

Setting an Industrial Tourism Route of the Lake BIWA Canal in KEAGE, KYOTO

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Abstract:

The infrastructures which are related to Lake BIWA canal concentrate in KEAGE, Kyoto. The infrastructures are the KEAGE Canal lift, the SUIROKAKU Water Bridge, the KEAGE Hydroelectric Power Plant, the KEAGE Water Purification Plant, and the Lake BIWA canal Museum of Kyoto. These infrastructures are active, and also are the representative industrial heritages showing the dawn of modern Japanese industries. However, such recognition is not always common in Japan. Therefore some of these may be lost in the future. As measures to it, to set an industrial tourism route which visits the associated infrastructures of the Lake BIWA canal at the vicinity of KEAGE is suggested in this article. A concrete route plan is shown, and the points that should have to be examined until realization are clarified.

Keywords: Lake BIWA canal, Canal lift, KEAGE Hydroelectric Power Plant, KEAGE Water Purification Plant, SUIROKAKU Water Bridge, Lake BIWA Canal Museum of Kyoto, Industrial Tourism Route

1. Preface

The purpose of this study is to review the infrastructures which are related to the Lake BIWA canal at KEAGE, Kyoto from a viewpoint of industrial tourism, and to set a route visiting the infrastructures.

Lake BIWA canal was completed solely by Japanese people, such as Dr. Sakuro Tanabe, in 1890, and it accomplished a big role in supplying water and electricity to Kyoto. And also it played a big role in transporting supplies by a boat. And it became a typical industrial heritage showing the dawn of modern Japanese industries. However, it is difficult to say that those infrastructures are recognized as an industrial heritage and are treated as valuable ones. Therefore some of these infrastructures may be lost in the future. As measures to it, to set an industrial tourism route which visits the associated infrastructures of the Lake BIWA canal at the vicinity of KEAGE is suggested in this article. In other words, during walking along the route people's interest into the Lake BIWA canal will increase and it is expected that the interest is turned to maintenance of the infrastructures and a preservation of industrial heritages.

2. Infrastructures of the Lake BIWA canal at the vicinity of KEAGE

The canal flows 7.5km between OHTSU of Shiga Prefecture and KEAGE of Kyoto Prefecture being the sea level difference of 6m, The canal flows 7.5km between OHTSU of Shiga Prefecture and KEAGE of Kyoto Prefecture, and there is 6m sea level difference, because the sea level at the surface of Lake BIWA is 84m and the one at the stopping boats place at the top of the canal lift of KEAGE is 78m. However, it lowers suddenly from there, and the sea level of the road beside the stopping boats place being ahead by 700m from the previous spot is 45m. Therefore, there is the sea level difference of 33m between both the places¹.

The hydroelectric power plant uses this difference of the sea level, and the water is supplied to the whole of the city by a natural flowing style at KEAGE water purification plant where the sea level is approximately same with the top of canal lift.

It supplies the highlands with water by a natural style bottom after having pushed it up with a pump once to a higher distributing reservoir. But, in case of supply to highlands, water is supplied by a natural flowing style after being pushed up into a reservoir for highlands.

In addition, the canal lift was made so that a boat could get over this difference of the sea level. The canal is mediated into high SHISHIGADANI area through the SUIROKAKU water bridge, and the flow can diverge to the northern high area. In other words, a water purification plant, a hydroelectric power station, a SUIROKAKU water bridge, and an canal lift were constructed because the difference of the sea level more than 30m still remains there.

3. Industrial Tourism Route of Lake BIWA Canal

The idea and activity on "industrial tourism" to make use of industrial heritages as tourism resources began in the 1990's in the U.K. which is a country of the Industrial Revolution. They spread out to Europe afterwards², and are spreading in Japan. Lake Biwa Canal Museum is included to the above-mentioned LAKE BIWA canal-related infrastructures at the vicinity of KEAGE (Fig. 1)³, and then, to set an Industrial Tourism Route which visits them is proposed in this study. Each infrastructure is outlined as follows.

(1) Water purification plant

It was founded as the water purification plant which adopted the first rapid filtering method in Japan in 1912. However, most of the buildings and facilities at the time of the foundation seem not to remain because expansion and improvement of it often have been done afterwards. An illustration of placement of the water purification plant is shown in Fig. 2⁴.

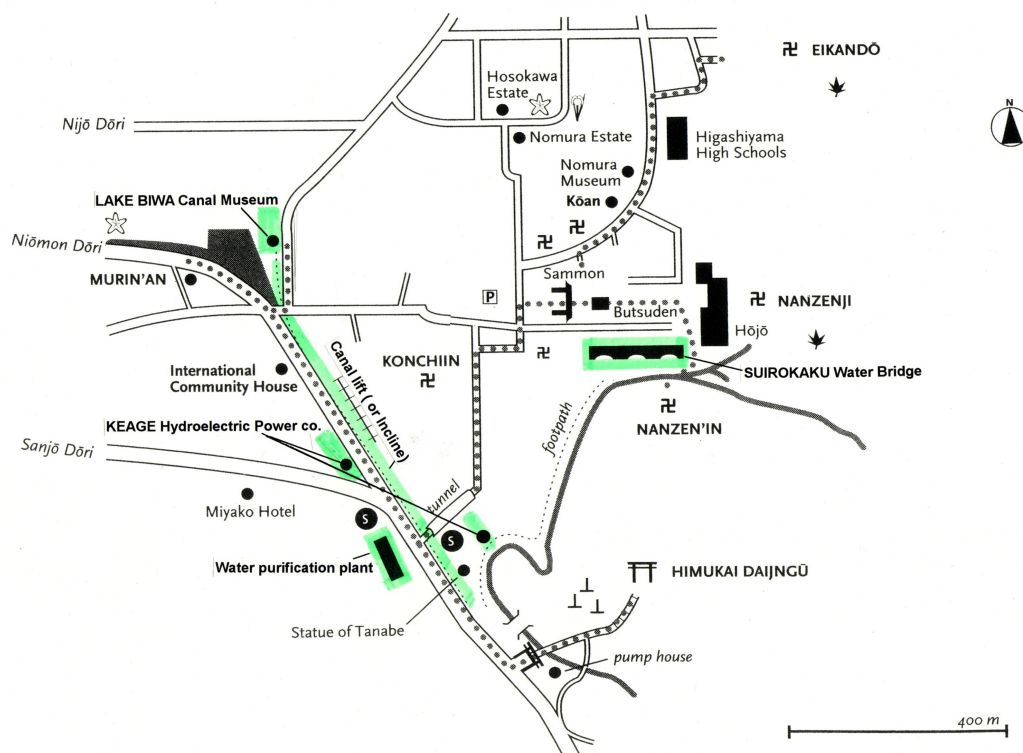


Fig. 1 LAKE BIWA canal-related infrastructures in KEAGE, KYOTO

Although it is closed usually, it is opening only during May 5 from the end of April every year while about 4,000 azaleas bloom there.

(2) Hydroelectric Power Plant⁵

It was completed in 1891, and it became KANSAI-HAIDEN co. to which Kyoto City invested⁶, and KEAGE Power Station, the Kansai Electric Power co. generates electricity now. A brick building (Fig. 3) still left was built during the second construction which finished in 1912. However, it is not used now since it was superannuated. Reinforcement will be considerably needed when it opens to the public. Generation is performed in the building which is next to the north side of this building, and one of two Francis turbines operates.

The electricity from this power station is supplied to nearby the private houses. In contrast, electricity of a nuclear power plant is carried from a far-off place to an urban region. Therefore, in case of this hydroelectric power plant, the transmission distance of electricity is shorter than it of a nuclear power plant, that is, this hydroelectric power plant is more advantageous in the cost than a nuclear power plant.

Kansai Electric Power co. pays the maintenance costs to the Kyoto City Waterworks Bureau now, but does not have a big problem on the income and expenditure if there is not happening such as exchanging a dynamo. And also, there are few environmental problems. Kansai Electric Power co. says that it does not have a plan to abolish the power plant in the next few decades.

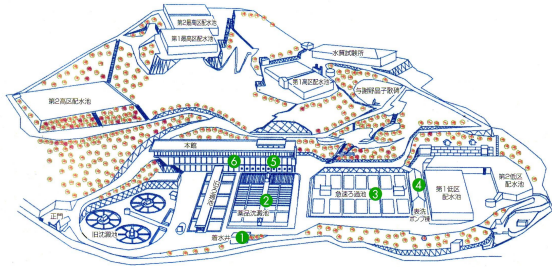


Fig. 2 General view of the water purification plant



Fig. 3 Brick building of KEAGE Hydroelectric Power Plant

(3) SUIROKAKU Water Bridge

The route of LAKE BIWA canal diverges in two directions at KEAGE. One of them runs against KAMO River via Okazaki and extends from there to south along KAMO River right-angled. Another is a route which goes to the north contrary to the flow of KAMO River along the heights east of Kyoto City from NANZENJI Temple. The SUIROKAKU Water Bridge mediates the canal from KEAGE into the direction of SHISHIGATANI which is higher.

Although the SUIROKAKU Water Bridge which is famous sightseeing spot is in the precincts of NANZENJI Temple, Kyoto City possesses it including land, and also manages it.

(4) Canal lift (or Incline)

The trucks are put on each at the top (Fig. 4) and the center (Fig. 5) of the canal lift. Boats were put on the both trucks until 2005, but, the center truck only remains there since the boat at the center of the canal lift was abandoned (Fig. 6). The Cultural Property Public Assistance Division of Kyoto City decided the removal of the center boat on March 10th, 2005 because it became superannuated and is dangerous. Placing the old FRP boat on a truck instead of the abolished boat is planned, which is based on the talk of the Waterworks Bureau, Kyoto City. The truck and boat near the top of the canal lift remain.

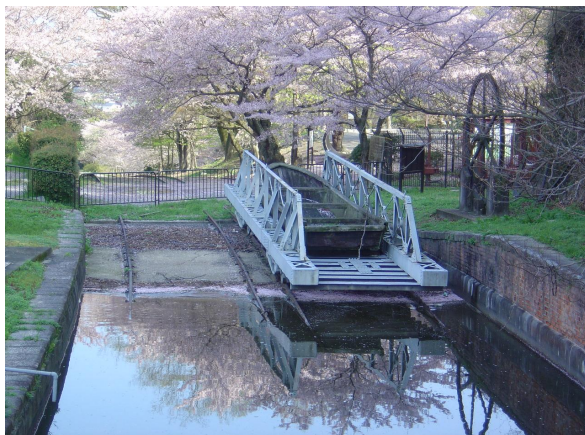


Fig. 4 The truck with a boat of the top of canal lift



Fig. 5 The central truck with a boat on the canal lift before March 10th, 2005

Generally speaking when something is exhibited, what is being operated gives a stronger impression than what is not being operated. If, for example, an attraction with a moving boat that people could ride on is performed on the canal lift after repairing machineries, improving surrounding environment, and limiting a period, it is expected that people will come to be interested in the canal.

(5) Lake Biwa Canal Museum

This museum was opened in 1989. A Pelton waterwheel and a Stanley generator, which were operated at a power station in the early days, are exhibited as well as two rough drafts of Dr. Tanabe Sakuro's graduation thesis in English. The drafts were written with the left hand because he was wounded in the right hand when he surveyed a route of the canal by himself. Because his graduation thesis does not remain, the drafts are regarded as the only document which can show his survey. The museum is located at the end of the canal lift, and visitors can watch the canal lift and the stopping boats place from the courtyard (Fig. 7).



Fig. 6 The same truck as Fig. 5
December 28th, 2005



Fig. 7 The Lake Biwa Canal Museum and
the stopping boats place

4. Setting the route

The route must be set so that it does not cause the destruction of environment and scenery, that is, a large-scale construction won't be performed to utilize current paths. With that in mind, it will be set considering the present conditions of each infrastructure, the safety of the route, and possibility of the realization. And the route guidance and an explanation about the industrial heritage at the suitable places are displayed. A tentative plan of the route is shown next.

- (1) Lake Biwa Canal Museum is a starting point of the route. Here, visitors gain the knowledge about a canal.
- (2) Visitors observe a power plant next. But it is not opened to the public now.
- (3) They visit the water purification plant next. However, here is not opened to the public usually. Because no heritages remain there, it is desirable that photographs or drawings at the time of the foundation are exhibited when it opens to the public. In addition, because drinking water is connected directly with life, one should pay a special attention to the safety measures to ensure a route where no accident could happen, and also should be cautious about the choice of places to be opened to public, and the placement of security guards.
- (4) The visitors return from the water purification plant on the same way, and go into the canal lift from the middle. After going up the canal lift on foot, they can reach a park where a sample of an aqueduct and a statue of Sakuo Tanabe are exhibited. Visitors cross the top of aqueducts of the power plant from an edge of the park (Fig. 8).

Another idea is that the canal lift is preserved at the situation of being operated. In other words a operation of the canal lift is revived, and the boat that visitors ride on is moving up and down. In that case, a promenade for walkers beside the canal lift is necessary to be arranged. Either one of two traffic lanes is used for a service of a truck, and the another lane becomes a promenade for walkers. Therefore, to construct a new

promenade is not necessary and only to construct a fence may be necessary.

(5) From the vicinity of the other side of the conducting tubes, visitors go along the side road of the canal that leads to the SUIROKAKU Water Bridge (Fig. 9). Because of the ascended and descended places, narrow spots, and the place that is not paved, the maintenance is necessary between (4) and (5).



Fig. 8 The top of conducting tube



Fig. 9 Canal and side road that lead to the SUIROKAKU Water Bridge



Fig. 10 The upper part of the SUIROKAKU Water Bridge

(6) The visit of the SUIROKAKU Water Bridge (Fig. 10) and the Nanzen-ji Zen temple becomes the end of the route.

There are other meaningful infrastructures other than the above-mentioned, but, they are omitted here.

5. Expected effect

It is clear that education and environment which make young generation be always interested in the industry or technological field are necessary for Japan to be able to continuously keep up with the world in the industry and technology. A lot of students visit Kyoto every year as a school excursion. Setting this route will give a good opportunity for such young generation to study a history of technology.

6. Summary

The infrastructures which are related to Lake BIWA canal in KEAGE were reviewed from a viewpoint of the industrial tourism, and an industrial tourism route visiting them is proposed. For realization of the route, it made clear that an examination of the safe management in water purification plant, the

reinforcement of a brick building of the power plant, the exhibition method of a truck and a boat on the canal lift, and the maintenance of unpaved points are necessary. It is expected that it becomes the place for the education of a technological history to young generation. Moreover, these infrastructures will be preserved as a result, if a general concern about them increases.

References

1. Kyoto city, "Kyoto city Toshikeikaku-zu (1/3000)", 1925. This is possessed by The Kyoto University Museum.
2. Hiroshi Suda, Kohichi Tokuda, Katsumi Yasumura, "Shin-Sangyo-Kanko-Ron", Subaru-sha, pp.165-166, 2002. (In Japanese)
3. Judith Clancy, "Exploring Kyoto - On Foot in the Ancient Capital -", Weatherhill, p.70, 1999. This was modified by the author.
4. Kyoto City Waterworks Bureau, Pamphlet "KEAGE Water purification plant", 2003. (In Japanese)
5. This clause depends on a story of the Kansai Electric Power co.
6. Kyoto City Waterworks Bureau, "100 years of LAKE BIWA canal", The Kyoto Shinbun Newspaper Co., Ltd., p.444, 1990. (In Japanese)