

# Lake Biwa Comprehensive Preservation Initiatives

Bequeathing a Clean Lake Biwa to Future Generations

— Seeking Harmonious Coexistence with the Lake's Ecosystem—



Lake Biwa Comprehensive Preservation  
Liaison Coordination Council



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## Introduction

The ‘Project Investigation for the Comprehensive Preservation of Lake Biwa’ was a joint compilation of projects for the comprehensive preservation of Lake Biwa and the promotion of cooperative initiatives by relevant government agencies (Ministry of Health, Labour and Welfare (current name); Ministry of Agriculture, Forestry and Fisheries; Forestry Agency; Ministry of Land, Infrastructure, Transport and Tourism (current name); Ministry of the Environment (current name)) in March 1999. This took ‘Bequeathing a Clean Lake Biwa to Future Generations’ as its basic principle.

The First Stage was set from FY1999 to FY2010 and the Second Stage was set from FY2011 to FY2020. We are aiming to achieve goals and policies in stages through a flexible response based on continuous improvement in relation to protecting water quality, increasing soil’s recharge capacity and preserving the natural environment and scenic landscapes.

In FY2010, with the cooperation and collaboration of the Ministry of Health, Labour and Welfare, the Ministry of Agriculture, Forestry and Fisheries, the Forestry Agency, the Fisheries Agency, the Ministry of Land, Infrastructure, Transport and Tourism, the Ministry of the Environment and Shiga Prefecture, a review took place of the goals and initiatives of the Second Stage in light of the inspection results in the period of the First Stage.

This pamphlet is a compilation about the promotion of the comprehensive preservation of Lake Biwa, looking toward FY2020.

Cover photo: Courtesy of Shiga Prefecture (Nagahama City)

# 1. Overview and History of Lake Biwa

## Overview of Lake Biwa

### Lake Biwa : An Ancient Lake

Lake Biwa is the only ancient lake in Japan. In terms of surface area, despite being the largest lake in Japan. In terms of age, however, the lake is the world's third oldest, with a history of some four million years. The term "ancient lake" is generally defined as an extant lake that was created more than 100,000 years ago. Because they have such long histories, ancient lakes feature a great many endemic species that have evolved within the respective lake. Lake Biwa possesses abundant biodiversity, offering habitats to over 1,000 species, including at least 60 endemic species, such as Biwa trout (*onchorhynchus masou rhodurus*) and Seta corbiculid clam (*corbicular sandai*).



	Lake Baikal	Lake Tanganyika	Lake Biwa
Age	Approx. 30 million years old	Approx. 20 million years old	Approx. 4 million years old
Lake Surface Area	31,500km <sup>2</sup>	32,600km <sup>2</sup>	670km <sup>2</sup>
Maximum Depth	1,637m	1,471m	104m
Average Depth	740m	572m	41m
Water Storage Capacity	23,000km <sup>3</sup>	18,880km <sup>3</sup>	27.5km <sup>3</sup>
No. of Species Living in Lake	Approx. 2,500	Approx. 1,300	Approx. 600
Rate of Endemic Species	Approx. 50%	Approx. 50%	Approx. 10%

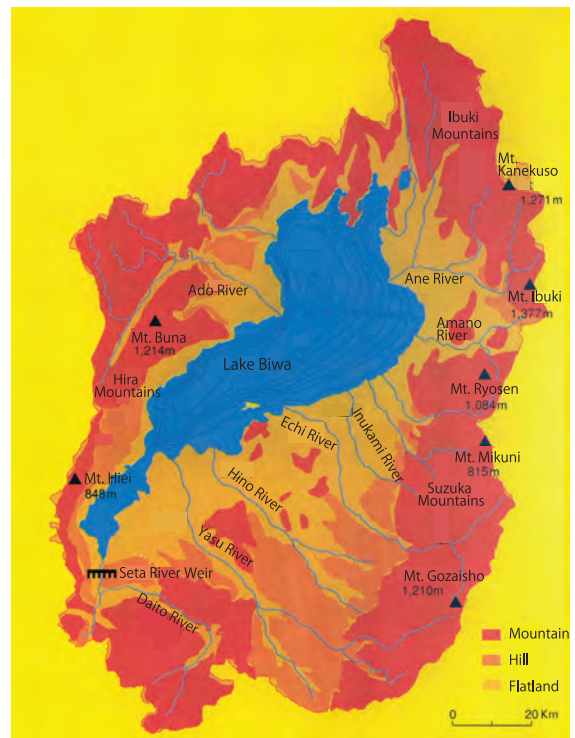
Location and Characteristics of the Oldest Lakes in the World

(Source: Shiga Prefectural Lake Biwa Museum 'World's Ancient Lakes' and Shiga Prefecture '2011 Environmental White Paper')

### Dimensions of Lake Biwa

The surface area of Lake Biwa, Japan's largest lake, is 670km<sup>2</sup>, 17,000 times the area of Koshien Ball Park one of the largest baseball fields in Japan and one-sixth the total area of Shiga Prefecture where the lake lies. At the lake's narrowest point, it is spanned by Biwako Ohashi Bridge. The lake's section north of the bridge is called "Hokko" (northern lake) and that south of the bridge is called "Nanko" (southern lake); Hokko and Nanko differ in character in various aspects.

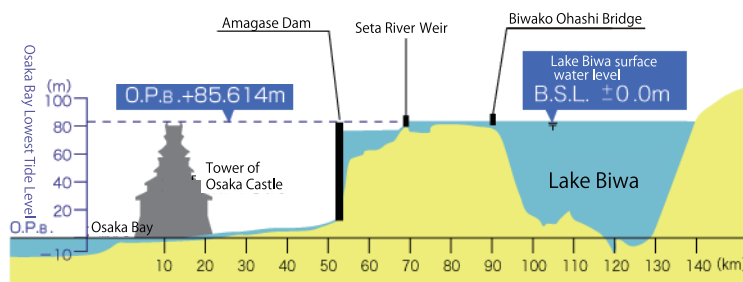
There are approximately 450 rivers of various sizes flowing into the lake. There is, however, only one outflow from the lake (the Seta River), apart from canals constructed during early modern times. It is estimated that approximately 19 years are required to change all water in the lake.



Catchment Area of Lake Biwa	3,174Km <sup>2</sup>	
Size of Lake Biwa	Area	670.25Km <sup>2</sup> (North Lake:South Lake =617.75km <sup>2</sup> : 52.50km <sup>2</sup> =11 : 1)
	Extension of the North Lake	63.49km
	Maximum Width	22.8km
	Minimum Width	1.35km
Water Depth	Circumference	235.20km
	Maximum Depth	103.58m
Volume of Water Kept in Store	Average Depth	41.20m
	Volume of Water Kept in Store	27.5 billion m <sup>3</sup> (North Biwa 27.3 billion m <sup>3</sup> , South Lake 0.2 billion m <sup>3</sup> )

Dimensions of Lake Biwa

(Source: Shiga Prefecture '2011 Environmental White Paper')



Elevation of the Lake

(Source: Homepage of the Incorporated Administrative Agency, Japan Water Agency, Lake Biwa Development Integrated Operation & Maintenance Office)

# Overview of Lake Biwa and the Yodo River Basin

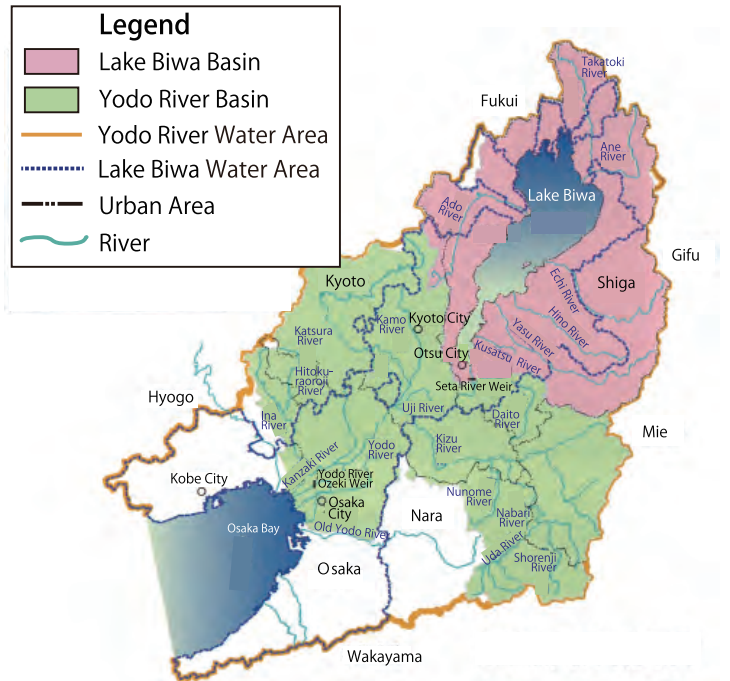
## Overview of the Basin

The Yodo River, flowing into Osaka Bay, originates in mountains in and around Shiga Prefecture. After flowing out of Lake Biwa, the river travels southward down to the Osaka Plain, combining several branches of various sizes including the Kizu and the Katsura rivers. The Yodo River changes names during its long travel: the upper and middle reaches are called the Seta and the Uji rivers, respectively. The Yodo River basin constitutes an extensive area of approximately 8,240km<sup>2</sup>, covering the six prefectures Mie, Shiga, Kyoto, Osaka, Hyogo and Nara.

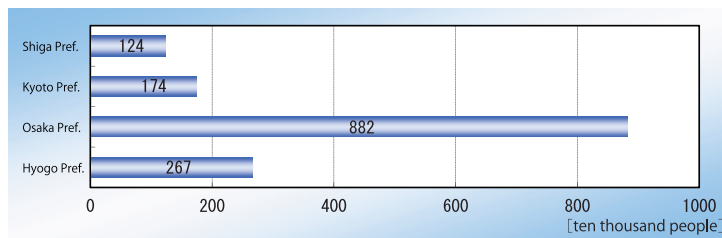
## Water Use in the Basin

Lake Biwa supplies water for various uses: domestic, industrial and agricultural uses, and for power generation. Water of Lake Biwa and the Yodo River supports social and economic activities not only in their respective basins, but also in extensive areas in the Kinki region. Notably, tap water from the lake/river serves some 14 million people, the largest population in Japan benefiting from a single water source.

The water is taken and used throughout the water source. In the upper reaches, water taken from Lake Biwa and dams is mainly used in Shiga Prefecture; in the middle reaches, water is taken from Biwako Canals and the Uji River primarily for use in Kyoto City; in the lower reaches, water from the Yodo River serves the huge population of Osaka and other cities on the Osaka Plain.



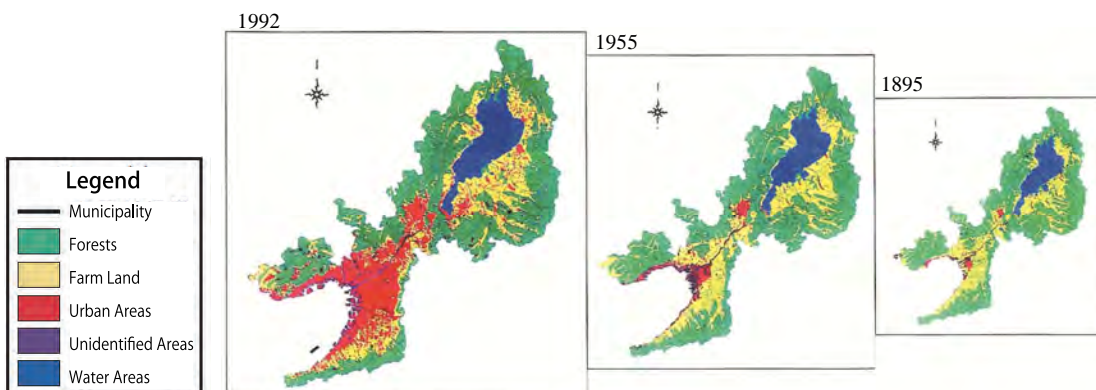
Lake Biwa and Yodo River Basin Map



Population Using Water from Lake Biwa: FY2008 Waterworks  
(Compiled from Shiga Prefecture statistics)

## Land Use in the Basin

Since ancient times, many cities have been developed on the flat lands in Lake Biwa and the Yodo River Basin. During Japan's high economic growth period after World War II, industrialization and urbanization progressed remarkably, particularly in Kyoto, Osaka, Kobe and their suburbs; many forests and farmlands around large cities were converted into residential zones during that period. Today, the Lake Biwa Basin and the upper reaches of the Yodo River have a relatively greater proportion of farmland; the lower reaches contain more residential, commercial and industrial districts.



Changes in Land Use in Lake Biwa and the Yodo River Basin  
(Shiga Prefectural Lake Biwa Museum Research Report No. 6)

# History of Lake Biwa/Yodo River Basin and the People

## The Origin of Abundant Blessings

It is believed that ancient people began living around Lake Biwa over 20,000 years ago. During the Yayoi Period (ca300BC - ca300AD), rice cultivation was introduced to the fertile wetland around the lake, where increasing numbers of agricultural communities developed, protected by the natural embankment from seasonal changes in the lake's water levels.



**Rice cultivation During the Yayoi Period**  
(Courtesy of Shiga Prefectural Museum of Azuchi Castle and Archaeology)

● **Dainaka-no-ko lake ruin**

During the reclamation of Dainaka-no-ko inland lake, many artifacts produced between the Jomon (ca6,000BC-ca300BC) and Heian (794AD-1192AD) periods were discovered on the lake bottom. Wooden farm tools and the ruins of paddy fields from the Yayoi period (ca300BC-ca300AD) show that rice was grown around the lake during that period.



**Clay Pot Unearthed from Dainaka-no-ko Lake Ruin**  
(Courtesy of Incorporated Administrative Agency, Japan Water Agency, Lake Biwa Development Integrated Operation & Maintenance Office)

## Increased Rice Production, Expanded Farmlands and Subsequent Development of Commerce

As time passed from the ancient period to medieval times and then to the Edo Period (1603 – 1868), new rice paddies were cultivated on the Omi Plain and it is said that at that time agricultural production here was the second highest in Japan, after the Kawachi Plain in Osaka.

In addition to rice produced on the Omi Plain, the annual rice tax and other products from the Hokuriku region were transported by boats, called “marukobune,” from Lake Biwa, through Uji River and Yodo River, on to Kyoto and Osaka. Transportation by water reached its peak during the mid-Edo Period, when as many as 3,700 boats would sail on the lake. At that time, Lake Biwa served as an essential transportation artery in the Kinki economic region, which was centered on Kyoto and Osaka, for the mass transit of goods.



**Otsu Harbor Crowded with “Marukobune”**  
(Courtesy of Suntory Museum of Art)

## A Political Center and Cradle of Culture and Tradition

Since ancient times, the Lake Biwa region played an essential role in Japan’s political scenes, as well as in agriculture and commerce. In 667, Japan’s capital was relocated to Otsu; in 1579, Azuchi Castle was constructed on a hilltop commanding the view of the lake. For several subsequent years, Azuchi was Japan’s political and economic center.

Along with the development of transport, Lake Biwa also became well-known for its scenic beauty. Many poems depicting the lake’s landscapes appear in Manyoshu, the earliest extant anthology in Japan, and other collections of poems. During the Muromachi Period (1333 – 1573), a nobleman named Konoe Masaie selected Omoi *Hakkei* (The Eight Scenic Beauties in Omi) modeled on Shousyou *Hakkei* in the Dongting Lake of China. Omi *Hakkei* were subsequently depicted by Ando Hiroshige, a *ukiyo*e (woodblock print) artist, and his works became extremely popular, promoting the beauty of the four seasons in Lake Biwa throughout Japan.

In this way, Lake Biwa has continuously benefited Japanese people spiritually as well as economically, inspiring artists and nurturing various cultures and traditions.

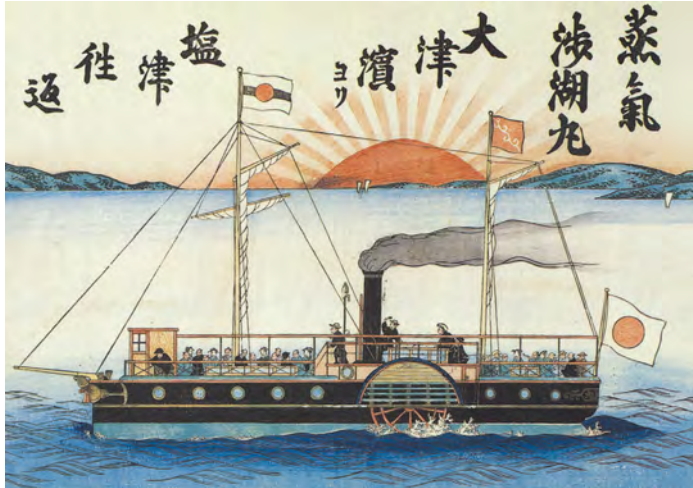


**Omi Hakkei (The Eight Scenic Beauties in Omi)**  
(Courtesy of Otsu City Museum of History)

**Industrial and Economic Development after the Meiji Restoration**

After the Meiji Restoration (1868), Lake Biwa and the Yodo River Basin experienced outstanding industrial and economic development. Osaka in particular prospered as Japan's industrial center. On Lake Biwa, steamship services were used for transport between Nagahama and Otsu, and for sightseeing tours of the lake. Prior to full-scale introduction of railways, steamships on rivers played the leading role in transporting both passengers and cargo between Kyoto and Osaka.

During the Meiji Period (1868 - 1912), Osaka citizens bought water-filled barrels from vendors, who drew water from the Yodo River. In 1905, however, Osaka City commenced tap water supply service, whose source also was the Yodo River.



Lake Biwa Steamship (Courtesy of Otsu City Museum of History)



Steamship on the Yodo River  
(Courtesy of the Yodogawa River Office, Kinki Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism)

**Changes in the Society and Lifestyles of Lake Biwa and the Yodo River Basin**

Since ancient times, people living near Lake Biwa and the Yodo River lived in direct contact with the water of the lake and basin in various forms, such as rice cultivation, fishing, cooking and cleaning. However, during Japan's high economic growth period (1955 – 1974), the situation surrounding the lives of people living here changed dramatically. For example, there was rapid urbanization and industrialization which led to fields disappearing, little-by-little. Together with this, increasing numbers of people were living in urban areas, where a tap water service was available and where every household had an electric washing machine. The lives of the people became more affluent and convenient, and the amount of water use increased. On the other hand, opportunities to directly come into contact with the water of Lake Biwa and the Yodo River Basin in everyday life decreased.



1956

Drawing water from a well with a water bucket suspended from a weighted rod (photograph on the left). At that time, it was possible to see such scenery with fields everywhere.

Nowadays, residential land has been developed and the fields have disappeared (photograph on the right).

(Yanagasaki, Otsu City)



1997



1955

Washing rice in the lake (photograph on the left).

Currently, this place has been filled up and turned into a road (photograph on the right).

(Okishima Town, Omihachiman City)



1997

**Changes in Society and Life**

(Courtesy of Shiga Prefectural Lake Biwa Museum 'Lake Biwa Album of You and Me')

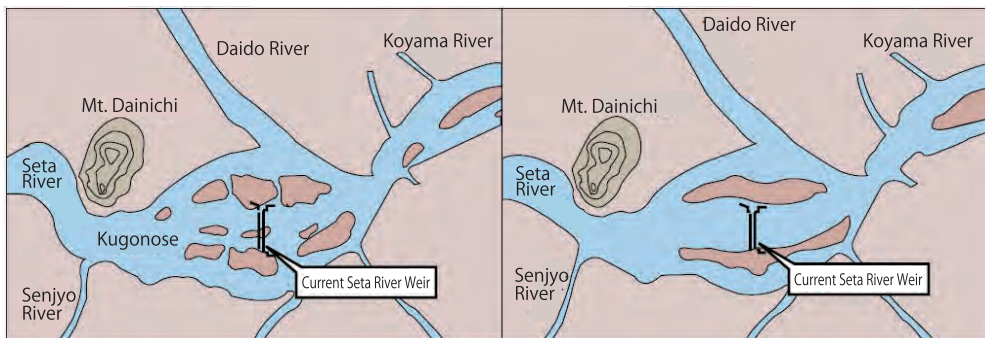
Bottom left photograph: Taken by Takashi Maeno

## 2. Lake Biwa Comprehensive Development Project

### Background to the Lake Biwa Comprehensive Development Project

#### Flood Damage in the Edo Period (1603 – 1868)

Although Lake Biwa generally benefited people living on the Omi Plain, the lake sometimes flooded farmlands, causing great damage to farmers. The major factor of flooding was evident: despite the size of the lake, it had only one outflow, the Seta River, which was shallow and narrow. Well aware of the need to dredge the riverbed, farmers of the Edo Period filed petitions for dredging with the Shogunate government, thereby risking their lives, since such actions were strictly banned under the feudalistic system of that period. The desperate attempts of those brave farmers, however, were seldom rewarded, since villagers on the lower reaches of the river thought that dredging the Seta River would cause flooding in the lower basin. From the militaristic perspective, the Shogunate government regarded the shallow ford of the Seta River as a strategic point for transporting an army across the river, and was naturally reluctant to dredge the riverbed. The Shogunate government allowed dredging only 5 times for 200 years of Edo Period. Accordingly, the farmers around the lake occasionally dredged the riverbed themselves, pretending that they were collecting clams.



**Map of the Seta River Before the Tenpo Dredging** **Map of the Seta River After the Tenpo Dredging**  
 (Source: Incorporated Administrative Agency, Japan Water Agency, Lake Biwa Development Integrated Operation & Maintenance Office)

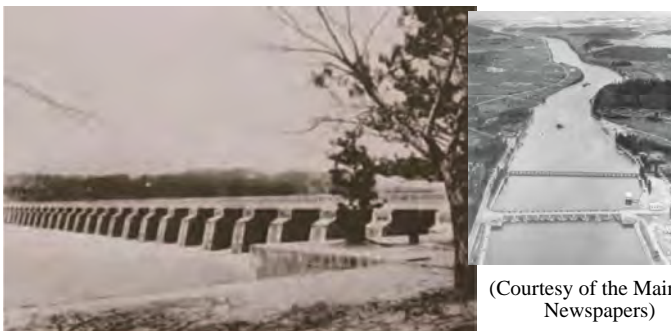
#### Flood Control during the Meiji Period (1868 – 1912)

Even after the Meiji Restoration, Lake Biwa occasionally flooded, causing extensive damage to farmlands around the lake. The great flood of 1885 caused particularly serious damage, including 121 casualties and 17,340 collapsed houses. Following this disaster, the River Law was enacted in 1896, a large-scale disaster prevention program was initiated, targeting the entire Lake Biwa and the Yodo River Basin. The program mainly comprised widening and dredging of the shallow ford of the Seta River, construction of Old Seta River Weir(Nango Araizeki Weir), and improvement works of the lower reaches, the Uji River and the Yodo River. As a result, Seta River flow capacity increased four times, and water level of Lake Biwa and flow of the Seta River control became possible by operating weir gates. The gates, however, were manually operated, requiring one full day to open and two days to close.

Land erosion prevention and afforestation projects were also commenced in the beginning of the Meiji Period. Prior to project implementation, Mt. Tanakami by the Seta River had no vegetation; sand and soil eroded from the mountain flowed down with rainwater into the river and were deposited on the riverbed. In the afforestation of this mountain, the Japanese government asked the help of a Dutch civil engineer, Johannis de Rijke, who played a leading role in the project. Subsequently, he committed himself to many river improvement and erosion prevention projects in various parts of Japan, including improvement of the Yodo River and Osaka Bay. For these commitments, he is remembered as the father of flood control in Japan.



**Extensive Flooding of September 1896**  
 (Courtesy of Otsu City Museum of History)



**Old Seta River Weir(Nango Araizeki Weir)**  
 (Courtesy of the Kinki Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism)

(Courtesy of the Mainichi Newspapers)



**Civil Engineer Johannis de Rijke**  
 (Courtesy of the Yodogawa River Office, Kinki Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism)



**The Beginning of Modern Usage of Water from Lake Biwa**

The first modern project for using the water of Lake Biwa was the Lake Biwa Canal Project (the first canal), inaugurated in 1885. This project, aimed at supplying agricultural and domestic water to Kyoto, developing a water transportation route, providing energy through construction of hydroelectric power plants and paved the way for subsequent multi-purpose regional development programs. Also, this was the first large-scale project undertaken solely by the Japanese people without the assistance of foreign engineers. In 1890, along with the canal a power plant was completed, which began supplying electricity to Kyoto City, enabling the City to operate Japan's first street car services. In 1912 a second canal was constructed, which contributed to the further growth of Kyoto City.



**Lake Biwa Canal**  
(Courtesy of Otsu City Museum of History)



**Keage Power Plant**  
(Courtesy of the Yomiuri Shimbun)



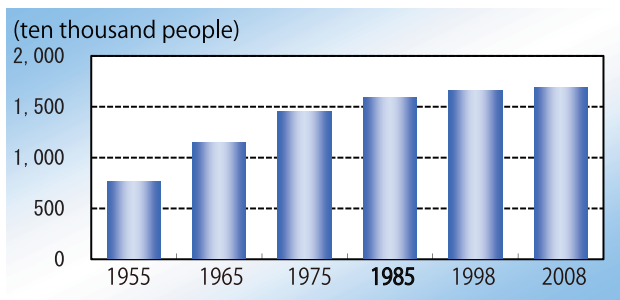
**Japan's First Streetcar**  
(Courtesy of the Yomiuri Shimbun)

**Increasing Demand for Water in the Showa Period (1926 – 1989)**

In the decades after World War II, the Japanese economy began enjoying soaring growth. Under the economic boom, the lower basin of the Yodo River began demanding more and more water from Lake Biwa, urged by increasing population, progress of industrialization, and worsening land subsidence caused by overuse of underground water.

Meanwhile, Shiga Prefecture had its own demands for resolving age-old problems of flooding and drought, as well as for preserving the water quality and ecosystems of Lake Biwa, and using the water for developing local industries.

Given such diverse demands of the various parties concerned, it became essential to prepare a comprehensive program involving all stakeholders. The objectives of such a comprehensive program included promoting effective use of water to develop Shiga and the Kansai economy and controlling flooding, while at the same time conserving the lake's water quality and ecosystems.



**Population Supplied with Water from the Yodo River System (Lake Biwa, River Yodo, River Katsura and River Kizu)**  
(Source: Water service statistics: Facilities and operations)



**Road Affected by Land Subsidence**  
(Courtesy of Osaka Municipal Waterworks Bureau)

## Details of the Lake Biwa Comprehensive Development Project

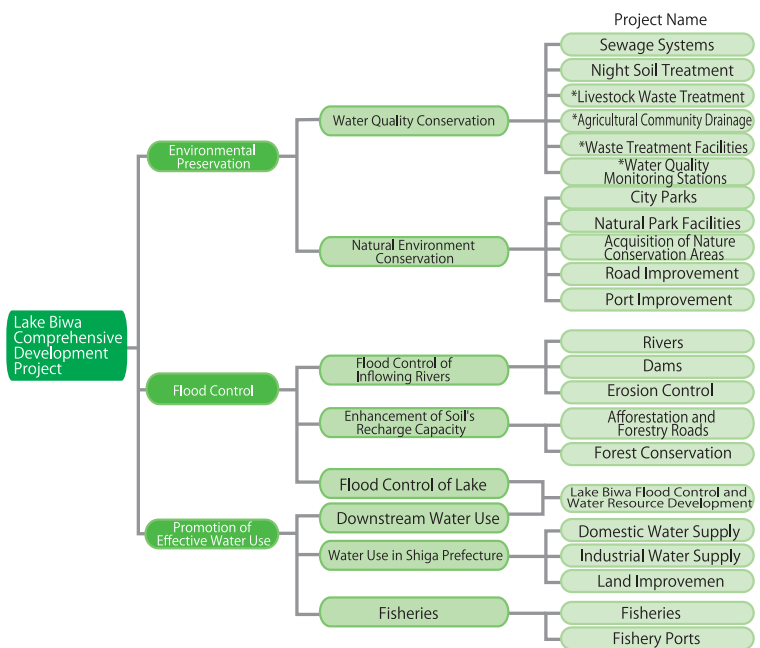
As stated earlier, since ancient times Lake Biwa has continuously benefited people in Shiga Prefecture and the Kinki region, contributing greatly to regional development and prosperity. On the other hand, there have been various challenges related to the lake: residents of the lake area experienced occasional floods and droughts. In addition, progress of urbanization and industrialization aggravated the lake's natural environment and residents' living environment. Ever since the post-World War II high economic growth period, demand for water has increased in the Yodo River basin, imposing a still greater burden on Lake Biwa as an essential water source. With this backdrop, the Lake Biwa Comprehensive Development Project was initiated in 1972 as a national project in compliance with the Special Law for Developing the Lake Biwa Region. To resolve various problems in a holistic manner and seek economic development of both the upper and lower reaches of the Yodo River, this Project encompasses policies to promote effective use of water, control flooding and drought, and create amenity-rich waterfront areas. At the same time, the Program incorporates measures for addressing environmental challenges, including deterioration of water quality. The Special Law for Developing the Lake Biwa Region was extended twice (for 10 years in 1982 and for additional five years in 1992); in total, the Project was in operation for 25 calendar years from 1972 to 1997.

### Program System

The major objectives of the Lake Biwa Comprehensive Development Project were conservation and restoration of the lake's environment, including water quality; flood control of Lake Biwa and the Yodo River; and promotion of effective use of water.

### Outline of Project Expenses

The Project encompassed various projects in 22 categories, all contributing to sound development of the Kinki region. The total budget amounted to approx. 1,863 billion yen; when the Project was fully completed, actual expenditures reached 1,905 billion yen.



\* : Added Program by changes in 1979

**Systems of the Lake Biwa Comprehensive Development Project**

### Special Financial Measures

The Lake Biwa Comprehensive Development Project was implemented in compliance with the Special Law for Developing the Lake Biwa Region, providing legal grounds for allocating special funds from the national government. This legal system paved the way for many subsequent water source development programs throughout Japan.

○ **Special Funds from the National Government:**

The national government endowed special funds (by raising the share of the national government) to many projects implemented as part of the Lake Biwa Comprehensive Development Project.

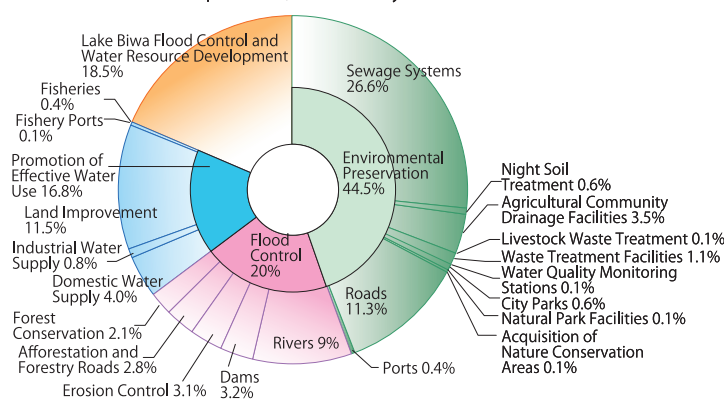
○ **Share of Municipalities in the Lower Basin:**

The municipalities in the lower basin that would benefit from the lake development projects shared the expenses of the lake development and conservation projects implemented by Shiga Prefecture and municipalities within the Prefecture. The share ratio was determined in accordance with the water volume to be supplied from the newly developed resources (40 tons in total). The share paid by the municipalities concerned totaled approximately 60.2 billion yen. In addition, Osaka and Hyogo prefectures furnished Shiga Prefecture with funds totaling 5 billion yen.

○ **Lake Biwa Management Fund:**

To finance construction and operation of various maintenance facilities in Lake Biwa, Shiga Prefecture established the Lake Biwa Management Fund of approximately 10 billion yen in Fiscal 1996, when the Lake Biwa Comprehensive Development Project was completed.

<Total expenses:1,905 billion yen>



**Breakdown of Expenses of the Lake Biwa Comprehensive Development Project**

## Outcomes of the Lake Biwa Comprehensive Development Project

As a result of projects implemented as part of the Lake Biwa Comprehensive Development Project, Lake Biwa and the Yodo River basin obtained improved infrastructures. Construction of embankments and facilities to remove inner drainage solved flood problems; various measures taken against drought enabled a steady supply of water. Of the 22 major projects incorporated in the Project, 11 concerned environmental conservation, which aimed to improve living and natural environment.

### Effects of Flood Control Projects

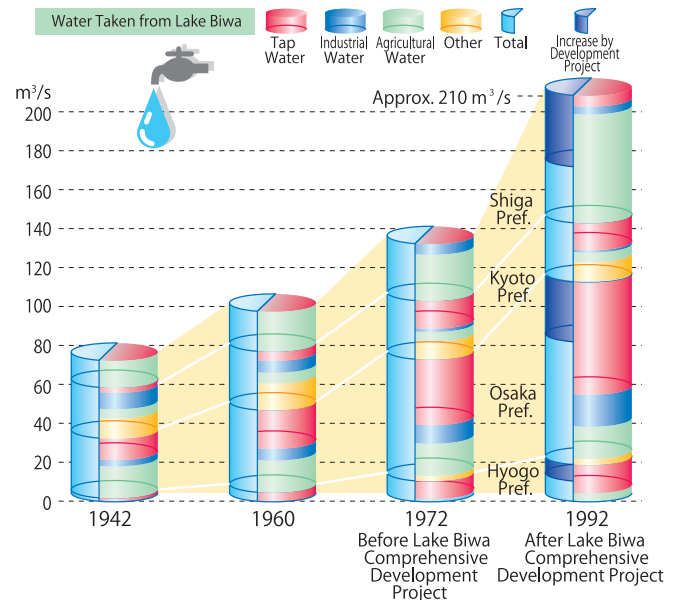
As a result of the Lake Biwa Comprehensive Development Project, control of the lake's water level has become much easier, in turn enabling flood control. For instance, the Project has significantly mitigated damage from flooding in terms of both flooded area and number of houses inundated above and below floor level.

Comparison of Damage from Flooding

Factors		Flooding in July 1972	Flooding in May 1995
Precipitation	Max. precipitation	424 mm	435 mm
	Location of max. precipitation	Yanagase, Yogo Town	Tochu, Kutsuki Village
	Average precipitation in basin	320 mm/5 days	297 mm/13 days
Max. water level		+92cm	+93cm
Area flooded by Lake water		3,377ha	742ha
Number of houses inundated above/below floor level (Shiga Prefecture)		755 houses	7 houses

### Effects of Projects Promoting Effective Use of Water

As a result of the Lake Biwa Comprehensive Development Project, daily supplied water volume increased significantly, securing a steady water supply for domestic and industrial uses throughout the basin.

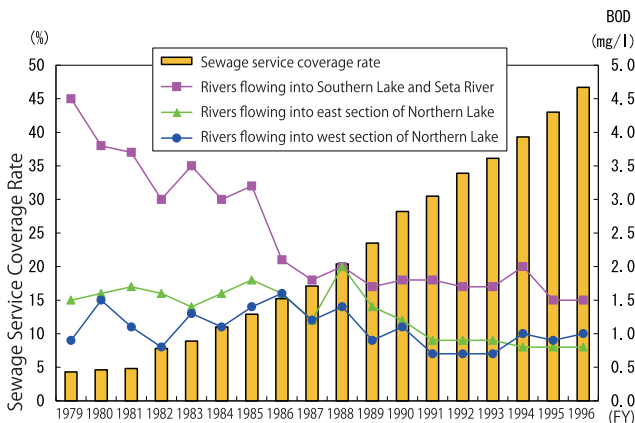


### Effects of Environmental Preservation Projects

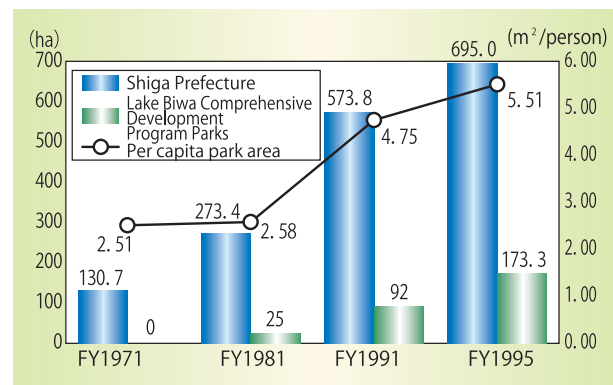
Despite increase in the population of Lake Biwa's catchment, its water quality has significantly improved as a result of water quality conservation projects, including construction/improvement of sewage treatment plants, livestock waste treatment facilities, agricultural community drainage facilities and waste treatment plants. These projects were particularly effective in improving water in rivers into the Southern Lake, thereby mitigating eutrophication.

To enable citizen access to the lake, city parks and natural parks were constructed along the shoreline. In addition, governments of various levels purchased strategic lakefront areas to preserve outstanding scenic beauty, as well as the lake's indigenous natural environment.

Effects of Projects to Promote Effective Use of Water  
(Source: Incorporated Administrative Agency, Japan Water Agency, Lake Biwa Development Integrated Operation & Maintenance Office)



Changes in River Water Quality and Sewage Service Coverage Rate



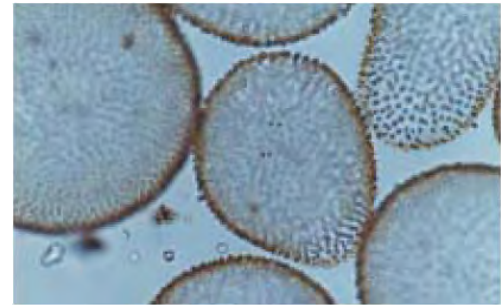
(Note) Per capita park area = city park area / population in urban district  
Trends in the Area of City Parks in Shiga Prefecture

## 3. Efforts for the Comprehensive Preservation of Lake Biwa (First Stage)

### History of the Efforts for the Preservation of Lake Biwa

#### Red Tide Outbreak in Lake Biwa

In May 27, 1977, the first occurrence of red tide was confirmed offshore of Otsu and Takashima City. The lake surface turned the reddish brown associated with the fishy smell hanging in the air. Furthermore, a large quantity of fish died, causing great damage to fishery. The red tides were caused by abnormal growth of phytoplankton resulting from eutrophication-the over-enrichment of water due to excessive loading of nutrients such as nitrogen and phosphorus.



Phytoplankton (*Uroglena americana*)

#### Water Quality Conservation Campaigns Initiated by Local Residents

The red tides had a significant and lasting impact on the residents of Shiga Prefecture. The outbreak of red tide motivated residents to take action to prevent further eutrophication. Increasing numbers of citizens were involved in the environmental action, resulting in a prefecture-wide campaign to stop using synthetic household detergents containing phosphorus, one of the major causes of eutrophication. Instead of synthetic detergents, the residents began using powdered soap to wash clothing. As a result, use of powdered soap, which accounted for only 26% of use of detergent in 1979, soared to at least 70% in 1980. Driven by the residents' campaign, the Shiga prefectural government, ahead of other prefectures in Japan, decided to enact an ordinance to control wastewater containing nitrogen and phosphorus. This ordinance, enacted in 1979, is titled the Shiga Prefectural Ordinance Concerning the Prevention of the Eutrophication in Lake Biwa (Eutrophication Prevention Ordinance).

#### Shiga Prefectural Ordinance Concerning the Prevention of the Eutrophication in Lake Biwa (Eutrophication Prevention Ordinance)

In 1979, Shiga Prefecture enacted the Eutrophication Prevention Ordinance to prevent eutrophication of Lake Biwa by controlling inflow of nitrogen and phosphorus. The Ordinance was the first in Japan to ban the marketing, use, and gifting of phosphorus-containing synthetic detergent, whose use was widespread throughout Japan at that time. The Ordinance also encompassed regulations on industrial wastewater, together with guidelines for reducing nitrogen and phosphorus from domestic and agricultural wastewater.

#### World Lake Conferences

As part of Shiga Prefecture's commitment to lakes' comprehensive environmental conservation, the Prefecture planned international conferences on the environmental preservation of lakes worldwide, and hosted the 1st World Lake Conference in 1984.

Following this first conference, World Lake Conferences were held, in principle, biennially in various lakeside cities around the world, with the objectives of gathering scientists, administrators and citizens to discuss various challenges currently confronting the world's lakes, and seeking solutions to such challenges. In 2001, the 9th Conference was held again in Shiga Prefecture, the host city of the first Conference.

To promote the spirit of the World Lake Conferences, a new NGO titled the International Lake Environment Committee (ILEC) was formed with support from Shiga Prefecture and cooperation from the United Nations Environmental Programme (UNEP).

Sites and Dates of Past World Lake Conferences

1st	Shiga Prefecture, Japan, 1984
2nd	State of Michigan, U.S.A., 1986
3rd	Keszthely City, Hungary, 1988
4th	Hangzhou, China, 1990
5th	Stresa City, Italy, 1993
6th	Ibaraki Prefecture, Japan, 1995
7th	San Martin City, Argentina, 1997
8th	Copenhagen, Denmark, 1999
9th	Shiga Prefecture, Japan, 2001
10th	Chicago, State of Illinois, U.S.A., 2003
11th	Nairobi, Kenya, 2005
12th	Jaipur, India, 2007
13th	Wuhan, China, 2009
14th	Austin, U.S.A., 2011

## Background to the Survey

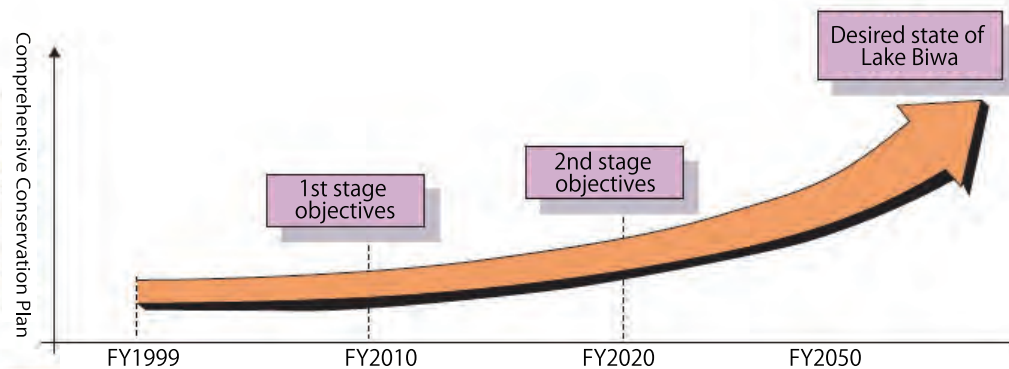
Lake Biwa is currently confronted with various challenges, including deteriorating water quality and loss of habitats for endemic species, resulting primarily from changes in lifestyles and land use, both driven by recent socioeconomic development. To address these challenges, various ministries and agencies concerned (National Land Agency and Ministry of Construction [now Ministry of Land, Infrastructure and Transport]; Environmental Agency [now Ministry of Environment]; Ministry of Health and Welfare [now Ministry of Health, Labour and Welfare]; Ministry of Agriculture, Forestry and Fisheries; and Forestry Agency) decided to develop a comprehensive lake conservation plan, as a model plan encompassing Lake Biwa and its peripheral regions, by coordinating and integrating various policies taken by respective ministries/agencies. To this end, the governmental bodies concerned jointly established a committee comprising specialists from a wide spectrum of academic fields. In the two years from fiscal 1997 to fiscal 1998, the committee conducted a comprehensive survey, studying and discussing diverse aspects, including improvement of water quality and soil recharge capacity, along with preservation of natural environment and landscapes. The survey outcome was compiled in a report titled "Survey for Preparing Lake Biwa Comprehensive Conservation Plan".

## Objectives and Period of the Plan

The Plan period has been set at 20 years, since in 20 years (around 2020), children born at the time of the Plan's initiation will reach adulthood. Furthermore, the Plan encompasses a longer-term vision, envisaging the state of Lake Biwa fifty years from now (around 2050), when the children will become most influential in the future society.

This long-term Plan must enable flexible operation and, if necessary, revisions in response to social changes, since unexpected changes can occur.

The plan has been set for the 1st stage (up to 2010) and 2nd stage (up to 2020). The objective for the 1st stage is to promote environmental conservation through steady yet flexible implementation of ongoing policies, based on constant review of their effectiveness; coordination among various policies, introduction of new policies and model projects, and continuous surveying and monitoring. The 2nd stage objective is to further promote conservation policies in response to new findings in the 1st stage, with particular focus on preventive measures.



Stage	1st	2nd	Future (long-term vision)
Stage	From feasibility of policies		
Viewpoint	Ongoing measures reflecting new findings	Preventive measures	Promotion of proper land use in consideration of the lake's environmental changes and progress of environmental surveys, studies and conservation technologies; flexible implementation of the Plan in view of changing public opinion, social and legal systems and economic conditions
Focus	<ul style="list-style-type: none"> <li>Steady implementation and reinforcement of ongoing policies and their coordination</li> <li>Introduction of new policies and model projects</li> <li>Information sharing and resident participation</li> <li>Survey and monitoring to analyze and identify environmental problems</li> </ul>	<ul style="list-style-type: none"> <li>Implementation and reinforcement of policies, based on analysis of their effects</li> <li>Promotion of new policies and model projects to entire region</li> <li>Information sharing and resident participation</li> <li>Survey and monitoring to analyze and identify environmental problems</li> </ul>	
	Flexible operation in response to constant review and improvement of the Plan		

Period of the Plan and Strategies at Each Stage

## Results and Tasks in the First Stage

In the First Stage (FY1999 – FY2010), various measures were implemented based on the survey plan for the comprehensive preservation of Lake Biwa. These measures were related to the three categories of comprehensive environmental preservation efforts (protecting water quality, increasing soil's recharge capacity and preserving the natural environment and scenic landscapes), as well as the three areas of common foundations (citizen participation and activities, information sharing and staff exchange, as well as surveys and research). The following describes the results from the major tasks, objectives and policy implementations in the First Stage and the challenges faced heading into the Second Stage.

### Three Categories of Comprehensive Environmental Preservation Efforts

#### Protecting Water Quality

##### Major Tasks

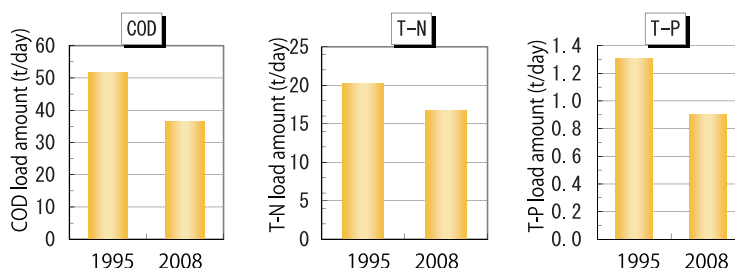
- ① Further reducing chemical oxygen demand (COD), total nitrogen and total phosphorus
- ② Eliminating musty odor, freshwater red tides and blue-green algae blooms
- ③ Reducing influent load from non-point (unspecified sources)
- ④ Investigating and analyzing measures against low biodegradable organics

##### 1<sup>st</sup> Stage Objectives

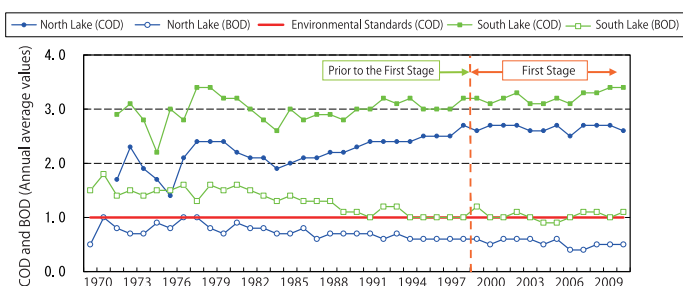
A reduction of influent load to a level of that in the latter half of the 1960s  
 To reduce the COD level by approximately 31%, total nitrogen by approximately 17% and total phosphorus by approximately 36% from 1995 levels

##### First Stage Results

Through various measures in the basin, including maintenance of the drainage system, the estimated levels of influent load were reduced to levels equivalent to those 40 years ago in COD, total nitrogen and total phosphorus. We are continuing to get closer to the objectives in the First Stage. Furthermore, the water quality in the lake is improving in most respects and the number of days on which freshwater red tide is occurring has been reduced.

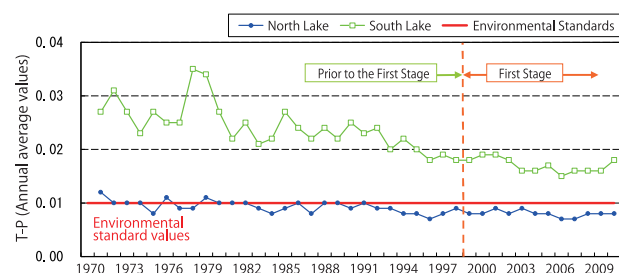
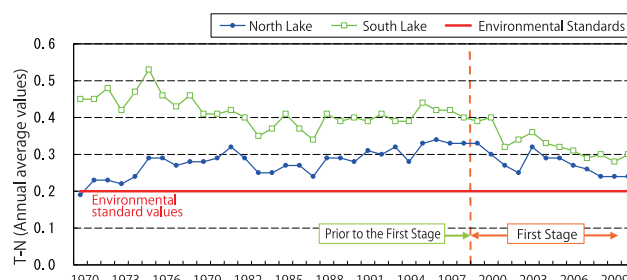


Reduction in the Influent Load to Lake Biwa



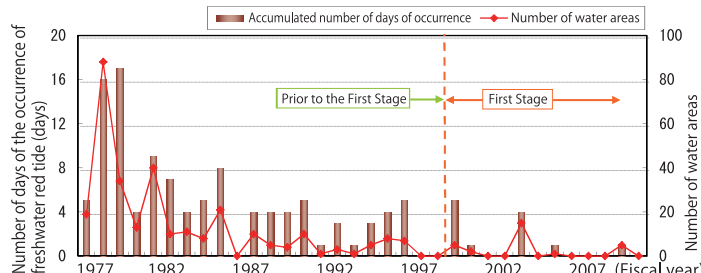
Changes in the Water Quality of Lake Biwa

(Source: Compiled from Shiga Prefecture '2011 Environmental White Paper')



Changes in the Water Quality of Lake Biwa

(Source: Compiled from Shiga Prefecture '2011 Environmental White Paper')

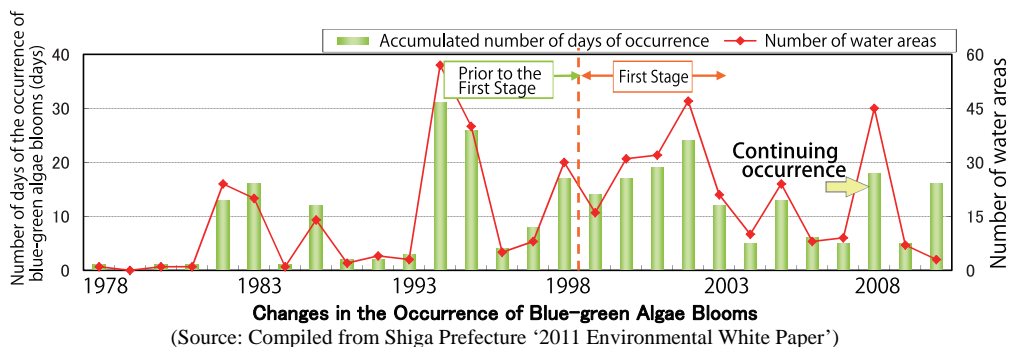


Occurrence of Freshwater Red Tide

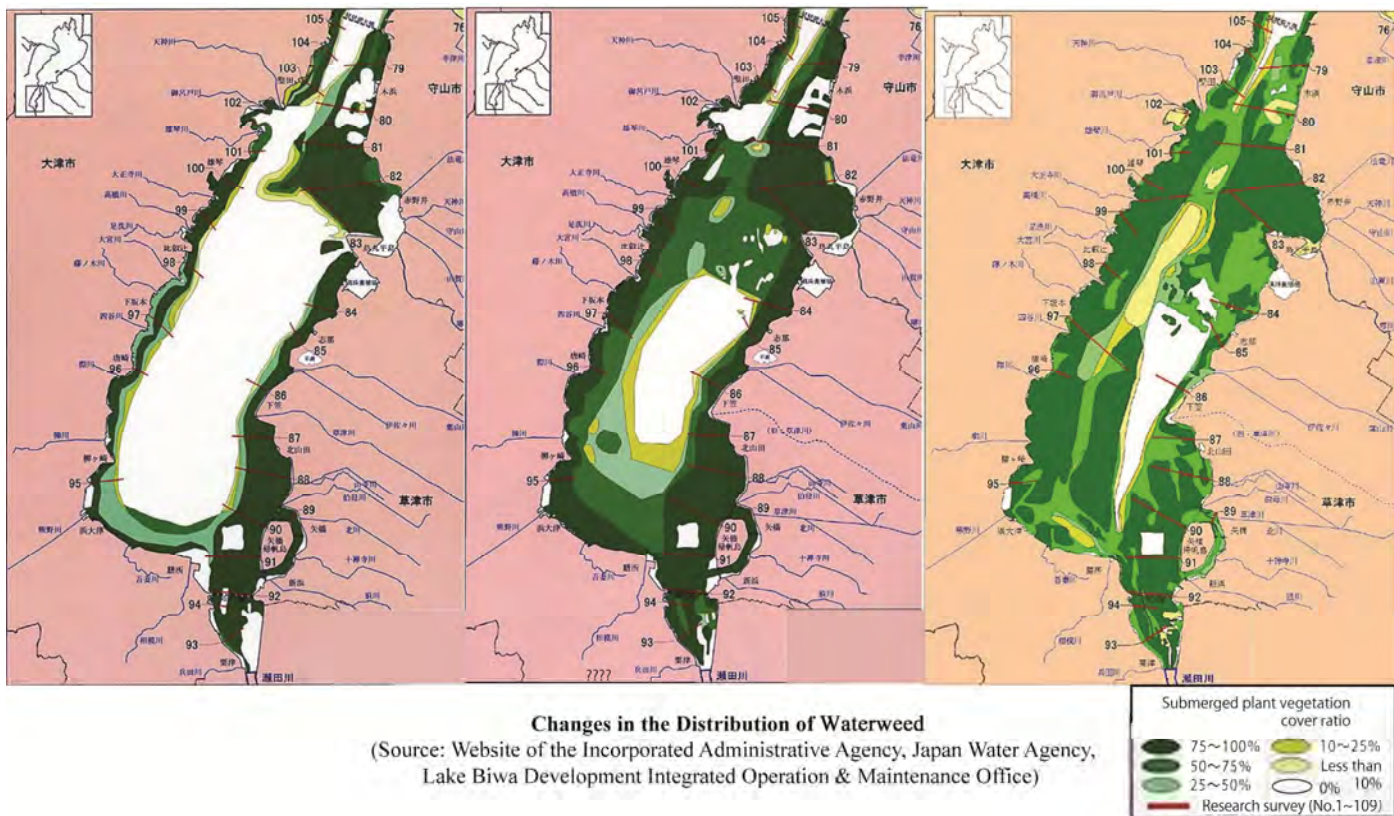
(Source: Compiled from Shiga Prefecture '2011 Environmental White Paper')

**Challenges**

- COD, total nitrogen and total phosphorus in the lake water quality (South Lake) has not reached environmental standards and COD is gradually increasing
- Blue-green algae blooms are still occurring
- There are changes in the water environment, for example changes in the balance of nutrients (nitrogen and phosphorus ratio)
- Changes in the environment at the bottom of the lake, such as a decline in dissolved oxygen
- Massive growth of waterweed
- Ensuring safety and crisis management in use for the water supply and recreational purposes
- Impact from climate change in global warming, etc.



**Occurrence of Blue-green Algae Blooms**



**Increasing Soil's Recharge Capacity**

**Major Tasks**

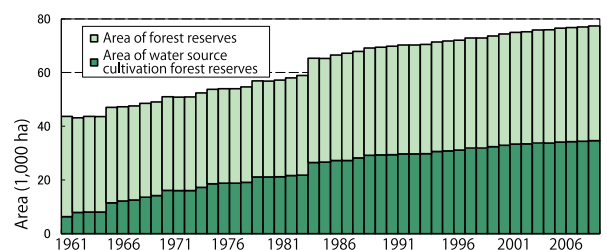
- ①Securing sufficient forest area
- ②Ensuring proper management of planted forests
- ③Improving forest maintenance/management systems
- ④Securing sufficient agricultural land area
- ⑤Increase the soil's infiltration and holding capacity in urban districts
- ⑥Promoting efficient water use

**1<sup>st</sup> Stage Objectives**

- Secure a sufficient land area for rainfall infiltration and storage
- To secure sufficient land area for rainfall infiltration in forests, agricultural land and urban districts that becomes the foundation of a natural water cycle by preventing forest erosion from the destruction of mountainous districts
  - To protect forest soil layers on a sustainable basis by promoting adequate plant growth and management, particularly in planted forests

**First Stage Results**

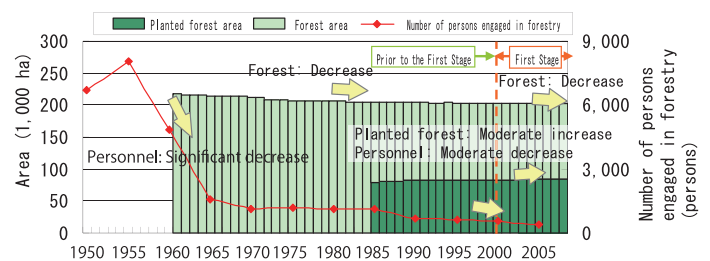
A certain level of effect could be observed. For example, progress was made on securing a sufficient land area for high-quality rainwater infiltration and storage due to designating water source cultivation forest reserves and preservation and maintenance of agricultural land. However, during the First Stage, the area of forest and agricultural land saw a moderate decrease and there was a slight increase in residential land.



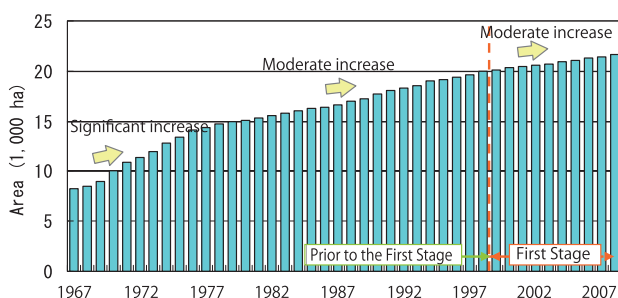
**Changes in the Land Area of Forest Reserves and Water Source Cultivation Forest Reserves**  
(Source: Compiled from Shiga Prefecture Forest and Forestry Statistics, and Shiga Prefecture Statistics)

**Challenges**

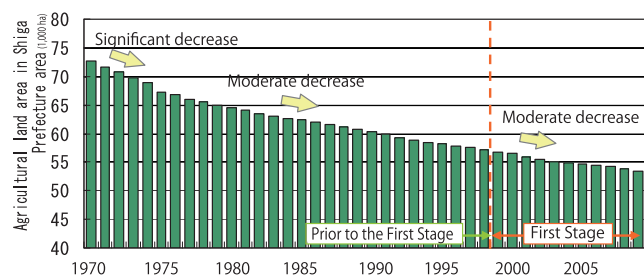
- Decrease in the rainwater infiltration and storage capacity due to a qualitative deterioration in forests, as well as a reduction the land area of forests and agriculture
- A reduction in the number of workers engaged in forestry and agriculture (persons in charge), an increase in the amount of maintenance of planted forests necessary to carry out care (cutting and thinning, conversion to multi-layer forests, etc.) and an increase in forests with a lack of management
- Obvious damage to forests from wildlife, pests and withering of oak trees
- Impact on the amount of water, water quality and ecosystems in Lake Biwa, caused by changes in water due to the rapid increase in population and the rise in the residential area



**Changes in the Forest Area and Number of Persons Engaged in Forestry**  
(Source: Compiled from Shiga Prefecture statistics and census results)



**Changes in Residential Land Area**  
(Source: Compiled from Shiga Prefecture statistics)



**Changes in Agricultural Land Area**  
(Source: Compiled from Shiga Prefecture data)



Preserving the Natural Environment and Scenic Landscapes

Major Tasks

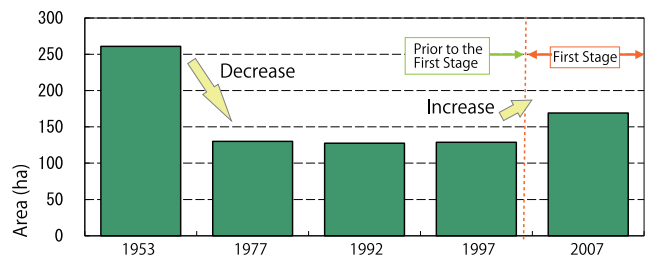
- ① Preserving wild life habitats
- ② Preserving biodiversity
- ③ Preserving the lake's indigenous scenic beauty
- ④ Optimization of lakeside land use

1<sup>st</sup> Stage Objectives

- Securing strategic points for the creation of biotope networks
- Biotope initiatives in the area around the lake to preserve the transition zone (called "ecotone") between the water and land
  - Biotope initiatives in the rivers and riverside forests to strengthen the capacity of the ecological corridors linking biotopes in Lake Biwa and the area around the lake as well as biotopes in the mountain forests

First Stage Results

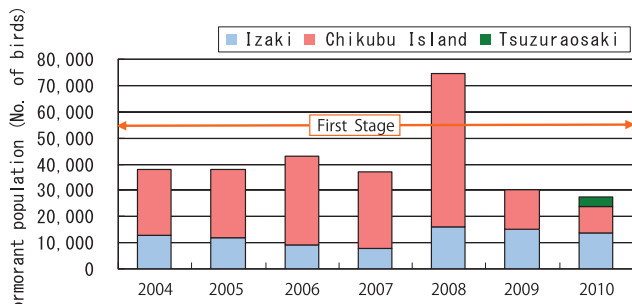
A certain level of results has been observed. For example, as a quantitative guarantee of habitat spaces, conservation and regeneration of the reed colonies and sandy beaches took place. Another example is that as qualitative improvement of habitat spaces, initiatives took place, such as the removal of introduced non-native species and regeneration of the continuity between the lake and the land.



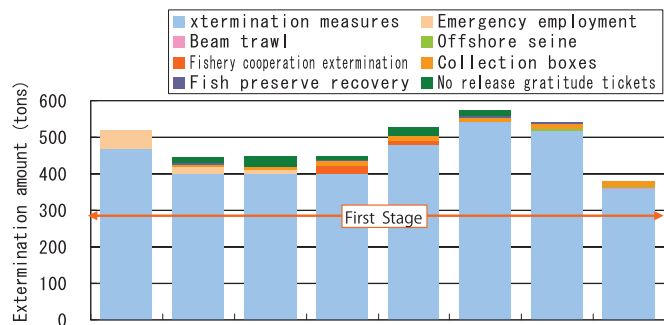
Changes in the Area of the Reed Colonies (Source: Compiled from Shiga Prefecture data)

Challenges

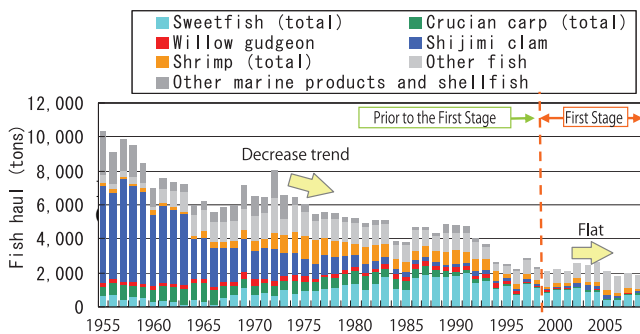
- Early detection and early elimination of invasions of external species, such as introduced non-native fish species
- Further improvements in the expansion and quality of the area of reed colonies
- Reductions in the habitat space due to the decrease in the area of the water and land ecotone in the lake, sandy beaches and riverside forests
- Analysis of biological transition channels in the area around the land due to the loss of continuity between the lake and land



Changes in the Population of Cormorants (Source: Compiled from Shiga Prefecture statistics)



Changes in the Removal Amount of Introduced Fish Species (Source: Compiled from Shiga Prefecture statistics)



Reduction in Catches of Indigenous Fish Species (Source: Compiled from Shiga Prefecture statistics)



Deterioration of the Lake Biwa Scenic Landscapes

### 3-Efforts for the Comprehensive Preservation of Lake Biwa (First Stage)

## Three Categories of Common Foundations

### Citizen Participation and Activities

#### Major Tasks

Promoting a wide variety of activities involving citizens

#### 1<sup>st</sup> Stage Objectives

Citizen participation and activities: Developing eco-friendly lifestyles and building Lake Biwa conservation networks

#### First Stage Results

There has been development of lifestyles and business activities that have a low environmental impact, building of networks for preservation efforts, and initiatives have taken place as key priorities of a shared awareness across generations.

- There has been a promotion of initiatives in lifestyles and business activities such as of environmentally-friendly shopping campaigns, green purchases and use of water-saving products, as well as of the acquisition of the ISO 14000 series and reduction in the amount of emissions and transfers of chemical substances designated by the PRTR (Pollutant Release and Transfer Register).
- Initiatives involving the participation and cooperation of residents took place through various policies across all corners of each region and diverse core activities. There was also the formation of expansive networks in the Lake Biwa and Yodo River Basin areas as well as networks between farmers and local residents.
- Awareness education of familiar environmental preservation and environmental study was promoted. For example, there was the development of exhibition study centers and places of experiential learning as well as the distribution and application to schools of environmental education supplementary readers.



**Environment-friendly Shopping Campaign**  
(Shiga Prefecture '2010 Environmental White Paper')

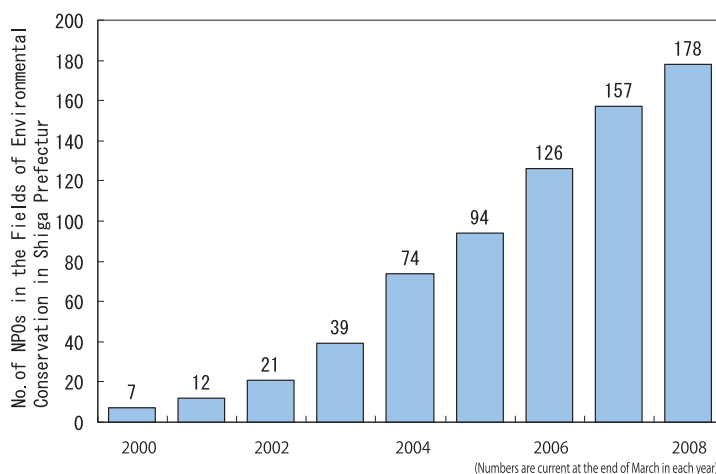


**Environmental Learning Support Center**  
(Shiga Prefecture '2009 Environmental White Paper')



Blue Lake Biwa (Elementary schooledition)    Blue Lake Biwa (Junior high schooledition)    Lake Biwa and Nature (High school edition)

**Environmental Supplementary Readers**  
(Shiga Prefecture '2011 Environmental White Paper')



**No. of NPOs in the Fields of Environmental Conservation in Shiga Prefecture** (Tertiary Shiga Prefecture Environment Coordination Plan)

#### Challenges

- Move away from initiatives that involve mere participation to initiatives of participation where people living in each area form the core entities.
- Conferences with business operators, residents associations and the government about the promotion of further initiatives, as well as continuing guidance and education.



**Study Boat 'Uminoko' and Cutter Activities**  
(Shiga Prefecture '2010 Environmental White Paper')

## Information Sharing and Staff Exchange Promotion

### Major Tasks

Increasing friendly exchange opportunities and establishing easy-to-access networks

### 1<sup>st</sup> Stage Objectives

Information sharing and staff exchange: Sharing information and promoting friendly exchanges

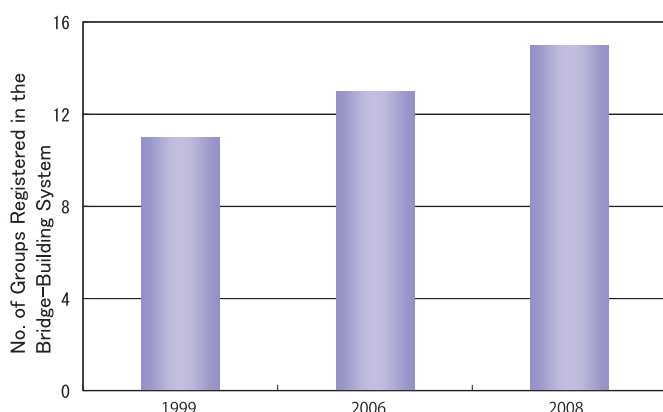
### First Stage Results

Initiatives were carried out as key issues to promote a broad exchange of personnel and information beyond the boundaries of prefectures, and to improve access to complete qualitative and quantitative basic environmental knowledge as well as complete comprehensive guidance functions and information.

- Education took place, such as a bridge-building group that performs independent activities by field reports and people in the area using the Lake Biwa Museum. Various exchanges of personnel also took place, including the promotion of citizen participation in the environmental surveys through the cooperation of these people.
- Broad-based exchanges were expanded, such as information sharing with the cooperation of experiment and research institutes, public relations from Lake Biwa supporters and promotion of forest development through the cooperation of forestry organizations in the upper reaches and citizen's groups in the lower reaches.
- Research information networks on Lake Biwa were built and the compilation of a database of research information was promoted, including measurement data and visual materials.
- Improved access to information through the website.



**Forest Development by Cooperation with Residents in Prefectures in the Lower Reaches**  
(Courtesy of Shiga Prefecture)



Changes in the No. of Groups Registered in the Bridge-Building System  
(Source: Shiga Prefecture 'Education in Shiga Seen in Numbers')



**Shiga Environmental Business Exhibition** (Shiga Prefecture '2008 Environmental White Paper')

### Challenges

- Maintenance of a database related to actual participation of urban citizens in development of forests
- Further accumulation and distribution of information as well as promotion of organic links
- Enhancing networks for the promotion of information utilization

### 3-Efforts for the Comprehensive Preservation of Lake Biwa (First Stage)

#### Surveys and Research

##### Major Tasks

Enhancement of observational information and promotion of systematic surveys and research

##### 1<sup>st</sup> Stage Objectives

Surveys and research: Promotion of systematic surveys and research

##### First Stage Results

Initiatives took place as key issues for the promotion of monitoring and systematic surveys and research, as well as for building survey and research networks and contributing to the preservation of lakes worldwide.

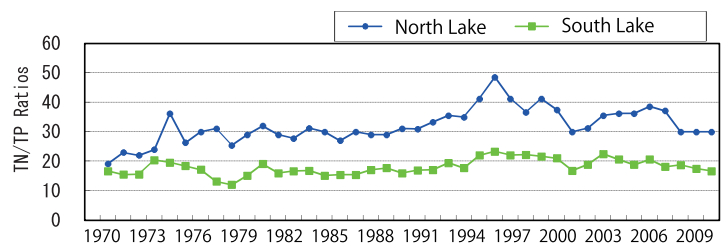
- A variety of data was collected over a long period of time and new data was accumulated through development of cutting-edge analysis technology. Effective results were obtained to elucidate the mechanisms of water pollution.
- Surveys and research were carried out toward the establishment of technologies for improved water quality conservation and cross-sectional surveys and research took place that were not bound by the fields of water quality conservation, watershed cultivation and preservation of the natural environment and scenic landscapes, such as research on ecosystems and movement in the coastal areas of Lake Biwa. There was also the promotion of systematic surveys.
- Contributing to the preservation of lakes worldwide was targeted through cooperation with international organizations, hosting of conferences, the sharing and development of international initiatives, as well as information exchange and technical cooperation.



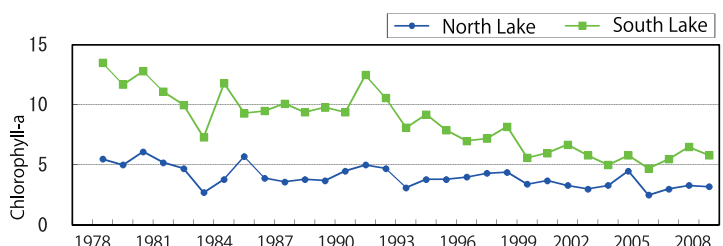
9<sup>th</sup> World Lake Conference  
(Courtesy of Shiga Prefecture)

#### Challenges

- Surveys and research are needed into new subjects, for example the nitrogen and phosphorus ratio, the collapse in the balance of the biomass, changes in the ecosystem and the state of the influx load
- Promotion of deeper and more sophisticated collection, understanding and utilization of information, data and findings pertaining to areas relevant to each other and causes and effect, as well as strengthening networks of policy development, residents, experimental and research institutes and governments.
- It is important that surveys, research, data collection and monitoring take place as one series in order to clarify the relationship between the implementation of measures and projects and the results of countermeasures
- Promotion of the establishment of comprehensive management of the lake basins in developing countries through the continuous flow of international exchange and international cooperation.



Changes in the N/P Ratio of Lake Biwa  
(Source: Compiled from Shiga Prefecture '2010 Environmental White Paper')

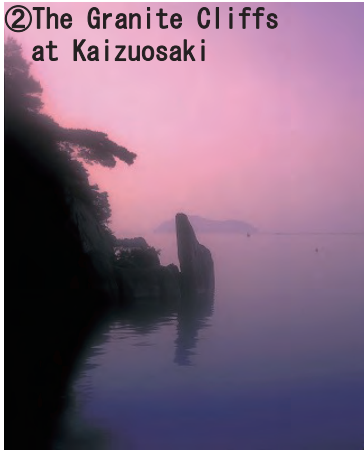


Changes in Chlorophyll-a  
(Source: Compiled from Shiga Prefecture '2010 Environmental White Paper')

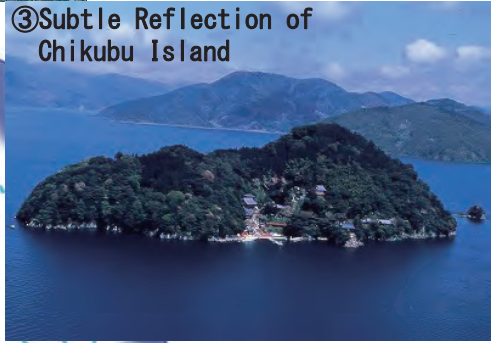
①The Grandeur of Mt. Shizugatake



②The Granite Cliffs at Kaizuosaki



③Subtle Reflection of Chikubu Island



⑤The White Beach of Omatsuzaki



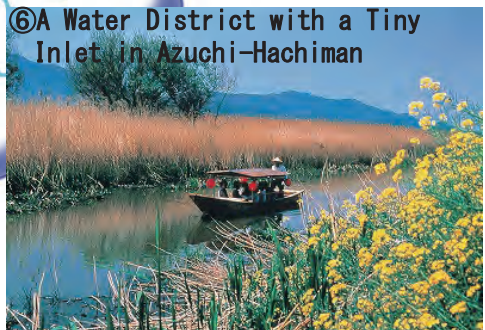
④The Old Castle in Hikone



⑦Forest on Hiei



⑥A Water District with a Tiny Inlet in Azuchi-Hachiman



⑧The Crystal-clear Water in Seta, Tshiyama



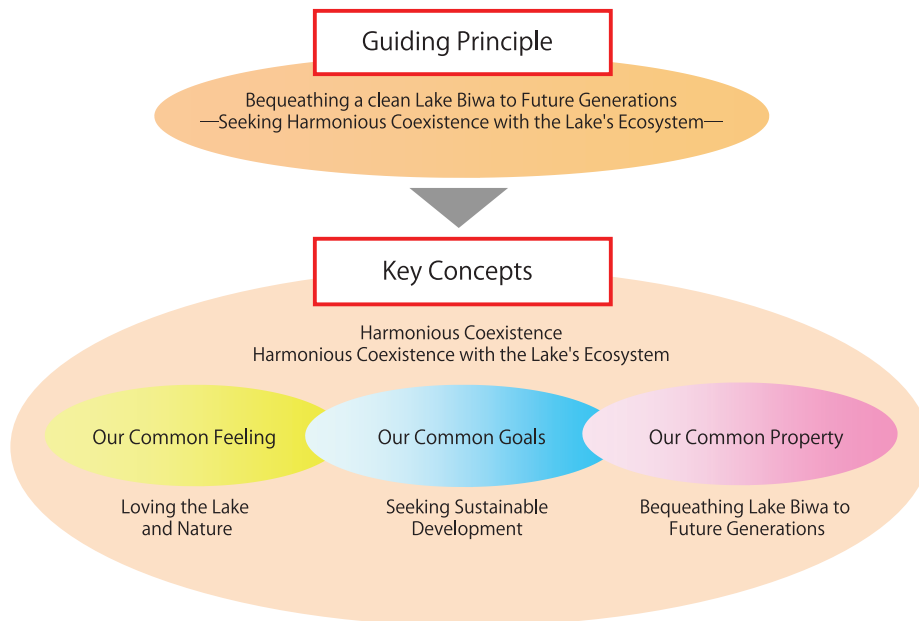
Biwako Hakkei (Eight Scenic Places in Shiga) selected in 1949  
(Courtesy of Biwako Visitors Bureau)

# 4. Efforts for the Comprehensive Preservation of Lake Biwa (Second Stage)

## Overview of the Second Stage

### Basic Principles

When promoting the comprehensive preservation of Lake Biwa, it is necessary to share the basic recognition which becomes the basis of efforts for all people connected to Lake Biwa. Therefore, while maintaining a harmonious coexistence between the people and the lake, it shall be considered important to share the special characteristics and importance held by Lake Biwa across the generations, and so the following basic principles have been established.



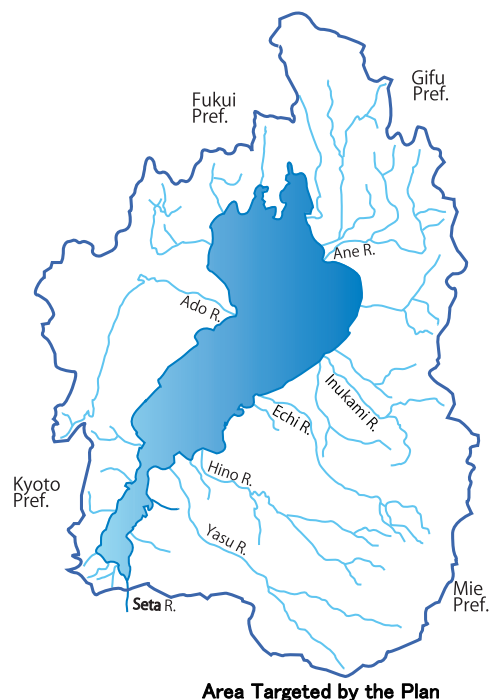
### Plan Fundamentals

#### Period of the Plan

The plan shall last from FY2011 to FY2020.

#### Items Targeted by the Plan

- **Preservation Measure Categories**
  - **Protecting Water Quality:** Investigation of policies for water quality conservation
  - **Increasing Soil's Recharge Capacity:** Investigation of policies to ensure a healthy water cycle
  - **Preserving the Natural Environment and Scenic Landscapes:** Investigation of policies to ensure biodiversity and habitat spaces (Surveys and research: In the areas of preservation measures, policies, projects, data collection and monitoring will be treated as one series and shall be set as items that need to be enforced for each)
- **Common Foundation Categories**
  - **Citizen participation and activities:** Investigation of policies for the participation of various main entities and voluntary actions
  - **Information sharing and staff exchanges:** Investigations of policies for exchange of various people and information



Area Targeted by the Plan

#### Area Targeted by the Plan

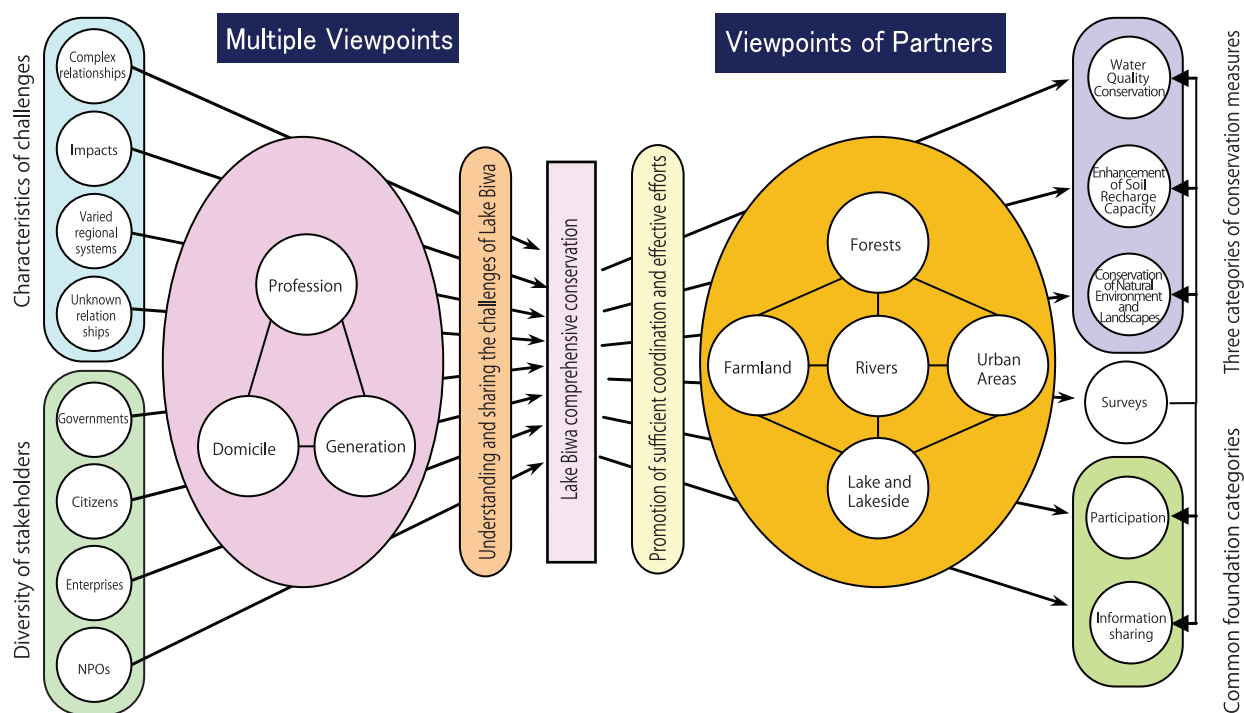
The area targeted by this plan shall be the catchment area of Lake Biwa excluding the basin portion from Lake Biwa to the Seta River overfall weir.

## Perspectives of Cooperation

In order to respond to challenges in Lake Biwa arising in its complex relationships, it is important that the many varied people connected with the lake do not perceive separate events with an individualistic perspective or from a perspective of just the region they are from. Instead, it is necessary to take a comprehensive outlook on Lake Biwa, holding a pluralistic perspective across generations of both the category of the challenge and the area, with a cooperative spirit of understanding the issue and then sharing this with others.

### Pluralistic Perspective

In order to promote the comprehensive preservation of Lake Biwa, while advancing independent efforts of relevant government bodies, residents in the region, businesses and various organizations in light of various projects and proactive initiatives, it is necessary there is cooperation expanding to relevant agencies and government organizations in the Lake Biwa and Yodo River Basin area that are using the water of the lake. This cooperation should also be carried out internationally.



Perspectives of Policies in the Plan

## Perspectives of Promotion

### Independent Activities

There will be a review of the shape that mass consumerism and mass disposal has become in everyday life and thorough schemes and energy conservation looking for the effective use of water will be promoted. In production activities technological development for environmental preservation will be promoted. There will also be a transfer to industries in harmony with nature that have an even lower environmental impact as well as the encouragement of the realization of a low-carbon society. Independent activities will be promoted in everyday life and familiar activities. Furthermore there will be the promotion of environmental education and places of experiential learning necessary in order to achieve these objectives.

### Multi-layer Cooperation

While striving for a mutual understanding that considers different relationships and consciousness with Lake Biwa, attempts will be made toward the harmonization of efforts in various forms in the region and basin, as well residents, businesses and the government. In order to foster a sense equivalent to efforts while there is an awareness of the effectiveness of residents taking part in activities, a database of regional activities will be compiled and these activities will also be visualized, and then multi-layer cooperation will proceed.

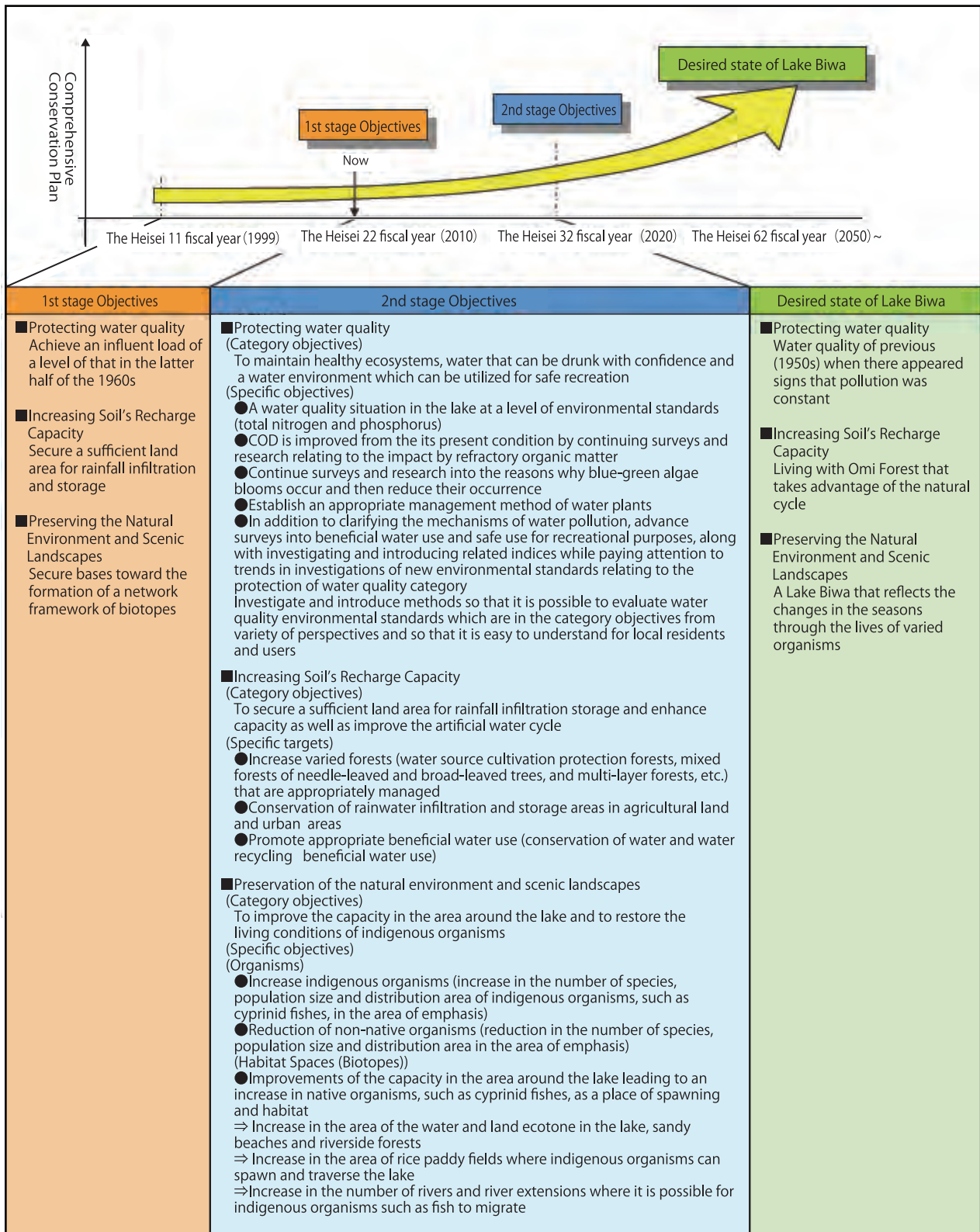
### Continuous Improvement

There will be promotion of the compilation of a database of surveys and research that will facilitate cooperation in these, as well as technological development. The needs of residents will also be understood. Together with this, proactive efforts will take place that flexibly incorporates changes in conditions and new findings. Therefore, policies, projects, surveys, research, data collection and monitoring will be implemented in the same framework.

## Objectives in the Second Stage

In order to resolve challenges that have become clear from the results of the First Stage and inspection of the Plan, in addition to challenges that have newly arisen in Lake Biwa, in the Second Stage a review has been carried out of objectives in each category of conservation measures.

A decision was made to split the objectives into two phases: “category objectives” of targets that must be aimed at and “specific objectives” of targets that are more specifically described. In the future, while carrying out continuous improvement toward the achievement of these targets, there will also be a focus of how things should be in Lake Biwa in approximately 40 years’ time.



Objectives in Phases of the Categories of Conservation Measures (Objectives after the Review of the Second Stage)



## Policy and System toward the Promotion of the Plan

It is important that efforts in the Second Stage for the comprehensive preservation of Lake Biwa are continuously put into action while increasing efficiency. The Plan will move forward in a flexible fashion while looking toward continuous improvement by reflecting the various conditions in the Plan in a timely and appropriate manner, for example the results of monitoring, new technology, societal trends, the state of progress and the financial situation.

### Policy for the Promotion of the Plan

#### ● Flexible promotion of the Plan

Adaptive management (evaluation and review of the Plan by the PDCA cycle) will take place and the results of the assessment by management indicators will be made public. In addition, a review will take place around every three to five years of the Plan details and objectives.

#### ● Reflecting monitoring, surveys and research, and technological development

Results from the cooperation of research institutions will be shared and then efficient and effective surveys and research and technological development will be promoted. Moreover the situation of Lake Biwa will be appropriately understood and this will then be reflected in the Plan, assessment and objectives.

#### ● Progress of the Plan and reflection of the assessment

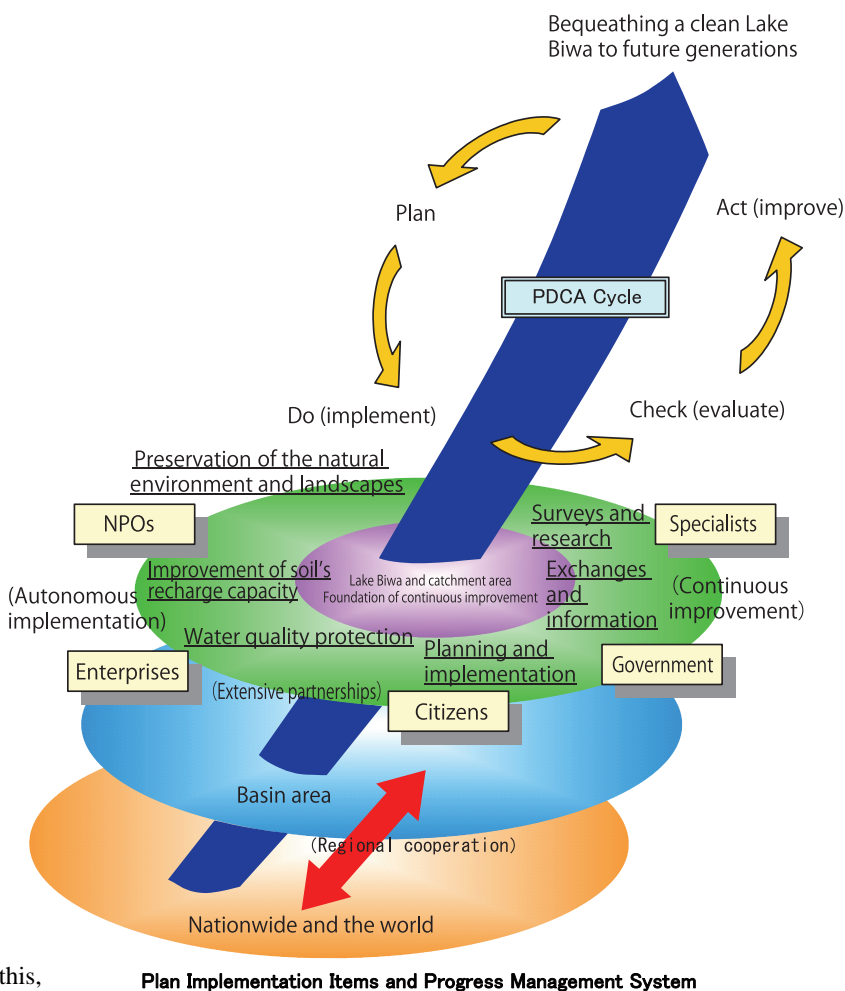
The progress of the Plan and the cost-benefits will be appropriately ascertained and a review will then take place as needed. Together with this, while investigating varied assessment methods through participation of residents and keeping in mind the correlation between monitoring information and objectives, there will be efforts to quantitatively understand the situation and reflect this in the Plan.

#### ● Coordination between the main entities and policies as well as the participation of the residents

Common understanding will be encouraged by sharing information relating to policy details. Along with this, effective methods will be promoted through the cooperation and collaboration of NPOs, businesses and local residents with the aim of fostering participation awareness.

#### ● Procedures

The fundamental procedures of adaptive management go Planning → Implementation → Confirmation and Assessment → Review and Improvement. Upon the establishment of progress indicators (policy confirmation) and objective management indicators (assessment of objective achievement), monitoring is implemented continuously in order to understand the effects.



### Promotion System

#### ● Lake Biwa Comprehensive Preservation Liaison Coordination Council

(Constituted bodies: Ministry of Health, Labour and Welfare; Ministry of Agriculture, Forestry and Fisheries; Forestry Agency; Fisheries Agency; Ministry of Land, Infrastructure, Transport and Tourism; Ministry of the Environment)

There is an aim to smoothly promote the Plan, while cooperating with organizations of Lake Biwa and the Yodo River Basin from a wide-area and neutral position by carrying out exchanges of information about the comprehensive preservation of Lake Biwa, together with communication coordination and opinion exchanges relating to the promotion of efforts, results and policies.

#### ● Lake Biwa Comprehensive Preservation Promotion Council

(Constituted bodies: Kinki Regional Agricultural Administration Office; Kinki Regional Development Bureau; Kinki Chugoku Forest Office; Kinki Regional Environmental Office; Osaka Prefecture; Hyogo Prefecture; Kyoto Prefecture; Shiga Prefecture; Osaka City; Kobe City; and Kyoto City)

Along with information exchanges that will take place about the comprehensive preservation of Lake Biwa, independent participation for the conservation of the source of the river will be encouraged and an integrated approach will be promoted which includes the lower reaches.

## Efforts of the Second Stage

Examples of the objectives and policies of categories of preservation measures (preservation of water quality, water source cultivation and natural environment and scenic landscapes conservation) in the Second Stage.

### Initiatives in the Category of the Protecting Water Quality

#### Category Objective

To maintain healthy ecosystems, water that can be drunk with confidence and a water environment which can be utilized for safe recreation

#### Specific Objectives

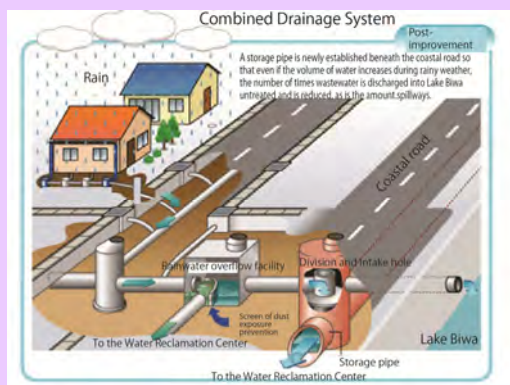
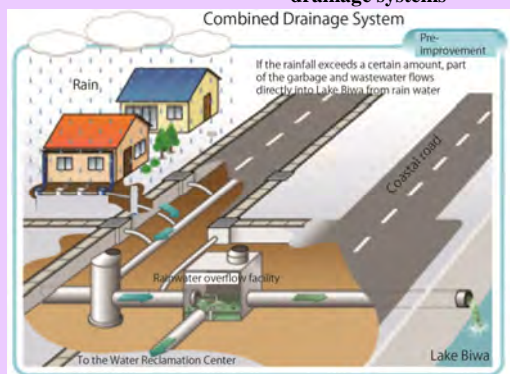
- Water quality in the lake at the level of environmental standards (total nitrogen and total phosphorus)
- COD shall be improved from its current state by the continuation of surveys and research into the impact by refractory organic matter
- Surveys and research shall continue into the reasons why blue-green algae blooms occur and the occurrence of these shall be reduced
- Appropriate control methods of waterweed shall be established
- In addition to the clarification of the mechanisms of water pollution, surveys will be promoted on the preservation of the safety for beneficial water use and recreational use, together with the introduction and investigation of relevant indicators while looking at trends in investigations into new environmental standards relating to the preservation of water quality category
- There will be an investigation and introduction of methods so that levels in the water quality environment, which are the objectives of this category, can be easily understood by local residents and users of the water, and furthermore so that it is possible to carry out assessments from diverse points of view

### Examples of Policies Implemented

#### Further Spread and Promotion of Point Source Load Reduction Measures

It is important to further spread and promote point source load reduction measures that were worked on in the First Stage. Furthermore, it is vital to promote measures for an even higher level than traditional water quality preservation to further reduce the load in processing systems.

#### Example of the improvement of combined drainage systems

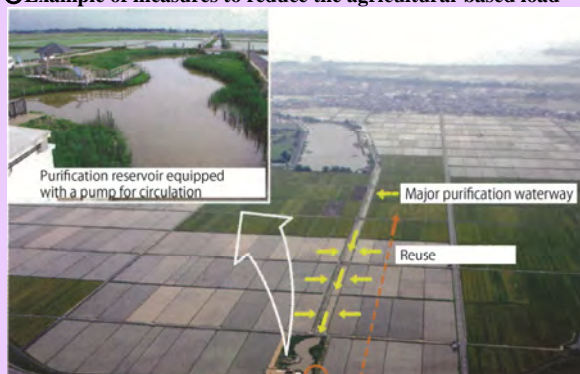


(Source: Otsu City, Shiga Prefecture website)

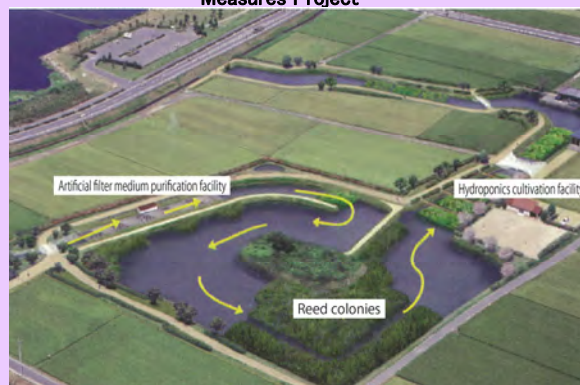
#### Promotion of Non-point Source Load Reduction Measures

It is important to enhance measures against non-point source load from the catchment area. Furthermore, it is important to combine investigations into understanding the actual condition of the non-point source load, establish an estimation method of the emissions load output level, as well as policy effects on circulating irrigation and vegetation cleanup.

#### Example of measures to reduce the agricultural-based load



Konohama District Water Quality Preservation Measures Project



Ukifune District Water Quality Preservation Measures Project  
(Courtesy of Lake Biwa Water Quality Preservation Measures Plan of Action Promotion Council 'Yume Kodo' No. 7)

## Examples of Policies Implemented

### Promotion of Surveys, Research and Monitoring into Water Pollution Mechanisms

Water pollution mechanisms have many un-clarified parts. This means that it is important to continuously understand the situation of Lake Biwa and signs of environmental change, and as necessary, reflect this in proactive efforts. In order to advance even more appropriate and effective initiatives, it is vital to promote surveys, research and monitoring into water pollution mechanisms.

#### ○ Example of a Water Quality Environment Assessment Method that is Easy to Understand for Local Residents and Users

In light of the beneficial usage of water and natural conditions for the water level in 'maintenance of healthy ecosystems, water that can be drunk with confidence and a water environment which can be utilized for safe recreation,' which is the category objective, a method (ranking classification) shall be investigated and introduced so it can be easily understood by local residents and users of the water, and furthermore so that it is possible to carry out assessments from diverse points of view.

Rank			Assessment Items of the Water Quality Management Guide						
Rank	Description	Image of the Rank	Assessment Items and Assessment Level*2						
			Common Items Nationwide					Specific Regional Items	
			Amount of Garbage	Clearness of Water*2	Texture of the Lake*3,4	Smell of the Water	Blue-green Algae Spore Occurrence	Fecal coliform bacteria count	
A	It is safe to splash the water of the lake on your face		Garbage in and near the lake cannot be seen and although there is garbage it is not of a level of concern	50 or over	Pleasant		Blue-green Algae Spores cannot be verified	100 or less	Set independently according to the characteristics of the applicable lake and site, and also the needs of the local residents.  Set independently together with residents  Set from reference documents
B	It is safe to play in the lake		Garbage in and near the lake can be seen, but it can be endured	25 or over	No sense of unpleasantness	Not unpleasant	It is not possible to verify blue-green algae spores with the naked eye, but if the water is scooped up and looked at closely, it is possible to verify their existence	1000 or less	
C	It is not possible to enter into the lake, but you can get up close to the edges		There is garbage in and around the lake and it is unpleasant	Less than 25	Unpleasant	When your nose comes close to the water, there is an unpleasant smell	There is a faint presence of blue-green algae spores and near to the water it is possible to verify some spores scattered around	Over 1000	
D	The water of the lake has no appeal and it is safe to go near the lake		There is garbage in and around the lake and it is very unpleasant			When your nose comes close to the water there is an extremely unpleasant smell	Blue-green algae spores occur over extensive areas of the surface of the lake and are also clustering together		

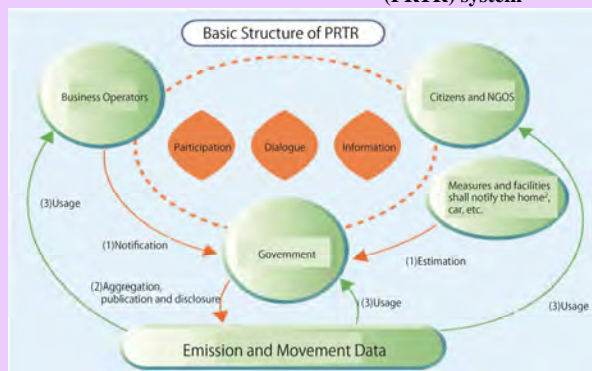
Assessment level (The level of each of the assessment items and rank)

(Source: River Bureau, Ministry of Land, Infrastructure, Transport and Tourism 'Future Lake Water Quality Indicators (Plan)')

### Promotion of initiatives relating to regulations, participation, activities, exchange and information

It is very important to promote the observation of drainage and load emissions based on ordinances, water quality preservation of water quality accident prevention through guidance, implementation of the Pollutant Release and Transfer Register (PRTR) system, observation of designated chemical substances emitted into public waterways and monitoring of trace chemical substances. In addition, it is vital to promote activities, monitoring, surveys and research into water quality conservation of load reduction measures by water quality surveys and water purification experiments in cooperation with residents in the basin, NPOs and businesses.

#### ○ Structure of the Pollutant Release and Transfer Register (PRTR) system



(Source: Ministry of the Environment website 'PRTR Information Plaza')

#### ○ Water quality surveys with the pack test



(Courtesy of Shiga Prefecture)

**Initiatives in the Category of the Increasing Soil's Recharge Capacity**

**Category Objective**

To secure a sufficient land area for rainfall infiltration storage and enhance capacity as well as improve the artificial water cycle

**Specific Objectives**

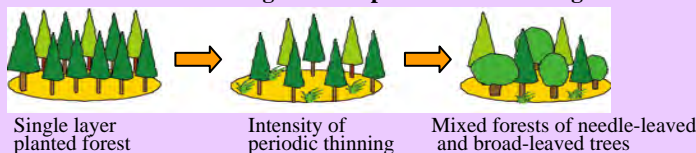
- Increase properly managed forests (water source cultivation protection forests, mixed forests of needle-leaved and broad-leaved trees, and multi-layer forests, etc.)
- Secure rainfall infiltration storage land in agricultural and urban areas
- Promotion of appropriate beneficial water use (conservation of water and water recycling beneficial water use)

**Examples of Policies Implemented**

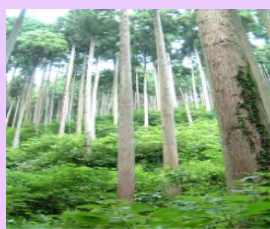
**■ Securing sufficient land for diverse forests, adequate management and guaranteeing personnel promotion**

It is very important to further promote past measures with the aim of securing sufficient land for diverse forests, for example water source cultivation protection forests, multi-layer forests and mixed forests of needle-leaved and broad-leaved trees. In addition, in order to protect the capacity of water source cultivation, it is vital to have appropriate management of planted forests aimed at further stabilization of the soil layer and measures against forest damage by wildlife and pests. Furthermore, it is essential to promote measures to ensure and train personnel for forest maintenance, as well as forestry management base strengthening measures, and along with advancing the creation of a sustainable management system to encourage the utilization of timber from forest thinning.

○ Forest management and maintenance relating to forest preservation and regeneration



(Courtesy of Shiga Prefecture '2011 Environmental White Paper')

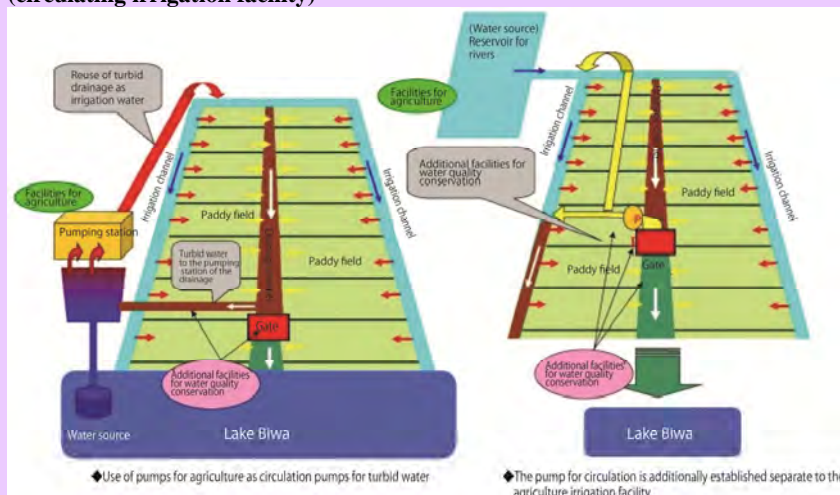


(Courtesy of Shiga Prefecture '2011 Environmental White Paper')

**■ Securing sufficient land for rainwater infiltration storage in agriculture land and further promotion of the reuse loop of water for agriculture**

It is important to further promote past measures relating to the preservation maintenance of sufficient land for rainwater infiltration storage in agriculture land, with the aim of ensuring a superior agricultural area. Moreover, it is vital to maintain the capacity of water source cultivation and effective use of water for agriculture by the reuse loop of water for agriculture.

○ Preservation maintenance of water conservation and recycling water use facilities (circulating irrigation facility)

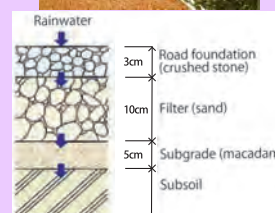


(Source: Shiga Prefecture)

**■ Further promotion of improved artificial rainwater infiltration storage capacity in urban areas**

It is important to further promote past measures of rainwater infiltration and storage facilities in urban land and to look for restrictions on the reduction of infiltration areas as well as a substantial increase in this area.

○ Maintenance of an infiltration and storage facility (porous pavement sidewalk)



(Courtesy of: Shiga Prefecture website)

### Examples of Policies Implemented

#### ■ Promotion of surveys, research and monitoring into water source cultivation capacity in forests and agricultural land

It is important that there is a concept of continuous improvement when it comes to water source cultivation initiatives. Combined with steady implementation of measures that can be put into practice at the current point in time and including existing efforts, while verifying these results and technique of implementation, these should be promoted. In order to carry out efforts for continuous improvement like this, it is important to understand the situation of water source cultivation in forests and agricultural land, to improve the capacity of this and then survey, research and monitor the water cycle.

##### ○ Investigation into forest management (Survey of the growth of remaining trees and changes in lower strata vegetation)



(Courtesy of Shiga Prefecture)

##### ○ Investigation into the state of the water cycle (Survey of the outflow of fallen rainwater in forests)

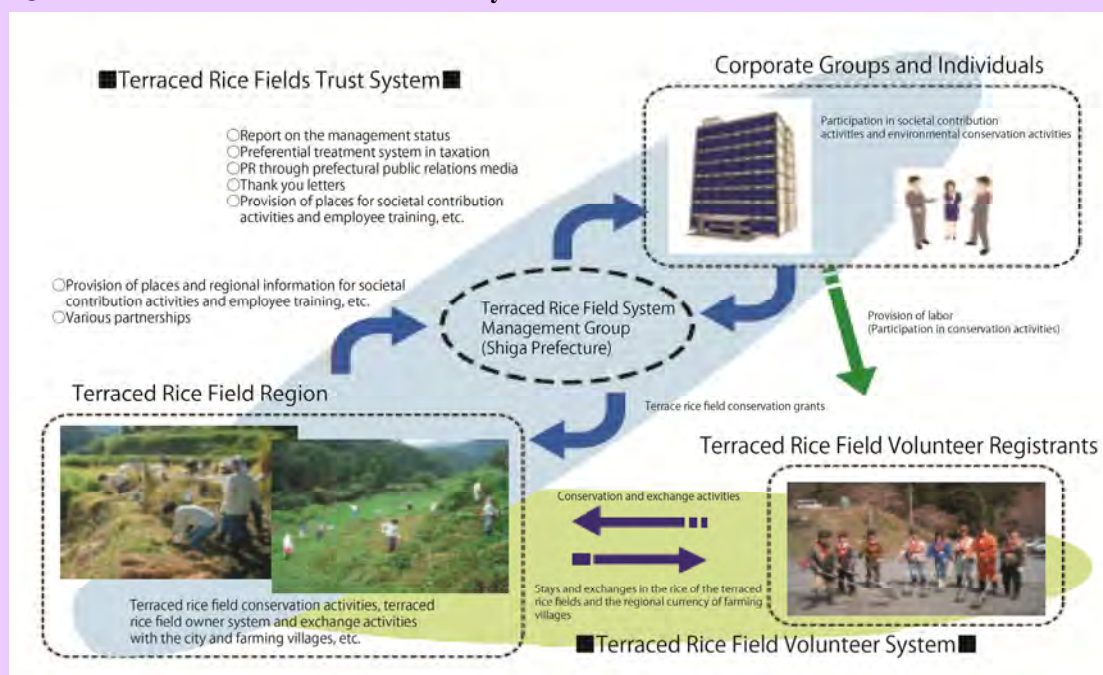


(Courtesy of Shiga Prefecture)

#### ■ Promotion of initiatives relating to regulations, participation, activities, exchange and information

It is important to promote the participation of urban residents in forest maintenance by the provision of experiential learning spaces relating to forests and to promote the revitalization of forestry production activities through cooperation with the government, municipalities and businesses. Moreover, it is vital to promote efforts to get participation in agriculture experience learning and initiatives such as for terraced rice fields to preserve the terraced-rice field area. Furthermore, it is essential to promote activities, monitoring, surveys and research into water source cultivation, such as the periodic thinning of forests and afforestation with the cooperation of residents in the basin, NPOs and businesses.

##### ○ Overview of the terraced rice field trust system



(Courtesy of Shiga Prefecture '2011 Environmental White Paper')

Initiatives in the Category of the Preserving Natural Environment and Scenic Landscapes

Category Objective

To improve the capacity in the area around the lake and to restore the living conditions of indigenous organisms

Specific Objectives

<Organisms >

- Increase in indigenous organisms (increase in the number of species, population size and distribution area of indigenous organisms, such as cyprinid fishes, in the area of emphasis)
- Reduction of non-native organisms (reduction in the number of species, population size and distribution area in the area of emphasis)

<Habitat Spaces (Biotopes) >

- Improvements of the capacity in the area around the lake leading to an increase in native organisms, such as cyprinid fishes, as a place of spawning and habitat
- ⇒ Increase in the area of the water and land ecotone in the lake, sandy beaches and riverside forests
- ⇒ Increase in the area of rice paddy fields where indigenous organisms can spawn and traverse the lake
- ⇒ Increase in the number of rivers and river extensions where it is possible for indigenous organisms such as fish to migrate

Examples of Policies Implemented

■ Further promotion of increased lake area capacity (a qualitative improvement in habitat spaces)

It is important to further promote existing measures for the preservation and regeneration of the lake, the area of reed colonies and sand beaches, as well as aiming to improve the lake area capacity that will become a spawning, habitat and development space of indigenous organisms.

- Fishing grounds environment preservation creation project (Ensuring places of spawning and breeding for crucian carp and gudgeon, as well as preservation of ecosystems around the lake)



- Lake Biwa river regeneration project (Restoration to the original state of artificial embankments in the natural environment and regeneration of the lakeshore prior to landfill)



(Courtesy of Shiga Prefecture)

■ Further promotion of non-native organisms measures

It is important to further promote existing measures for the prevention of intrusion by non-native organisms, as well as extermination and removal measures, in order to preserve the native organisms of the lake.

- Extermination of non-native fish



- Extermination of Alternanthera philoxeroides



- Collection from non-native fish collection boxes



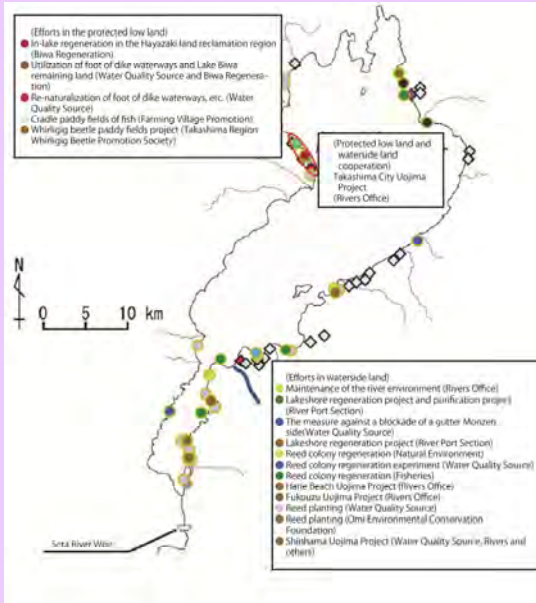
(Courtesy of Shiga Prefecture)

**Examples of Policies Implemented**

**Further promotion of continuity (species migration routes) regeneration with Lake Biwa and land**

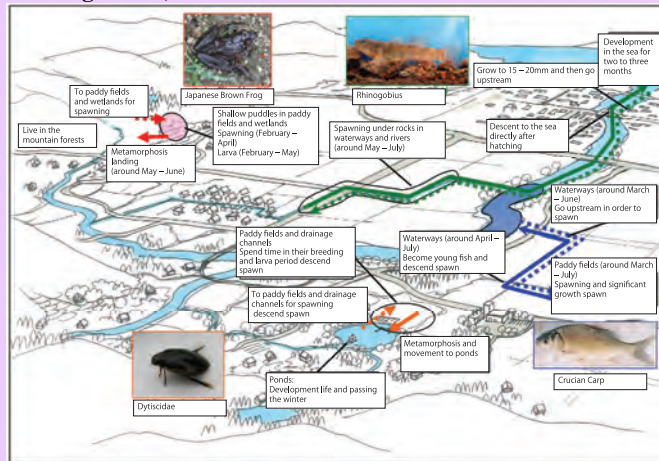
It is important to regenerate river crossing facilities, such as weirs, and migration paths of species lost due to development of lakefront levees, as well as to promote measures to secure continuity from the forests and mountains to Lake Biwa. In addition, it is vital to promote the regeneration of a paddy field environment that will become a place for spawning, habitat and development of native organisms and somewhere these species can traverse to the lake.

**Efforts relating to continuity improvement in the land and water migration zone**



(Ministry of Land, Infrastructure, Transport and Tourism, Kinki Regional Development Bureau Biwako Office: Land and Water Migration Zone Working Group records)

**Preservation maintenance of agricultural land (example of the relationship between the life history and migration routes of organisms)**



(The Council for Food, Agriculture and Rural Areas Policies, Rural Development Sub-working Group, Technical Committee of Agriculture and Rural Development Subcommittee (March 2006 data)

**Surveys, research and monitoring to clarify the ecology mechanisms in Lake Biwa**

Toward the conservation of the natural environment and scenic landscapes of Lake Biwa, it is important that expertise which must be enriched by repeated trials and efforts for continuous improvement shall be implemented for the many challenges that must be addressed in the long term. Therefore, it is vital to promote surveys, research and monitoring to clarify the ecology mechanisms in Lake Biwa, as well as to appropriately reflect these results in measures.

**Implementation of monitoring**



(Ministry of Land, Infrastructure, Transport and Tourism, Kinki Regional Development Bureau Biwako Office: Land and Water Migration Zone Working Group records)

**Promotion of initiatives relating to regulations, participation, activities, exchange and information**

It is important to promote efforts for surveys with the participation of residents and education and support, such as environment volunteers and biological environment advisors. Furthermore, it is vital to promote biological surveys, various initiatives, monitoring, surveys, research and monitoring with the cooperation of residents in the basin, NPOs and businesses.

**Reed cutting as a regional activity**



**Survey of river species**



(Shiga Prefecture Mid-Term Plan: Courtesy of Shiga Prefecture)

## 4-Efforts for the Comprehensive Preservation of Lake Biwa (Second Stage)

### Cooperative Initiatives

In order to efficiently and effectively develop policies in the three categories of preservation measures, it is necessary to promote multi-layered initiatives through cooperation and collaboration in various places, including forests, mountains, agricultural land, rivers and lakes, by varied entities, such as residents in the basin, NPOs, businesses and the government. In relation to cooperative initiatives that will become common foundations like this, examples of the basic concepts and measures are shown below.

### Citizen Participation and Activities

#### Basic Concept

It is important that residents in the basin and businesses put into practice lifestyles and business activities with a low environmental impact, and it is important that the government provides proactive support for this. Moreover, in order to expand initiatives while the government, NPOs and business work together in tandem, it is essential to provide opportunities where diverse participation will be possible to have initiatives that support activities to put this into practice.

#### Examples of Policies Implemented

##### ○ Promotion of the proactive participation of residents and businesses as a member of the regional community.

- Personnel, economic and academic support toward the enhancement and promotion of regional activities
- Structure of initiatives for the participation and cooperation by regional residents toward policies

##### ○ Networking of implementation entities of various initiatives

- Construction of a cooperative network centered on the river basin and nearby communities
- Participation promotion and wide-area network formation of various entities in Lake Biwa and the Yodo River Basin

##### ○ Shared awareness across generations

- Promotion of environmental education and experiential learning for children
- Enhancement of participation opportunities in environmental conservation activities targeting households



'Uminoko' Experiential Learning  
(Courtesy of Shiga Prefecture '2011 Environmental White Paper')

### Information Sharing and Staff Exchange Promotion

#### Basic Concept

In order to expand initiatives through cooperation, it is important to encourage information sharing and staff exchange between each of the main entities. It is vital to distribute information about initiatives in Lake Biwa inside and outside the country, especially through cooperation with the lower reaches, exchanges of staff over a wide area and information networking.

#### Examples of Policies Implemented

##### ○ Promotion of exchanges through the compilation of a database for the visualization and information exchange of initiatives

- Compilation of a database for visualization and activity information exchange of regional activities
- Foundation maintenance for information distribution and exchange by various entities participating in activities

##### ○ Development of wide-area exchanges

- Wide-area information distribution and provision about the role and value of Lake Biwa
- Development and encouragement of wide-area exchanges between various entities in Lake Biwa and the Yodo River Basin
- Encouragement of staff exchanges and information distribution in universities, research institutions and private research establishments

##### ○ Distribution of information to the world

- Networking promotion of initiatives, such as information exchange in lake environment preservation technologies
- Continuation of information distribution and international exchange for lake preservation worldwide
- Steady promotion of comprehensive lake management (Lake Biwa model) by international cooperation for developing countries



International Symposium on Wetland Restoration  
(Courtesy of Shiga Prefecture)



## Comprehensive Initiatives

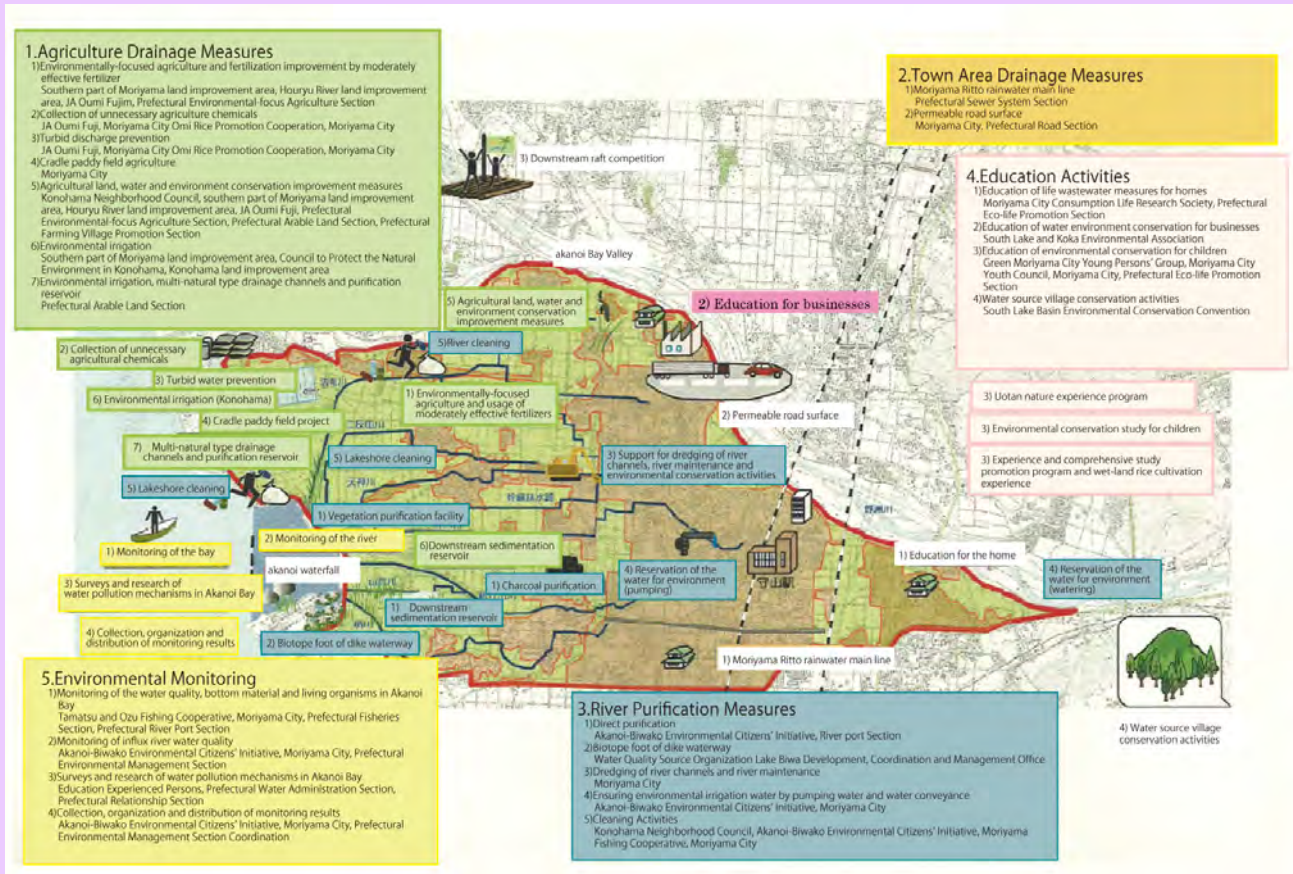
### Basic Concept

The targets of the preservation of Lake Biwa extend over extensive categories and measures that should be taken cover a lot of ground. This means it is necessary to promote cooperation between measures, places, categories and entities and take comprehensive initiatives depending on the purpose of the policies involved with each category.

### Examples of Specific Efforts

#### ○Akanoi Bay basin outflow water measures promotion project

Initiatives will be taken with the cooperation of local organizations and municipalities for the pollution load reduction in the basin.



**Akanoi Bay Basin Outflow Water Measures Promotion Project Schematic Diagram**  
(Source: Shiga Prefecture and Kyoto Prefecture 'Lake Biwa Water Quality Conservation Plan No. 5)

#### ○Comprehensive soil management consistent with the basin

It is important that the establishment of the dam and erosion control facility maintenance, river improvement, gravel collection, Lake Biwa water level change and lakeshore structures is done so with cooperation from the perspective of soil management consistent with the basin in the lakeshore area from the river area. It is also vital that there are surveys and investigations about the qualitative improvement of habitat spaces and scenic landscapes as well as proper utilization of forests, rivers and lakes.

## 5. Chronological Table of Lake Biwa

	Year	Major Incidents in Japan	Major Incidents in Lake Biwa Basin
	Approximately 4 million years ago	The ice age with several intervals	An ancient lake was formed in the Iga Ueno region in Mie Prefecture.
	Approximately 1 million years ago Approximately 400,000 years ago 10,000 - 15,000 years ago	The Japanese Archipelago became separated from the Eurasian Continent.	Lake Katata was formed around Katata. Lake Biwa was formed at the present lake site.
Old Stone Age	B.C.10000  8000		Stone spear points and tools discovered around Lake Biwa
Jomon	6000 3000 2000		Various Jomon period ruins discovered around Lake Biwa
Yayoi	200 A.D.28 250		Yayoi Period ruins discovered around Lake Biwa The capital was relocated to Omi. Bronze bell-shaped vessels unearthed from ruins in Yasu
Asuka	646 667 672	Taika coup  Jinshin civil war	The capital was relocated to Omi (Otsu capital) for a short period.
Nara	710 742	The capital was relocated to Nara.	A new capital was constructed in Shigaraki (Shigaraki capital).
Heian	794 905 1065	The capital was relocated to Kyoto. Issuance of <i>Engishiki</i>	A port in Omi was renamed Otsu. Rice was transported to the capital from northern countries via the lake. Taira-no-Kiyomori planned to construct a canal between Shiozu and Tsuruga, in vain.
Kamakura	1192	Kamakura Shogunate government was established.	
Muromachi	1428 1455 1467 1500	Onin civil war	Farmers' riots Shogunate government collected tax from ships sailing on the lake.  Omi hakkei (eight scenic landscapes of Omi) were selected.
Azuchi-Momoyama	1575 1576 1582 1587 1600	Honnoji incident  Sekigahara battle	Oda Nobunaga constructed a bridge across the Seta River. Oda Nobunaga began constructing Azuchi castle.  Asano Nagayoshi approved free navigation on the lake.
Edo	1603  1672  1802 1846	Edo Shogunate government was established.  Westward navigation route opened.	Construction of Hikone castle began. Tokugawa Ieyasu surveyed farmland in Omi. Water transport on the lake declined due to development of the westward navigation route. Extensive flooding of Lake Biwa Extensive flooding of Lake Biwa
Meiji	1868 1869 1872 1874 1878 1890 1893 1896  1905 1912	Meiji Restoration       Issuance of the former River Law	Extensive flooding in Shiga Prefecture (+3.3 m) A steamship began service on the lake. Shiga Prefecture was established. A water gauge was installed at the Torii River. Disaster prevention project began in the Seta River basin. The first Lake Biwa Canal incline was completed. Hikone meteorological observation station opened. Extensive flooding of Lake Biwa (+3.76 m) The Yodo River improvement project began. Old Seta River Weir(Nango Araizeki Weir) was completed. The second Lake Biwa Canal was completed.
Taisho	1913 1914 1919 1921 1925	Outbreak of World War I  Issuance of Public Waters Reclamation Law	Uji River power plant was completed. Kyoto University opened lakeside observation station in Otsu. Mt. Ibuki meteorological observation station began operation.  The first public beach opened in Otsu.
Showa	1941 1944 1949 1950  1952 1958  1960  1961  1962 1964	Outbreak of World War II (Pacific War)  Comprehensive National Land Development Act  Enactment of the Sewage Law, Public Water Quality Preservation Law, and Industrial Effluent Water Law  Enactment of two laws concerning water source development  Enactment of New River Law Tokyo Olympic Games	Shiga Prefecture decided upon reclamation of several inland lakes. Biwako <i>hakkei</i> (eight scenic landscapes of Lake Biwa) were selected. Lake Biwa was designated first quasi-national park in Japan.  Yodo River water control project first-phase completed (water level: -1 m) Establishment of Liaison Council to Prevent Water Contamination of the Yodo River  Fish in Lake Biwa were contaminated by PCP from agricultural chemicals. Seta River Weir completed.  Bio-resource survey began in Lake Biwa. Biwako Ohashi Bridge and Amagase Dam were completed.

	Year	Major Incidents in Japan	Major Incidents in Lake Biwa Basin
Showa	1967	Enactment of Basic Law for Environmental Pollution Control	Reclamation of Dainaka-no-ko Lake was completed.
	1968		Biwako Fair was held.
	1969		Shiga Prefecture enacted Anti-pollution Ordinance.
	1970	Enactment of Water Pollution Control Law EXPO'70 was held in Osaka.	Complaints of musty odor in tap water were filed in Kyoto City. Complaints of odor in tap water were filed by about 400 citizens in Kyoto, Otsu and Osaka. Lake Biwa Comprehensive Development Promotion Council was established.
	1971		Entire Lake Biwa region was designated a wildlife sanctuary.
	1972	Enactment of Special Law for Developing Lake Biwa Region	Environmental standard was introduced to Lake Biwa.
	1973	The 1st oil shock	Shiga Prefecture enacted Natural Environment Preservation Ordinance.
	1974		Omi Ohashi Bridge opened.
	1977		Uroglena (phyto plankton) spread over the lake.
	1979	The 2nd oil shock	Shiga Prefecture enacted Lake Biwa Eutrophication Prevention Ordinance Yasu River Drainage Canal opened.
	1981		Shiga Prefecture adopted environmental impact assessment guidelines.
	1982	Partial revision of Special Law for Developing Lake Biwa Region (10-year extension)	Shiga Prefecture established Lake Biwa Research Institute.
	1983		Shiga Prefecture school ship "Uminoko" began operation. Blue-green algae blooms spread over southern lake for the first time.
	1984	Enactment of Special Law for Preserving Lake Water Quality	Shiga Prefecture enacted Landscape Preservation Ordinance. Shiga Prefecture held the first World Lake Conference.
	1985		Lake Biwa was designated a target of the Special Law for Preserving Lake Water Quality.
	1986		International Lake Environment Committee (ILEC) was established.
1987		Lake Biwa Water Quality Conservation Plan was finalized.	
Heisei	1990		Master Plan for Environmental Management of Yodo River System was finalized.
	1992	Partial revision of Special Law for Developing Lake Biwa Region (5-year extension) The Earth Summit	The 2nd Water Quality Conservation Plan for Lake Biwa was finalized; Shiga Prefecture enacted Reed Colony Conservation Ordinance.
	1993	Enactment of Basic Environmental Law	Lake Biwa was registered with the Ramsar Convention on Wetlands. Lake Biwa - Yodo River Water Quality Preservation Organization was established.
	1994	Serious water shortage throughout Japan	Blue-green algae blooms spread over northern lake for the first time; Serious water shortage of Lake Biwa (water level declined to -123cm on September 15, 1994).
	1995	Great Hanshin-Awaji Earthquake	UNEP established the International Environmental Technology Center.
	1996		Shiga Prefecture enacted the Basic Ordinance Concerning the Environment and the Ordinance to Promote Domestic Wastewater Measures. Lake Biwa Museum opened.
	1997	Termination of Special Law for Developing Lake Biwa Region Revision of River Law	The 3rd Water Quality Conservation Plan for Lake Biwa was established. Surveys initiated to introduce Lake Biwa Comprehensive Conservation Plan. World Ancient Lake Conference. Lake Biwa Comprehensive Development Project was terminated.
	1998		Action Plans for Conserving Water Quality of Lake Biwa were finalized.
	1999		Shiga Prefecture enacted Environmental Impact Assessment Ordinance. Surveys to introduce Lake Biwa Comprehensive Conservation Plan were completed. Establishment of Lake Biwa Comprehensive Preservation Liaison Coordination and Lake Biwa Comprehensive Preservation Promotion Council
	2000		G8 Summit of Environmental Ministers was held in Otsu. Shiga Prefecture finalized Mother Lake 21 Plan.
	2001		The 9th World Lake Conference was held.
	2002		The 4th Water Quality Conservation Plan for Lake Biwa was finalized. Shiga Prefecture enacted Lake Biwa Sport Activities Control Ordinance.
	2003		The 3rd World Water Forum was held. Shiga Prefecture Environmentally-focused Agriculture Promotion Ordinance enacted
	2004	Invasive Alien Species Act promulgated Scenery Act announced	Shiga Prefecture Lake Biwa Forest Development Ordinance enacted Ordinance on the Promotion of Shiga Prefecture Environmental Study Promotion enacted
	2005		Restoration Project for Lake Biwa and Yodo River Basin formulated Shiga Prefecture Lake Biwa Forest Development Prefectural Tax Ordinance enacted
	2006		Rapid expansion in wilting oak trees Ordinance for Coexistence with Wild Plants and Animals at Home and in Shiga enacted
	2007		2006 International Symposium on Wetland Restoration held The 5th Water Quality Conservation Plan for Lake Biwa was established
	2008	Enactment of Basic Act on Biological diversity	The Yodo River Basin Improvement Basic Policy was determined The dissolved oxygen concentration in the deep water of the North Lake saw its lowest ever value recorded (0.5mg/L)
	2009		Nishino Lake and Chomeji were added to the record of Ramsar Convention wetlands
2010		The Yodo River Basin Improvement Plan was determined	
2011	Great East Japan Earthquake	Surveys to Lake Biwa Comprehensive Conservation Plan First Stage inspection implemented Surveys to Lake Biwa Comprehensive Conservation Plan (Second Stage Plan) were Finalized. Shiga Prefecture 'Mother Lake 21 Plan (Second Stage Amended Plan) created	



**Lake Biwa Comprehensive Preservation Initiatives  
Bequeathing a Clean Lake Biwa to Future Generations**

— Seeking Harmonious Coexistence with the Lake's Ecosystem —

(February 2012)

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