

2015 Ashio Field Trip Report



June 30, 2015
SUSTEP Program
JDS Program
Univeristy of Tsukuba

Schedule for Ashio Trip (subject to slight changes)

June 30, 2015

- 8:00 Leave the University of Tsukuba (bus will be in front of the University administration building; we do not wait for late comers!)
- 11:00 Arrive in the **Ashio Environment Study Center**
- 11:40 Japan's first hydroelectric dam site and former village area
- 12:30 **Ashio History Museum** (lunch)*
- 13:30 Kotaki area (former mine site)**
- 14:30 Leave for Tsukuba
- 17:30 Arrive in the University

Preface

The Mater's Program in Environmental Sciences at the University of Tsukuba has sent its students to Ashio for many years. Up until recently, however, its Ashio field trips have focused on informing Japanese students about Ashio's roles in facilitating industrial developments in Japanese history. Somewhat different from previous trips, this 2015 trip aimed to educate international students, especially from developing countries, about not only Ashio's industrial development but also the restoration of the natural environment in the valley by local people and others. The latter topic is particularly important partly to remind young international students that the future of their countries, which are now having heavy pollution problems, can be solved.

Apart from what I intended to offer through this field trip, these students keenly observed a dilemma between nature restoration and population depletion. Whereas Ashio dramatically has somewhat recovered its pristine nature and wildlife in the last fifty years, it has constantly lost the population, especially young people. Some of our students, however, did not simply sighed. They recognized a good potential for the future tourism development in Ashio. Compiled reports below discuss some refreshing ideas about Ashio's future economic resurrection. Some other students placed what they observed in Ashio within an international context and discussed the implication of pollution on society. I trust that these reports have some value for Japanese people to read and learn.

Before introducing these reports, we must acknowledge an invaluable support we received from the Ashio History Museum and its members. Mr Kazuo Nagai, museum director, warmly welcomed our students. He helped organize our tour. Mr Mikio Aoki and Mr Satoshi Onozaki accompanied with us as guides. They lived in this city when Ashio was still thriving. Until recently, they had kept highly successful career in Tokyo and other places. Their knowledge about Ashio has been heightened by their strong commitment to researching and keeping its history alive. Mr Onozaki's presence also strengthened our tour when we looked through early twentieth-century photographs of the Ashio city area, which his grandfather, as the first professional photographer in town, took. We sincerely dedicate the following reports to them.

Kenichi Matsui (SUSTEP Program Committee chair, University of Tsukuba)

A Comparative Study of Mining Impact on the Environment between Japan and Mongolia

Enkhbat Oyuntselmet (Mongolia)

The Ashio copper mine became the focus point of one of the largest environmental pollution and restoration cases in Japan. By introducing cutting-edge ore extraction and refinement technologies since the 1880s, the mine became the biggest copper producers in Japan (Stolz, 2007), at the cost of the surrounding natural environment.

According to Robert Stolz, the pollution from the copper mine was recognized in the Watarase River watershed as early as 1885. Local people noted that the fishes were dead or very weak so that even children could catch them easily. From then Ashio copper mine observed the worsening environment. Trees and soils were contaminated with the sulfur dioxide gas emitted from the refinery, and eventually the forests in the Ashio valley became barren land. The heavy flood of the 1890s also released heavily contaminated sediments, bringing much destruction to the lower stream areas (Stolz, 2007). The flood also reduced the rice productivity in some areas.

When we visited to the Ashio town, I observed that the surrounding nature has been restored. The important thing that we have learned is the local people's persistent character for their environmental conservation and restoration. The long-term struggle of local people, which started in 1980 could influence to stop the mining activity. And local people's attempt for the ecosystem restoration could become barren land as a forest. For instance, people had brought the trees and planted. With the help of their restoration activities, also the water treatment is now being operated in Ashio town. Thanks to the local people for their struggling resolutely and persistent effort.

In Mongolia, there are many on-going similar cases to the Ashio mine in terms of mining related environmental destruction and protest activities. Recently, the case of

the uranium mining in the Ulaanbadrakh soum of Dornogovi province gained much media attention (Tolson, 2013). The mine operator is the COGEGOBI Company, which is the subsidiary to the Areva group of France. The group aims to ensure the long-term uranium supplies for nuclear power generation with its own environmental protection. Despite its claim, in 2012, a large number of livestock had died mysteriously, and in 2013 about 20 herder families reported spring birth deformities in their livestock (Tolson, 2013). In Mongolia, the death of livestock is the serious problem because the Mongolian economy largely depends on livestock.

In response, local people in collaboration with several NGOs expressed their opposition against uranium extraction in Mongolia. It informed the public of the fatal effects of uranium mining in Ulaanbadrakh soum, and urged decision makers to visit the soum in Dornogovi Province to witness the conditions. The government did not respond (Naranbold, 2013).

In both cases of Japan and Mongolia, local people faced risks of environmental hazards to their stable economy. In Mongolia, the government has more power than the people do. Technocrats have tried to make uninformed local people understand about the technological effectiveness and mining advantages. And the people are left powerless still now. The advanced technology is needed, but I think that the mining should be environmentally sustainable. Mining operators should control pollution to operate their activity friendly to the environment and local economic activities. And it is important that the government should take more active roles in managing and monitoring mining activities. So Mongolia needs demand of governmental right policy and intervention. I also think that people should act and protect the natural environment just as the local people in Ashio did.

During our field trip in Ashio, we also learned about the potential tourism development in Ashio. I see now that firstly it is important to train the local guide and make tour routes. The guide should have the best knowledge on their local environmental history and conservation. They should provide tourists with accurate

information and make the tour interesting. They can make people become more interested in environmental conservation.

Having local guides in Ashio is also good for the development of community-based tourism and ecotourism. Since the Ashio town's economy no longer depends on the copper mine, the tourism activity based on this town's environmental history is the another way to support the economy and provide local people with jobs. And it may also reverse the declining trend of the population.

References:

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Willingness & Awareness of Local People in Reviving the Nature Caused by Copper Mining at Ashio Lenggogheni (Indonesia)

Nikko city in Tochigi Prefecture is famous with UNESCO world heritage site, Toshogu Shrine. Not far from it, there is a place called Ashio that became famous with copper mining from the late nineteenth century to the early twentieth century. The copper from Ashio was discovered in the Edo period and used to build Toshogu Shrine and Edo Castle. [<http://www.travel-around-japan.com/k36-34-ashio-copper-mine.html>] This city had become one of the most developed cities in Japan by the early twentieth century. The most advanced transportation facilities from abroad had been introduced here. Unfortunately, the mining process caused heavy pollution within this area that destroyed trees and caused landslides.

The Ashio copper mine is one example of environmental problems caused by human activity in Japan. Historically Japanese suffered from not only environmental degradation but also health problems such as Minamata and the Gunkanjima coal mine. However, Japan learned from all these cases happened and took action in developing the environmental law. Japan is one of the countries that developed environmental law in the 1960s, earlier than many other countries did. Even today the Japanese environmental law has been consistent with those rules and regulations and the government enforces them strictly.

Indonesia, my country, is the largest tin exporter in the world. The biggest tin deposit is located in Bangka, Sumatera. As the global demand for tin constantly exceeds supply, Bangka has become a free-for-all mining town, where digging feverishly takes place both offshore and on land. After 13 years of indiscriminate mining, Bangka's tropical forests are left with thousands of moon-like craters that are contaminated with

acidic water and heavy metals. Health problems have also occurred.

The Government of Indonesia has been expected to take action quickly and comprehensively to solve the problems and to avoid further disasters. It can learn from Ashio experience to prevent further environmental degradation and to protect the citizen from health problems. Another thing that can be learned from Ashio Copper Mine experience is the experience in which the Japanese government and people tried to revive and bring nature back. In Ashio, there was once no standing trees. The mountain was bald. Flooding frequently happened. Today we see green areas around the mining site. The resurrection of nature has been done because of more than 50 years of efforts by government, local people and volunteer groups.

Today, this mine has been designated as a national historic site. Though this city is not as prosperous as before anymore, it sends strong messages to many people to be aware of the environment. Our guides this time were local people who had successful life outside this city but they came back to their hometown in reviving nature.

Potential tourism development in Ashio

Bayarmaa Enkhbold (Mongolia)

As one of the regular field trips of the SUSTEP program (Sustainability Science, Technology, and Policy), we went to the Ashio Copper Mine site, which was once the biggest copper mine in Japan. The purpose of this tour was to gain knowledge about the history of mining and rehabilitation of surrounding environment after the decline of the mining operation.

When arriving at the target area and investigating the environment, it did not seem there was an operation of mine at my first sight. Nature appeared very beautiful with the harmonic configuration of river, majestic mountains, trees, and animals. As for the remains of facilities such as refinery plant, chimneys, and the network of railroads and bridges, which were being used for mining operation and product transportation, seemed like an industrial museum in nature.

During the trip guided by Mr. Nagai Kazuo and Mr. Satoshi Onozaki, who worked in this mining town and are now honorary advisors, I was very impressed about the rehabilitation of nature by volunteer people, including both children and elders. The mountains became bald because of mining operations – removing trees in order to extract copper ore inside mountains and, using logs in order to build facilities in underground mine. Poisonous gas from refinery caused a death of trees. Moreover, the river was polluted and caused disasters.

Even though the Ashio copper mine had negative impact on the environment, it helped to develop a military strength and industry, which were a national priority for economic and political policies in the late nineteenth century and the twentieth century (United Nations University, 199200). It created the first electronic rail-way and engine-powered cable, which were being used for product transportation, the most

developed and modern city at that time. At the same time, the mining town triggered – the first movement against mining operation. The town also has nurtured the good large-scale land rehabilitation in the mid-twentieth century (United Nations University, 199200).

After coming back from this field trip, I found out about ways to improve Ashio tourism. Ashio has a possibility to improve tourism by using railroad. It can also highlight those initial great actions and measurements taken for rehabilitation in Ashio. Additionally, an excursion in the underground mine, which should be decorated with models of miners, tools, light and other related items with sound like a real mining activity under operation would be the most exciting tour for tourists. Also, one may organize a tour that aims to educate young generations regarding historical events related to the industrialization era, and successful implementation on environmental remediation with community based approaches. For example, around 60 years if environmental remediation was held by replanting around 12,000 trees in 2,600 hectares each year by volunteer people (Nagai Kazuo 2015).

In conclusion, this trip gave me much knowledge about the situation of Ashio copper mine operation and the great movement for land rehabilitation. This is one of the lessons other countries should learn from. As for my country, Mongolia, the mining sector is very important for economic development. The amount of mineral commodities occupies about 80% of the country's export and provides about 40% of the total national production (UNDP 2013). Therefore, looking at the history of Ashio, I want my country to strengthen the measures of nature protection during mining. After the end of the mining operation, there is an opportunity to increase state budget by developing tourism in the mining sites.

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Acknowledgement

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Introduction of Tourism to Rebuild Ashio

Moreen Bimali Weerasuriya (Sri Lanka)

This report will examine the importance of tourism in Ashio. This place has the history of the industrial based economy, which bloomed with the copper mining industry but started to decline with environmental problems in the mid twentieth century. I argue that tourism can be a remedy to the rapidly declining population.

Ashio is located in Nikko city, which is famous among international tourists for its historical places and the scenic beauty. The location of Ashio offers a good potential for tourists attraction. The dam site, river, copper mining locations, refinery, museum and mountain range will be good sources in developing tourism (fig.1 and 2).



Figure 01: Dam site with the view of mountain range



Figure 02: Refinery

The media can be used to increase the awareness of both local and foreign tourists about tourism attractions in Ashio so that more tourists can be encouraged to visit. The introduction of locally grown foods may increase the agriculture sector which was drastically reduced due to heavy industrious focus in the past (Environmental

Justice Atlas, 2014).

In Sri Lanka there are successful cases, in which the locally distinctive architectural designs develop as hotels to attract tourists. For examples, Heritane Tea Factory Hotel used the buildings of a tea factory, Bandarawela Hotel renovated the house for the British colonial government. The re-development of previously utilized character buildings as hotels or motels could be attractive to foreign visitors. In Ashio the location of the refinery with the view of the plantation forest and the tailing dam will be a good location to build a hotel.

In addition integration of eco-tourism into character architectural designs will increase the fascination among foreign visitors. The development of camping sites will be a good business potential to attract environmental lovers. Ashio residents can rent out necessities for campers. The plantation forest could be used not only to overcome environmental problems but also to improve the tourism. Some eco-tourism programmes can encourage campers to bring plants by themselves. Or residents may initiate the establishment of nurseries nearby and sell plants to tourists, so that they can participate in planting trees. This will help both livelihood and forest development. Initiating new tourism business can lead to developing of social service facilities, ensuring healthy places to live. This process will help reduce the out migration and encourage more people to move back to Ashio. Proper promotion can also increase the awareness of people regarding safe living conditions (i.e. safe water, quality air) in Ashio. So this will be helpful not only sustainable use of resources but also population growth in Ashio city.

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The Potential Tourism Development in Ashio to Reverse the Declining Trend of the Population

Renugapathy Kandiah (Sri Lanka)

The one-day field trip was conducted on June 30th, 2015 to the Ashio copper mining site in Tochigi Prefecture. It is located 127 km northwest of Tsukuba. Seventeen students participated in this trip and it was directed by Prof. Kenichi Matsui. In this field trip, Mr. Onozaki and Mr. Aoki, who grew up in Ashio, gave the explanation on the history of this mining town, the pollution of the environment and the importance of this place for them.

The site is a mountainous area with natural water bodies. The mountain is rich with various mineral deposits. Due to its large copper deposit, the place became the largest copper mining and advanced city in the 19th and 20th centuries with modern facilities like the first hydroelectric dam in Japan, the first electric railway and lighting. The mining company also used compressor and the ventilation system in mining. The refinery was established on site to produce pure copper until the 1990s from its ore by using chemicals. The utilization of chemicals in the refining process and mining activities led to the environmental damage and biodiversity loss of this area.

The population of those who depended on Ashio mine was 100,000 at its peak. Ashio nurtured the emergence of leading companies in the electronic and mining sectors. The mining workers resided nearby mining sites; refinery workers resided nearby the factory. The considerable population has been moved towards other towns in order to get the job opportunities and prevent them from the polluted environment. The population is currently less than 20,000. This statistics of population indicates that there is an urgent need to restore the population in this area. The tourism development can be the effective way to revitalize the town.

To promote the tourism in this area, the following suggestions can be taken into account:

1. The local authorities, the central government, or the mining company can provide extra protection and maintenance of ruined symbols in former mining site;
2. The following places can be of interests to foreign visitors and need additional explanation in English: the former public bath, some remains of ore transportation rails, explosive storage site.
3. Many students are not aware of the history of the Ashio copper mining and related environmental movements. Therefore, this historical place can be used to enhance the education for sustainable development for future generations;
4. Ashio has both natural beauty and industrial heritage such as the hydroelectric dam site, old bridges, and railway tracks. These places can be promoted among younger generations to know how the industrial development was carried out in the past;
5. The transportation can be improved from the Tokyo area to Ashio with the coordination of tourism agencies. The quality of catering and recreational services can help tourism;
6. With more support from different sources, the educational function of the Ashio History Museum and Ashio Environment Study Center can be enhanced to attract more visitors;
7. Elders from Ashio can be encouraged to work as volunteer guides;
8. As the 2020 Olympics will be held in Japan, a large number of tourists are expected to come to the Tokyo area. If the promotional activities will be implemented within 1-2 years, Ashio a chance to be famous and increase income;
9. The industries like Fujitsu and Hitachi may organize science history workshops.

These suggestions may help regain the population although they remain to be my premature speculations.



Effectiveness of Local Guides in Local Environment History

Pham Thuy Duong (Vietnam)

On 30th June 2015, I attended the fieldtrip to Ashio, a former copper mine in Japan. In the fieldtrip, we visited the Ashio Environment Study Center, the Hydroelectric Dam site, the History Museum and a former mine site. The trip was very informative and interesting since some of trip conductors are from local area. Personally, I believe that having local guides is one of the most effective ways for students to understand environment history due to various reasons.

The locals have their own stories. Through their stories, we can easily visualize history, whereas history can be a boring subject in books. Local memory can attach nostalgia to a place in Ashio that used to be the most advanced city in Japan. It also could convey a painful story of how nature was destroyed and how workers' health was affected. It also could touch on a sense of pride as to how much effort people made to restore the environment. Some stories are very familiar with what we can read in books. Some are very unique and interesting because they are personal and were not written in any books. The visitors could easily feel the flow of time, from the beginning to the end, and this flow thrills them.

The locals are source of information that is not written on books. Indeed, they spent their lives in the area, experienced the development of technology, suffered from pollution and enjoyed the achievement of environmental restoration. Being the witnesses of history makes them able to answer almost all questions from visitors. Furthermore, they can provide us with some information that you never imagine. They can show us where workers' bath was and how it worked. They even can show us where workers' children used to wait for their fathers with umbrellas when it rained. That information will not be printed in anywhere else.

All in all, local guides do play important roles in enhancing not only an environment history tour but also cultural and historical tours in general. In Vietnam, we also have some historical places with local guides and historical witnesses. For

example, Con Dao Prison can become alive with good guides. The French colonists built it in 1861 to detain people considered to be dangerous for the colonial government. Many high-ranking leaders of the Vietnam Communist Government at were imprisoned there and received severe corporal punishment. It is now designated as a historical relic of Vietnam. When you visit the site, you can see all the equipment that belongs to the former Prison. You can also talk with some former prisoner and their descendants. Through their stories as historical witnesses along with the pictures, you can imagine the horror in this prison. Their stories are more moving than the ones in books. My experience of visiting this site made me believe that local guides play a very important role in making history alive.

On the other hand, local guides may be ineffective if language differences exist. The local people, especially in a developing area, may not have strength in speaking different languages, and they will find it difficult to express their stories. In this case, in a short term, it is required to have an interpreter, who not only can speak the languages of local residents and the visitors, but also have knowledge on this area. In a long term, I think local guides should invest more in languages part.

Generally speaking, the effectiveness of local guides is undeniable in term of historical trips. Personally, I just hope that the guides could speak English more so that we could discuss and have a deeper view of the past and the future.

Potential Tourism Development in Ashio

Rei Cho (China)

On June 30th, we visited the Ashio Copper Mine area. We learnt about the history of Ashio copper mine pollution issues, how people and company dealt with pollutions, and their efforts to restore the environment and economy in Ashio.

According to the local guides' introduction, the Ashio Copper Mine in Tochigi was exploited since the 17th century. The Furukawa Company began to operate this copper mine in 1877, and the mine business developed rapidly in size and output. Its production was more than 4,000 tons in 1885, nearly 40% of the Japan's entire copper production at that time. Due to the development of mine businesses, Ashio became the first place of using electric railway and hydro-electric plant in Japan. Ashio town was regarded as one of Japan's most technologically advanced centers. However, because of the serious damage to the environment and copper depletion, this mine was closed in 1971. After that, many workers and local people went out of town, and the population was rapidly declined from 38,428 in 1916 to 3,220 in 2006. In order to revitalize this small town and protect this heritage, the Ashio copper mine was developed as a tourism destination and is now aiming to gain world heritage designation.

In this report, I will clarify the current tourism situation in Ashio, and then give my own ideas of potential tourism development in this area, which may help to reverse the rapidly declining trend of the population in Ashio.

Current tourism situation in Ashio

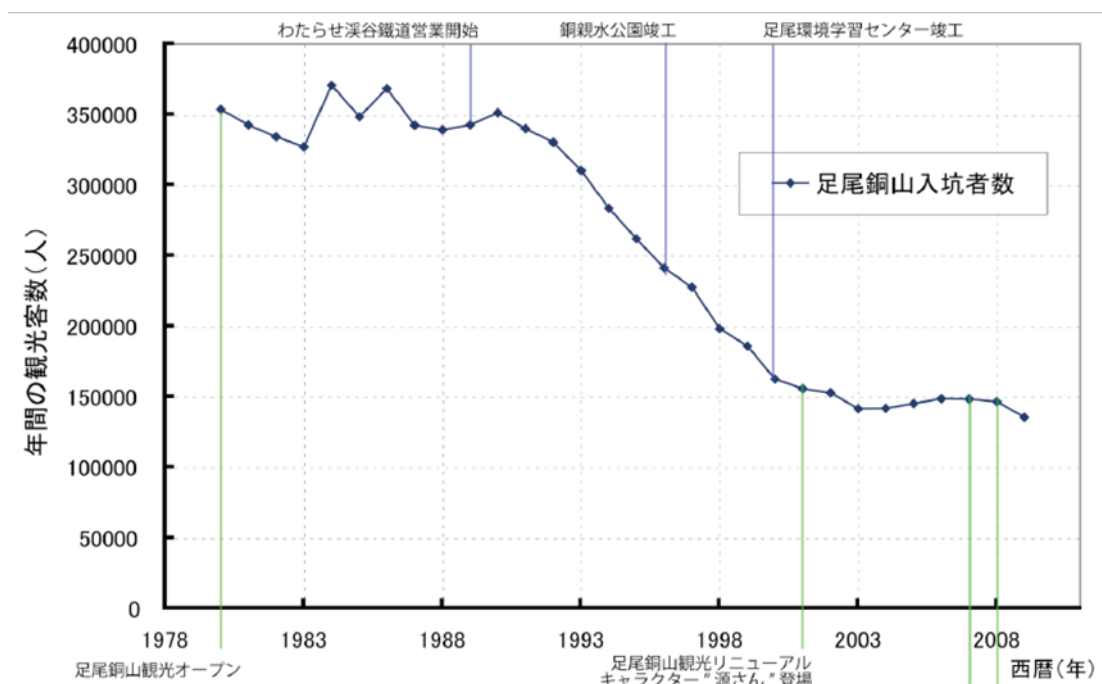
According to the Ashio Terrace, there are mainly 10 tourism resources developed in Ashio. They are Ashio Copper Mine Tour, Furukawa Kakemizu Club, the Ashio Environment Study Centre, Mt. Koshinzan, the Ginzandaira Camp Site, *Pinguicula ramosa*, Japanese Serow, the Watarase Keikoku Railway, People's Lodge "Kajika-so", and the Ashio History Museum. Among these, the most popular one is Ashio Copper Mine Tour.

Ashio Copper Mine Tour was established in 1980. This tourism authentically recreated the copper mine activities. By traveling through the 700 meters long tunnel in the mine, visitors can observe the real mine structures and also learn about its amazing history. As soon as Ashio Copper Mine Tour opened, it attracted a lot of tourists. From Graph 1, we can see that tourist arrivals kept more than 300,000 per year between 1990 and 1993. However, the tourist number rapidly declined in the 1990s. This declining stopped in 2003 with a number of tourists around 150,000 per year. Thus, the current tourism situation in Ashio does not seem to be improving since then. Although, in my observation, it is possible to improve tourism Ashio.

Conclusion

Based on what I learned in this field trip and reading related documents, I would like to give following recommendations that may help revitalize Ashio tourism, thus reversing the rapidly declining trend of the population in Ashio:

1. Primary or middle schools at least in the Tokyo area can be encouraged to offer Ashio Copper Mine field trip as a semi-compulsory activity with some government subsidy. Ashio Copper Mine is not only an important heritage, but also a good place to educate school children about the significance of protecting the environment. This policy can also enhance the brand of Ashio Tourism among children and parents.
2. Business promoters may encourage local people to open business of offering some local delicious foods and souvenirs. During our field trip, we didn't see any restaurants or souvenir shops to have lunch or buy something except the Ashio History Museum, which only offer some drinks. Thus, offering local foods and souvenirs can increase local peoples' income and also tourist satisfaction.
3. Ashio may be connected to an online recruitment for part-time guides who have an experience living in Ashio. This opportunity can not only attract people coming back to this town, but also promote the brand of Ashio Tourism.



Graph 1

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