied to the production of Japanese paper (Mino City). • Giving students opportunities to intern at the factory as part of efforts to train the next generation (wood processor). • Instructing and guiding successors at the factory in order to carry on the tradition (Gifu Academy of Forest Science and Culture). • Upgrading the mechanism used in the runners of umbrellas (wood processor). • Arousing interest with the creation of new products (wood processor). 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

iii) The Passing Down of the Culture Surrounding the Water and Ayu as well as Traditional Ayu Fishing Techniques

Name	Expansion of Production and the Sustainment of Recourses Supporting Traditional Culture and Fishing Techniques
Aims	<ul style="list-style-type: none"> • The preservation of the Japanese umbrella-pine used in making cormorant fishing boats and viewing boats as well as the protection of the henon bamboo used in in making the baskets used in cormorant fishing. • The maintenance of a condition conducive to capturing the Japanese cormorant. • Executing initiatives to ensure the preservation of the necessary materials used in traditional crafts.

Current Challenges	<ul style="list-style-type: none"> • The henon bamboo, when compared with the Japanese timber bamboo (<i>Phyllostachys bambusoides</i> Sieb. et Zucc.) often used in bamboo work, has an inferior colour but excellent durability. Henon used in the manufacture of cormorant fishing baskets is 4 -7 years old, with a diameter of 7cm and a space of 30cm between nodes. There are currently challenges facing the conservation of this specific type of bamboo. There are also ongoing problems in securing quality stocks of the Japanese umbrella-pine used in the construction of the boats used in cormorant fishing. • The cormorants used in cormorant fishing are caught on the coast at Hitachi City in Ibaraki Prefecture. However, there are challenges related to the passing down of the techniques involved in their capture. • The high quality mulberry tree currently used in the making of Mino <i>Washi</i> Japanese paper is currently taken mostly from the Nasu region in Ibaraki Prefecture. However, due to the decrease in the number of people working in the field there are concerns about the quality and security of the supply system. • The umbrella runner which ties the frame of Japanese umbrellas together requires Japanese snowbell (<i>Styrax japonica</i> Sieb. et Zucc.) wood to produce, a wood which is fine and tenacious, rarely chipping or bending despite the delicate cutting necessary to create the part. In recent years, a number of firms involved in collecting this wood have ceased trading and thus, there are concerns about maintaining the supply. Moreover, in order to plan for the maintenance of the supply of high quality Japanese snowbell, it is necessary to research methods for felling trees as well as the discovery of new sources of the wood.
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Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year 2000s				
		14	15	16	17	18
Supporting the Capture of Japanese Cormorants	<ul style="list-style-type: none"> • Collaborating with all of the other areas where cormorant fishing is practiced and supporting the training of successors in related fields as well as the capture of cormorants (Gifu and Seki cities) 	○	○	○	○	○

Expanding Production and Ensuring Securement of Materials Necessary for Traditional Crafts	<ul style="list-style-type: none"> Ensuring the protection of high quality materials for the making of cormorant fishing baskets through the preservation of henon bamboo forests and the carrying out of maintenance work in these forests on a regular basis (Gifu Academy of Forest Science and Culture). 	○	○	○	○	○
	<ul style="list-style-type: none"> Regarding the materials used to make cormorant fishing boats and the boats used to view the fishing, groups such as foresters, boatbuilders, and government bodies must come together and share information about sourcing good supplies to ensure secure, high quality sources of Japanese umbrella-pine can be found (Gifu Academy of Forest Science and Culture). 		○	○	○	○
	<ul style="list-style-type: none"> Researching new methods into management skills and the secure harvesting, preservation and effective cultivation of locally sourced resources used in the production of Mino <i>Washi</i> Japanese paper, such as <i>nebeshi</i> and the mulberry tree (Mino City). 	○	○	○	○	○
	<ul style="list-style-type: none"> Promoting the coming together of groups such as foresters, umbrella manufacturers and others through the “Snowbell Project”, which studies the felling of tress as well as the protection of the necessary thickness and length of the Japanese snowbell needed to produce the runners for umbrellas (Gifu Academy of Forest Science and Culture). 	○	○	○	○	○

iv) The Conservation and Passing Down of Landscapes and Traditional Disaster Prevention Systems on the *Satokawa*

Action Plan	Conservation and Passing on of Cultural Landscapes
Aims	<ul style="list-style-type: none"> Conserving the rural landscapes which allow people to receive blessings from the river, feel close to the river, approach the river and gain peace of mind. Conserving and passing on townscapes of historical value which form the seeds of industry and provide homes to the people.

Current Challenges	<ul style="list-style-type: none"> Concerns about the numbers of people working in the agriculture and forestry fields and the decay of <i>satoyama</i> and <i>satochi</i> which would accompany this, as well as the lessening of the status of the river due to this. The basin is home to the Kawara-machi area, an Important Cultural Landscape as well as two Important Preservation Districts for Groups of Traditional Buildings. While there are ongoing efforts made towards their preservation, in order to embolden these efforts it is necessary to create a combined strategy.
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Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
<ul style="list-style-type: none"> Conservation and Passing on of Rural Landscapes 	<ul style="list-style-type: none"> Gaining the cooperation of local authorities in relevant cities, NPOs and others including local citizens and subsequently carrying out weeding and cleaning efforts on the rivers (Gifu Pref.). 	○	○	○	○	○
	<ul style="list-style-type: none"> Managing forest areas through the carrying out of periodic thinning as well as putting in place strategies to deal with abandoned fields and rice paddies in order to promote and conserve the multi-functional nature of forested and agricultural areas (Gifu Pref.). 	○	○	○	○	○
<ul style="list-style-type: none"> Conservation and Passing on of Historical Townscapes 	<ul style="list-style-type: none"> Combining efforts made in the three areas of Kawara-machi in Gifu City, Mino-machi in Mino City and the old town in Gujo City to strengthen conservation efforts being carried out there (Gifu, Mino and Gujo cities). 		○	○	○	○

iv) The Conservation and Passing Down of Landscapes and Traditional Disaster Prevention Systems on the *Satokawa*

Action Plan	Protection and Passing on of Traditional Disaster Prevention Systems
Aims	<ul style="list-style-type: none"> Re-establishing awareness of the significance and role of traditional disaster prevention systems such as open and ring levees constructed with the knowledge and experience of our ancestors. Through this awareness the systems will be maintained by the local people and passed on to the next generation, raising the area's potential to prevent against disaster.

Current Challenges	<ul style="list-style-type: none"> Against the backdrop of continuing urbanisation and the lessening of the place of open and ringed levees in the minds of people generally as well as their function in disaster prevention, there is a greater risk to man due to the loss of these systems.
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Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Heightening Awareness of Disaster Prevention and Engaging in Related Education Based on a Traditional Disaster Prevention Map	<ul style="list-style-type: none"> Raising local people’s awareness of disaster prevention through the distribution to elementary and junior high schools and neighbourhood councils of the maps of all of the cities containing traditional disaster prevention systems created by Gifu Prefecture in March 2013. Related lectures will also be held by experts in the field (Gifu Pref.). 	○	○	○	○	○
	<ul style="list-style-type: none"> Passing on knowledge of the necessity of each disaster prevention system to the people living in areas near to them such as elementary and junior high school students, as well as neighbourhood councils. This will be done through explanations of the role of the systems and also through staging mock demonstrations for the public of the movement of water during floods (Gifu Pref.). 	○	○	○	○	○
	<ul style="list-style-type: none"> Planning for sustainable facilities related to this type of education and creating a comprehensive support system that makes use of class hours in order to emphasise disaster prevention education in the lives of children, those who will form the next generation (Gifu Pref.). 	○	○	○	○	○

v) Spreading Information about the Nagara River System Domestically and Globally

Action Plan	Increasing the Population of People Who Engage with the <i>Satokawa</i>
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Aims	<ul style="list-style-type: none"> • Promoting the Nagara River and its surrounding areas as a destination for tourists through leveraging the opportunity afforded by registration as a GIAHS and the increase in name recognition which accompanies it. • Promoting a position which is more conducive to welcoming tourism, such as green tourism which would offer people chances to experience traditional fishing techniques on the Nagara River in a hands on way and eco tourism which leverages the bountiful local nature, history and culture.
Challenges	<ul style="list-style-type: none"> • In 1973, 340,000 people came to watch cormorant fishing on the Nagara River. This is more than triple current annual totals. There is a downward trend in the number of people watching cormorant fishing. • Between 300,000 and 400,000 people attend the <i>bon-odori</i> dance festivals in Gujo City. However, the number of people using the highways in order to attend the events on a day trip is increasing with a decline in those choosing to stay overnight in those areas. On the other hand, new experiences such as rafting and gorge climbing are rising in popularity.

Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Revitalising Tourist Areas on the Basin and Attracting Overseas and Domestic Tourism	<ul style="list-style-type: none"> • Planning by local authorities, tourism related groups and businesses in the nine prefectures in the Chubu and Hokuriku areas of Japan to increase the name recognition of the region and combining these efforts with the <i>Shoryudo</i> Project, which aims to increase tourism from the Greater China area in order to grow the overseas tourism market in the region (Gifu Prefecture Tourism Federation, Gifu Pref.*). • Staging the 21st National Cormorant Fishing Summit (Seki City). • Promoting eco tourism, which leverages the nature, history and culture of the Nagara River, as well as green tourism which provides opportunities for people to experience first-hand the agriculture, forestry, and fisheries sectors (Gifu Pref.). • Compiling a list of tourist resources on the basin (Gifu Prefecture Tourism Federation, Gifu, Seki, Mino and Gifu cities, Gifu Pref. *). 	○	○	○	○	○

	<ul style="list-style-type: none"> • Creating recommended tour routes for tourists offering people the opportunity to experience the charms of the agriculture, forestry, and fisheries industries, history, culture and food culture of the Nagara River basin (Gifu Prefecture Tourism Federation, Gifu Pref.*). • Turning tours into sellable products (Gifu Prefecture Tourism Federation). 		○	○		
Strengthening the Capacity to Welcome Overseas Tourists	<ul style="list-style-type: none"> • Developing new package tours aimed at international tourists which combine the World Heritage Site Shirakawa-go, the Hida Takayama region and the city of Gero, as well as carrying out on site selling and leveraging tools like Social Networking Services to better spread information about the area (Gifu Prefecture Tourism Federation). • Holding study seminars aimed at the implementation of wireless LAN services in order to create a more convenient environment for tourists from overseas (Gifu Pref.). • Promoting the use of foreign languages such as English and Chinese as well as awareness of other cultures and religious requirements such as halal (Gifu Pref.). • Accompanying the creation of pamphlets aimed at overseas tourists research will be completed into the implementation of signage which is easy to understand for non-Japanese and also studying how best to treat guests in order to improve the quality of hospitality generally (Gifu, Seki, Mino and Gifu cities, Gifu Pref.). • Promoting international exchange through traditional craft goods between the city of Mino, which is known as a famous production area for paper, and the town of Amalfi in Italy, as well as the Korean city of Wonju (Mino City). • Promoting the charm of the area within the country, inviting exchange students from Aichi and Gifu Prefectures to cormorant fishing in the hope that they will become repeat visitors (Gifu and Seki cities). 	○	○	○	○	○

v) Spreading Information About the Nagara River System Domestically and Globally

Action Plan	Marketing the Nagara River System Worldwide
Aims	<ul style="list-style-type: none"> • Spreading information about the <i>satokawa</i>, which conserves the environment through appropriate use by the local people as a model for GIAHS in developed countries. • Starting with the appropriate cultivation of the forests, sharing information about the compact water circulation system of Nagara River which contributes to the conservation of safe drinking water and water used for producing food, as well as the conservation of the ecosystem both domestically and internationally.
Present Challenges	<ul style="list-style-type: none"> • Under current circumstances, it would be difficult for the Nagara River System to effectively promote itself internationally alone. Thus, it is necessary to come together with registered GIAHS in other prefectures in order to carry this out. • Due to global warming and accompanying climate change, increasing world population and the economic expansion of developing countries, there is an increasing demand on water resources. 700 million people around the world are currently facing water shortages and this situation is expected to worsen going forward.

Initiatives	Detailed Information (Executing Organisations, *Responsible Organisation)	Year (2000s)				
		14	15	16	17	18
Working Together with Already Developed GIAHS	<ul style="list-style-type: none"> • Holding an international symposium with Ishikawa Prefecture aimed at sharing the importance of the links between the mountains, forests, rivers and seas with the world (NRAFFPA). • Aiming to attract the International Forum on Globally Important Agricultural Heritage Systems (NRAFFPA). • Holding a top level meeting between the Governors of Ishikawa and Gifu Prefectures in order to discuss linking GIAHS sites in both prefecture (Gifu Pref.). • Sharing information between the “Noto’s Satoyama and Satoumi” GIAHS in Ishikawa Prefecture with its <i>satoyama</i> and <i>satoumi</i> and the <i>satokawa</i> here in Gifu and expanding cooperation efforts between the two areas (NRAFFPA). 				○	
				○	○	
		○				
			○	○	○	○

	<ul style="list-style-type: none"> • Leveraging the opportunity afforded by registration as a Globally Important Agricultural Heritage System to cooperate with other systems around the country and thus, promote the “Nagara River System” worldwide (NRAFFPA). • Continuing to explore links with other registered sites in Asia (NRAFFPA). 		○	○	○	○
<p>Sharing Information with the World about the Nagara River System and its Clear Water and Fisheries Resources Linked to It</p>	<ul style="list-style-type: none"> • Creating pamphlets aimed at overseas tourists and creating an official website about the area in order to promote the “Ayu of Nagara River” worldwide (NRAFFPA). • Promoting the concept of the creation of “Gifu, the Land of Clear Waters” which aims to leverage the participation of citizens in the prefecture in tandem with the ayu of the pristine Nagara River (Gifu Pref.). • Holding symposiums and promoting the importance of conserving fish resources in Asia through the coming together of learned scholars and fishing goods makers (NRAFFPA). 		○	○	○	○

VII. Exchange Through the GIAHS and Sustainability

The Nagara River and the ayu which act as its symbol support the lifestyles of the local people on the river and are in turn conserved through the efforts of these same people. The compact system which occurs on the river ensure the survival of ayu and a number of other rare species. In order to pass on this system to future generations, groups related to the fishery sector as well as the agriculture and forestry industries, the Gifu Prefectural Government and the local authorities in Gifu City, Seki City, Mino City and Gujo City formed the tightly knit the Nagara River Agriculture, Forestry and Fisheries Promotion Association and the Pristine Nagara River Agriculture Forestry and Fisheries Sector Players. These two groups are carrying out maintenance and management initiatives on the basin as well as training the next generation in necessary skills and creating a system for supporting them, thus ensuring the sustainability of their efforts.

Moreover, the compact system which occurs on the Nagara River reciprocally links the people with the ayu and through the offering of the *satokawa* which conserves clear waters as a model to the world, it is expected that it will become linked globally to resolving issues such as the conserving the water environment, fish resources, and biodiversity issues. More specifically, regarding ayu which is an endemic species to Asia, through the spreading of fishing methods and resource conservation methods throughout the region, international initiatives across Asia will benefit.

VIII. The Management System of the GIAHS and Efforts to be Taken

The efforts of the Nagara River Agriculture, Forestry and Fisheries Promotion Association and its affiliated groups will be supported along with groups registered with the Pristine Nagara River Agriculture Forestry and Fisheries Sector Players in order to ensure the progression of the aims laid out in the action plan.

More specifically, administrative support will be provided by the four related cities and the prefectural government. The Gifu Prefectural Research Institute for Fisheries and Aquatic Environments and the Gifu Academy of Forest Science and Culture will provide technical support.



a) The Role of the Country

- The General Plan for Foodstuffs, Agriculture and Rural Areas covers a wide range of fields and was established in 2010. Going forward, comprehensive and systematic policies will be promoted using the concepts of securing foodstuffs, multi-functionality, promoting sustainable agriculture and developing rural areas as a base.
- In 2012, the National Biodiversity Strategy for Japan was enacted as environmental policy. At the 10th Conference of the Parties on Biodiversity the Five Basic Strategies were created, listing the critical measures which should be enacted in order for the Nagoya Protocol to meet its goals by 2020.

b) The Role of the Prefecture

- In 2009, the Long Term Plan for Gifu Prefecture was devised, detailing the strategy of the prefectural government for the next 10 years. It lays down policy for all sectors, including the agriculture, forestry and fisheries and environmental sector.
- Moreover, in January 2014, “The Charter of Gifu, the Land of Clear Waters” was established. This document offers thanks to the clear waters and enshrines the nature, history, culture and skills which they gave life to as local treasures of the prefecture while stating that the citizens of Gifu shall come together as one in order to leverage these gifts given by the water and pass them on to the next generation.
- Regarding the field of agriculture (including the fisheries sector), the Basic Plan for Gifu Agriculture and Rural Area in 2011 lays down the necessary policy for the prefecture in these areas, spanning a five year period. Initiatives will be developed based on this plan and the Gifu Agricultural and Rural Maintenance Action Plan in 2012 which deals more specifically with the steady provision of equipment.
- In the field of forestry, in 2012, the 2nd Term Plan for Forest Creation in Gifu Prefecture was enacted which spans the five year period from 2012 - 2016 and aims to comprehensively and systematically promote policy related to forest planning. Coupling this with “Gifu, the Land of Clear Waters”, 100 Year Plan for Forest Creation (tentative) currently being devised, efforts are being developed specifically in the field of Blessed Forest Creation which increases the number of forest areas and in turn aids in the conservation of biodiversity along with the cultivation of water.
- In relation to the environment, using the idea of the prefectural citizens helping to create the lush “Gifu, the Land of Clear Waters” as its fundamental principle, the General Plan for the Environment in 2011 was created. Going forward, the power of the ordinary citizens will be utilised in order to create the idea of “Gifu, the Land of Clear Waters”, which will of course conserve the clear waters, which are a symbol of the prefecture, while sharing the story of them, leveraging them and accepting them as a symbol of the identity of the people.
- A strategy will be developed for the selling of the extraordinary local products in the agriculture, forestry and fisheries sectors leveraging the beauty of the local environment they were raised in. In doing so, efforts will be made for ayu to be sold abroad along with the existing exports to Southeast Asia of the *fuyu* persimmon and strawberries.

- As a form of fiscal support, in fiscal year 2012 the Land of Clear Waters Forestry and Environment Tax was introduced to support the wide range of activities linked to the preservation of the GIAHS, such as conservation efforts and sustainability.

c) The Role of Affiliated Groups to the Association

In order to conserve, protect and promote the GIAHS, the Association and its constituent groups as well as the Pristine Nagara River Agriculture Forestry and Fisheries Sector Players will carry out the following initiatives:

(1) Increasing Awareness Inside and Outside the Region

- Opening workshops for local people and interested groups.
- Spreading information about the site using all available mediums, such as TV, newspapers and the internet in order to reach a local and international audience.
- Relevant local authorities on the river basin are coming together and collaborating to develop new ways of promoting industries. This manifests itself in a number of ways, for example through the development of the trademarked “Gifu, the Land of Clear Waters” concept and the incorporation of the Nagara River Brand in a wide variety of areas, from agriculture, forestry and fisheries products and the new processed goods which are made from them, to the tourism sector.

(2) Resource Conservation

- In order to inform people of the necessity of conserving ayu resources, allowing the children of the basin to assist in releasing fry and holding visits to see spawning ayu.
- Fisheries cooperatives and the local authorities on the basin will come together and proceed with efforts to conserve ayu stocks through the carrying out of artificial hatching and releasing of the fish.

(3) Training Workers in Necessary Fields

- Holding seminars and hands on workshops dealing with traditional fishing techniques and culture, as well as providing opportunities for children to experience the agriculture, forestry and fisheries industries hands on.

(4) Environmental Conservation Efforts

- Holding workshops aimed at citizens in dealing with environmental conservation.
- Supporting NPOs and other citizens groups with their efforts to survey the river environment and clean the rivers.
- Supporting people affiliated with the agriculture, forestry and fisheries sectors, NPOs and those living locally in their efforts to create forests which support the rivers.

(5) Promoting Ayu Related Industry

- At the same time as conserving ayu stocks, increasing the numbers of fishermen for sport on the river and the number of visitors who come to see the cormorant fishing on the river.
- Continuing to strengthen the capacity of the area to welcome tourists through offering opportunities for them to experience the agriculture, forestry and fisheries sectors first hand and also increasing tourist numbers to the Hida Takayama and UNESCO World Heritage Site Shirakawa-go through combining their existing tourism efforts.

(6) International and Domestic Cooperation

- Participating in meetings with people from other sites in Japan and thus, sharing information and exploring possible links which could be forged.
- Developing skills in partnership with already registered sites inside and outside of Japan.

IX. Monitoring and Evaluation

- On a national level, holding a national conference aimed at appraising the site every year, as well as evaluating efforts made on a regional level while exchanging information with other GIAHS sites
- On a prefectural level, evaluating and monitoring the effects of the efforts being made by the Nagara River Agriculture, Forestry and Fisheries Promotion Association.
- Regarding the conservation of ayu stocks, along with the natural environment and the promotion and conservation of biodiversity, the opinions of reliable experts will be taken on board in tandem with the monitoring and evaluation of conditions on the river so that any problems which do arise shall be dealt with quickly and smoothly.

X. Conclusion

Ayu are only found in the East Asian Region, in places such as China, Korea and Taiwan. They are however, most plentiful in Japan. In Japan, they are the second most fished for breed amongst all river fish. However, in recent years, both domestically and abroad numbers of ayu are falling and concerns exist about the possibility of extinction in some areas.

Given these conditions, regarding the conservation of stocks of ayu on the Nagara river, the environment and spawning grounds are being maintained and conserved, and ayu which have been sourced from indigenous population are being hatched and released artificially, as well as opportunities being offered to view spawning grounds. These kinds of protections which are being carried out on ayu habitats are also linked to the conservation of other sometimes rare fish species, thus having a positive effect on biodiversity in the region as a whole.

Moreover, along the river, in order to leverage and conserve the clear waters, efforts are continuing to be made by related parties in the agriculture, forestry and fisheries sectors, along with local residents to create forests which give life to rivers, and also to ensure the rivers are kept pristine through cleaning.

While breathing new life into these efforts through leveraging the status afforded to the site by registration as a GIAHS, it is hoped that word of the *satokawa* system will be spread as a model for GIAHS in developed countries which is subject to appropriate exploitation by the people and which plays a role in the conservation of the environment and powering local production.

XI. Targets of the Action Plan

i) The Promotion of Sustainable Agriculture, Forest and Fisheries Industries on the *Satokawa*

Parameter	Reference Value		Annual Targets					Targets	
			(Upper: Total, Lower: Single Year or Annual Increase)						
			2014	2015	2016	2017	2018		
The Catch of Ayu (tonne/year)	Average (2011-2013)	278	280	560	840	1,120	1,400	Total (2014-2018)	1,400
Production of Gifu Ayu Hatchery (tonne/year)	2013	63	63.2	126.6	190.2	254.0	318.0	Total (2014-2018)	318
Number of Artificially Hatched and Released Eggs (millions of eggs/year)	2013	100	102	206	312	420	530	Total (2014-2018)	530
Number of People Offered Experiences to Fish (people/year)	2013	201	200	400	600	800	2,800	2018	2,000
			200	200	200	200	2,000		

ii) Maintenance and Conservation of Biodiversity and the Water Environment on the *Satokawa*

Parameter	Reference Value		Annual Targets					Targets	
			(Upper: Total, Lower: Single Year or Annual Increase)						
			2014	2015	2016	2017	2018		
Area of "Fish Breeding Forest" (ha)	as of 2013	4.5	4.5	4.5	9.5	9.5	9.5	by 2018	9.5
Area of "Nagara River Source Area Forest Cultivation Project" (ha)	as of 2013	4.9	5.9	6.9	7.9	8.9	10.0	by 2018	10.0
Area Registered with the Gifu Clean Agriculture Programme (ha)	as of 2013	1,688	1,700	1,712	1,725	1,737	1,750	by 2018	1,750
Water Quality of the Nagara River (Main Stream)			No. of sites inspected / No. of sites meeting the criteria						
BOD (1mg/L)	2013	1/1	1/1	1/1	1/1	1/1	1/1	2018	1/1
BOD (2mg/L)		3/3	3/3	3/3	3/3	3/3	3/3	3/3	
Total Zinc (0.03mg/L)		4/4	4/4	4/4	4/4	4/4	4/4	4/4	
LAS (0.03mg/L)		3/3	3/3	3/3	3/3	3/3	3/3	3/3	
LAS (0.05mg/L)		1/1	1/1	1/1	1/1	1/1	1/1	1/1	
NP (0.001mg/L)		3/3	3/3	3/3	3/3	3/3	3/3	3/3	
NP (0.002mg/L)		1/1	1/1	1/1	1/1	1/1	1/1	1/1	
Newly Qualified Natural Construction Managers (people/year)	2013	134	200	400	600	800	1,000	Total (2014-2018)	1,000
Inspection of Fish Ways (sites/year)	2013	250	250	500	750	1,000	1,250	2018	250
			250	250	250	250	250		

iii) The Passing Down of the Culture Surrounding the Water and Ayu as well as Traditional Ayu Fishing Techniques

Parameter	Reference Value		Annual Targets					Targets	
			(Upper: Total, Lower: Single Year or Annual Increase)						
			2014	2015	2016	2017	2018		
Number of Registered Storytellers of Traditional Fishing Methods	as of 2013	0	0	38	42	46	50	by 2018	50
Number of Public Lectures on Traditional Fishing and Culture (times/year)	2013	24	25	52	81	112	145	2018	33
Number of Craftsman Making Cormorant Baskets	as of 2013	1	3	3	3	3	4	by 2018	4
Production of Mulberry Trees in Gifu Pref. (kg/year)	2013	225	225	525	975	1,625	2,575	2018	950
Production of Sunset Hibiscus in Gifu Pref. (kg/year)	2013	30	44	102	174	260	360	2018	100
			44	58	72	86	100		

iv) The Conservation and Passing Down of Landscapes and Traditional Disaster Prevention Systems on the *Satokawa*

Parameter	Reference Value		Annual Targets					Targets	
			(Upper: Total, Lower: Single Year or Annual Increase)						
			2014	2015	2016	2017	2018		
Recovered Area of Abandoned Fields and Rice Paddies (ha/year)	2013	12	12	24	36	48	60	Total (2014-2018)	60
Area Subject to Thinning (ha/year)	2013	2,581	2,600	5,200	7,800	10,400	13,000	2018	2,600
Number of People Attending Closes on Traditional Disaster Prevention Systems (people/year)	2014	200	200	400	600	800	1,000	Total (2014-2018)	1,000
			200	200	200	200	200		

v) Spreading Information about the Nagara River System Domestically and Globally

Parameter	Reference Value		Annual Targets					Targets	
			(Upper: Total, Lower: Single Year or Annual Increase)						
			2014	2015	2016	2017	2018		
Tourists Attending Nagara Cormorant Fishing in Gifu City (people/year)	2013	105,002	102,714	217,714	332,714	447,714	562,714	2018	115,000
Tourists Attending Oze Cormorant Fishing in Seki City (people/year)	2013	7,587	7,587	15,587	24,287	33,687	43,687	2018	10,000
Visitors to the Mino-Washi Museum (people/year)	2013	32,418	32,500	67,000	103,000	140,500	179,500	2018	39,000
Number of People Engaging in Green Tourism (Including Eco Tourism) (people/year)	2013	83,132	86,505	176,383	269,634	366,258	466,258	2018	100,000
			86,505	89,878	93,251	96,624	100,000		