

Erdapfel, the world's oldest surviving
globe by Martin Behaim, Nuremberg
1492

Cipangu, Land of Gold and Silver

Iwami and Sado: Two sites of mining heritage

Regine Mathias, France

Cipangu, Land of Gold and Silver

Iwami and Sado: Two sites of mining heritage



View of the main street in Iwami ginzan, Omori cho, Oda, Shimane, 2018
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Motivation Today, Japan is generally regarded as a country with no mineral resources of its own. However, a look at history reveals a completely different picture. In the late 13th century, the famous merchant from Venetia Marco Polo (1254-1324) depicted Japan as *Cipangu, rich in gold*, in his travelogue. Later, between 1540 and 1640, Japan was an important player in worldwide flows of silver, and the country exported large quantities of copper in trade with China and the Netherlands. It was these very different narratives about Japan's precious metals that fascinated me and aroused my interest in the history of Japanese mining.

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Objective For a long time, little was known about the history of ore mining in Japan neither abroad nor in Japan itself. With the designation of the Iwami silver mine as a UNESCO World Heritage site in 2007, mining has become a more visible part of Japan's cultural heritage. Now several former mining sites preserve memories of the past and make them accessible to the public. Here we tell the story of two important heritage sites: the Iwami silver mine and the gold and silver mines in Sado. Visitors to these places can experience deep underground how the miners extracted ore under the most difficult conditions. For those who want to learn more about the miners' work and life, various museums in the mining towns of Omori (Iwami) and Aikawa (Sado) offer a wealth of illustrative material. Well-preserved traditional townscapes invite the visitor on a journey back in time to Japan's past.

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Context The idea of preserving not only temples, shrines, and castles, but also old industrial sites as part of its cultural heritage, began to spread in Japan in the late 1970s. Since the 1990s, several such heritage sites have applied to be included in the UNESCO World Heritage List. Japan has increased its efforts to preserve industrial monuments and evidence of people's working and living environments in the nineteenth century and before. Mining towns such as Omori and Aikawa have embraced this idea and are committed to preserving their centuries-old heritage for current and future generations. By allowing a glimpse into the largely unknown world of mining, they highlight the importance of this industry for Japan's modern development. At the same time, these activities strengthen regional identity, fusing knowledge of the past with an interest in Japan's present and future.

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Major mines in Japan

Japan, land of gold and silver

For many centuries, Japan was a country rich in natural resources. Precious metals, copper, sulfur, lead, ironsand, and, since the 19th century, coal were mined all over the country. These resources were not only sufficient to cover domestic consumption, but were also important export commodities.

Mining of precious metals and copper in Japan can be traced back to at least the seventh and early eighth centuries. Imported metal had been used in Japan since the Yayoi Period (roughly 500-400 BCE to 300 CE), but ore mining probably began only in the Kofun Period (3rd to 7th century). The production of gold, silver, and copper is mentioned in the ancient sources Kojiki (712), Nihon shoki (720), Shoku Nihongi (797) as well as in individual provincial records such as Izumo fudoki (733) and Harima fudoki (713-715), among others.

From early on precious metals were part of the trade with China, in which gold and gold dust were exported to China, while silver, raw silk, and silk materials were imported. In trade with the Korean peninsula, the export and import of precious metals were strictly forbidden in certain periods, but often carried on in secret. Placer gold – secondary deposits, such as in stream beds – was found in many places in Japan and was easy to extract, while the mining of silver was more complex and required certain skills. It was not until the 16th century that Japan began to produce and export silver in larger quantities.

In the 16th and 17th centuries, mining in Japan experienced a significant boom. The costly wars of the Sengoku Period, also known as the *Age of Warring States*, in the late 15th and 16th centuries, as well as increasing foreign trade and global demand for silver and gold, stimulated the search for precious metals and copper in Japan. With the advance of European merchants into East Asia and Japan after the mid-16th century, the demand for Japanese silver grew rapidly. It became an important export commodity and circulated in the trade networks of East and Southeast Asia.

During this eventful period, the most important gold and silver mines of the early modern period were developed or expanded. Many remained active until the 20th century, and some, including Iwami and Sado, are trying to preserve the memory of mining and its legacy for generations to come.



Japanese trade routes in Southeast Asia in the early 17th century

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View of Omori mine (former Iwami silver mine) in 1887

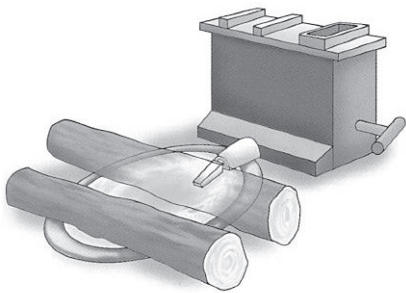
Courtesy of the Iwami Silver Mine Museum

Iwami: Origin of the silver boom

Sources suggest that the Japanese silver boom began in the first half of the 16th century in Iwami, a silver mine in what is now Shimane Prefecture in western Honshu. In 1526, Kamiya Jutei, a wealthy merchant from the harbor town of Hakata in northern Kyushu, is said to have opened a silver mine there. Within a few years it had become one of the most productive silver mines in Japan. The reason for this success was not only the rich ore deposits in the mountains, but above all the introduction of a new smelting technique in 1533. For this, Kamiya Jutei brought two smelters of Korean origin to Iwami.

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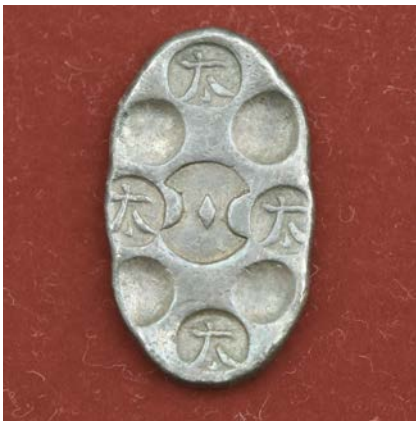
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*Haifuki furnace, Furusato Gakushushi:
Iwami Ginzan – Gin wo tsukuru –
Haifuki-ho, 1999, p7*



*Result of the haifuki process: haifuki
gin – silver gained by cupellation
©E. Pauer*



*Sekishu chogin – Oval shaped silver
coin from Iwami with stamps Courtesy
of Mint Museum*



Model of haifuki furnace, Courtesy of Museum UNESCO World Heritage Center

A new technique to extract silver

The *haifuki* method is a *cupellation* process, where ore is heated to separate silver from base metals, which oxidize at high temperatures. The silver ore is first crushed and separated in water. It is then smelted together with lead or manganese in an ash-lined melting furnace or crucible. To increase the heat, wood is also placed on top of the furnace and burned. The lead oxidizes and is absorbed by the ash, while the pure metallic silver remains on top of the ash. A simple form of this smelting technique seems to have been used in Japan in some places as early as the 7th century, but apparently fell into oblivion afterwards.

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It is assumed that the cupellation method, which was reintroduced by Korean smelters in 1533, originally came from China. It quickly spread from Iwami to other mines such as Sado and Ikuno in what is now Hyogo Prefecture. It was practiced until the middle of the 19th century and stimulated silver production in Japan. In the form of coins (*chogin*), silver served as currency for trade and taxes, with smaller amounts being obtained by cutting pieces from the coin.

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The fame of Japan's rich silver mines soon reached Europe, and as early as 1595 the name Iwami – Hivami, with the explanation Argenti fodinae (silver mine) appeared on the map of Japan by Luis Teixeira and Ignacio Moreira in Theatrum Orbis Terrarum, Abraham Ortelius (1527-1598), Antwerpen 1595



Japan as a global player in the *Silver Century*

Most of the Japanese silver from Iwami, Ikuno, Sado, and other Japanese mines was exported to China. A smaller part was smuggled to Korea. Alongside the legendary silver mine in Potosi, Bolivia, which was developed by the Spaniards around the same time as Iwami, Japan was one of the main exporters of silver at that time.

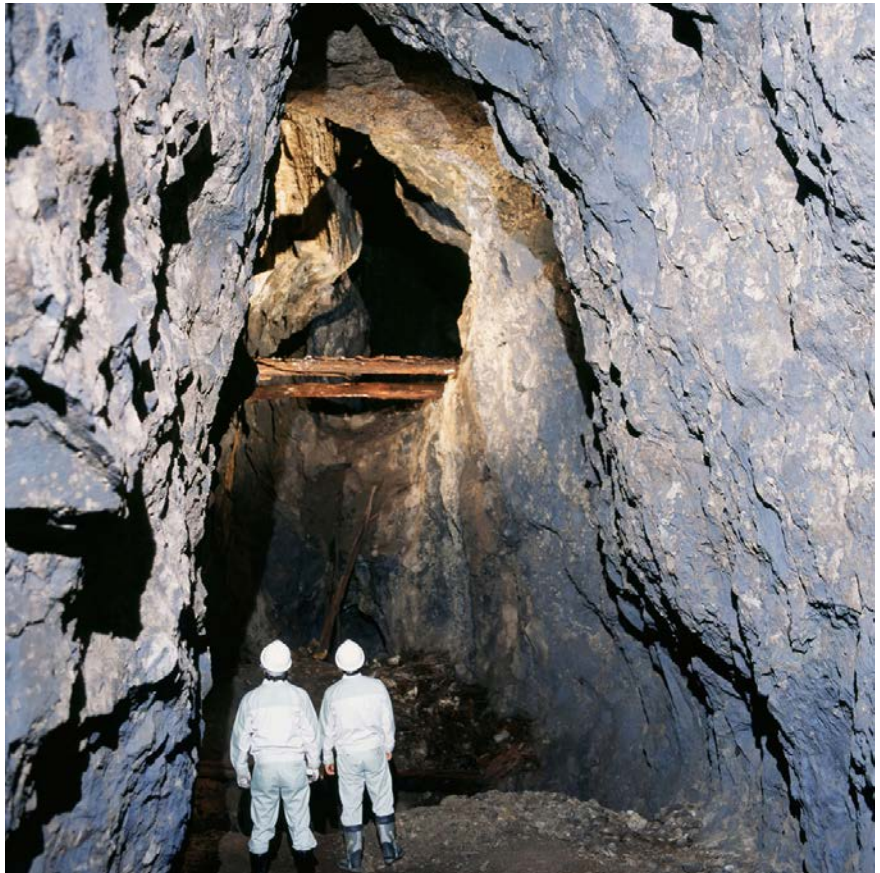
Economic historians speak of a *Silver Century* from 1540 to 1640, and a globalized *Potosi-Japan Silver Cycle*, in which the silver flowed around the world, mostly ending up in China. As China had prohibited direct trade with Japan in 1557, Portuguese ships were mainly used for this purpose, but Japanese ships and later the Dutch also actively participated in trade in East and Southeast Asia. In return, Japan imported raw silk, silk fabrics, gold, and medicines from China.

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Okubo tunnel mouth ©E. Pauer



*The Okubo tunnel was operated until the Meiji Period. It is so high and wide that Okubo was supposed to be able to ride into it on horseback
Courtesy of Shimane Prefecture and Ohda city education board*

Iwami today: Heritage sites

Remnants of more than 600 mine shafts and open pit diggings testify to mining activity in the region around Iwami. Mining was carried out by many small teams, each led by a *yama-shi* (mining headman). In 1601 the founder of the Tokugawa shogunate, Tokugawa Ieyasu (1543-1616) took control of Iwami, Sado, and the silver mine of Ikuno (Hyogo Prefecture). He appointed Okubo Nagayasu (1545-1613), an innovative and capable administrator, as magistrate. Okubo greatly increased silver production and promoted the exchange of mining experts and mining technology between different mines. A tunnel in Iwami named after him still reminds us of him today.

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Shimizudani seirenscho refinery plant, operated 1895-96 ©E. Pauer



The Kamaya mine entrance is near the dark shadow on the rock on the middle left side; one of the terraces where the ore was washed and selected is on the upper right side ©E. Pauer

Nearby, remains of an ore washing plant with water reservoirs and several flat terraces for processing the ore at the Kamaya tunnel show that ore extraction and further processing were small scale and apparently took place directly on site. Of the many tunnels and drifts, only the Ryugenji tunnel, and with a guided tour also the Okubo tunnel, are partly open to the public. They give a good impression of the miners' arduous work.

After 1640, silver mining declined continuously as the ore veins became poorer and mining more difficult. At the height of mining, the population of the mining district was more than 10,000 people; it shrank to a few thousand. Production of silver and copper, however, continued at a low level, and attempts were made to use modern technology to restart production in the late 19th century.

The remains of a modern smelting plant in Shimizudani erected in 1895 bear witness to these attempts, but success did not materialize. This refinery operated for less than two years. The Iwami mine was finally closed in 1923. The number of inhabitants in the town dropped to a few hundred. Many of the houses fell into disrepair. Iwami's great past was forgotten.

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If one walks through the town, one can experience the almost authentic ensemble of an Edo Period mining settlement in Iwami, even though many houses date only from after a great fire in 1800 ©E. Pauer



Seat of the magistrate – daikan-sho. Today it houses the Iwami Ginza Shiryokan, a museum and historical archive. ©E. Pauer



View of the main street in Iwami ginza, 2018, ©E. Pauer

Iwami: Edo Period mining town in a time capsule

Anyone who comes to Iwami today visits a world cultural heritage site. In 2007 *Iwami ginza silver mine and its cultural landscape* were listed as Japan's first industrial monument on the UNESCO World Heritage List. The 442-hectare area comprises production facilities, settlements, fortresses to protect the mine, graves, shrines, transport routes, and three harbors on the coast of the Sea of Japan, some 10km away, thus reflecting the complexity of mining operations in early modern times.

The town itself lies in a narrow valley and stretches about 3km along a road. It comprises two very different parts, the actual mining settlement of Ginza-saku-no-uchi, which was enclosed by a fence in the early Edo Period, and the former administrative center of Omori-machi, where the magistrate (*daikan-sho*), as representative of the Shogun, resided together with the samurai officials and merchants.

The seat of the magistrate, several samurai residences, and the impressive residential and commercial building of the rich merchant family Kumagai, reflect the life of a relatively wealthy and cultivated upper class in Omori.

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Kumagai merchant house, the business premises, ©E. Pauer



Inner yard of the residence of the Kumagai family. At the right side is one of the storehouses. ©E. Pauer

To learn more about the life of the miners themselves, the dangers and hardships, a visit to the museums in town is mandatory. The Iwami Silver Mine Museum in the building of the former seat of the local magistrate, the World Heritage Centre, and the collections in the private museum of the entrepreneur Nakamura Toshiro, who has made the revival of his home town his life's work, vividly illustrate the history of the region, mining technology, working in the mountains and everyday life in many panels and objects.

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*Mining placer gold shown on the Sado kozan kyushiki kogyo zu picture scroll
Courtesy of Kyoto University, Faculty of Engineering library, Sign. 56114*

Sado: The gold island

About 70km off the coast of Niigata City, this island has many faces. It was a place to which rulers banished unwelcome or disgraced people, among them emperors, the Buddhist monk Nichiren, and the famous No poet Zeami. The poet is seen as the origin of a special tradition of No-theater plays in Sado: one that has survived to this day. However, Sado is best known as the *Gold Island*, one of the most important gold mining sites in Japan. The double peak of the *Doyu no wareto*, where mining literally split the top of the mountain and left a deep scar, has become an iconic representation of Sado's golden history.



Doyu no wareto

©Sado Tourism Association

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Mining placer gold has left scars on the mountains in Nishimikawa, with bare patches clearly visible on the snowy slopes, Winter 2009, ©R. Mathias

Placer gold has been mined in Sado since ancient times. First, the gold was leached from sediments of rivers and the sea near the river mouths. Later the mountain slopes were carved out with hoes, and a complex system of ponds and water channels was developed through which the sand was washed into the valley, where the gold was then extracted. Traces of this mining method have been preserved in the landscape of Nishimikawa area, in the southwestern part of the island.

Today, anyone who wants to do their own panning can try it in the *Nishimikawa Gold Park*: finding gold is guaranteed.

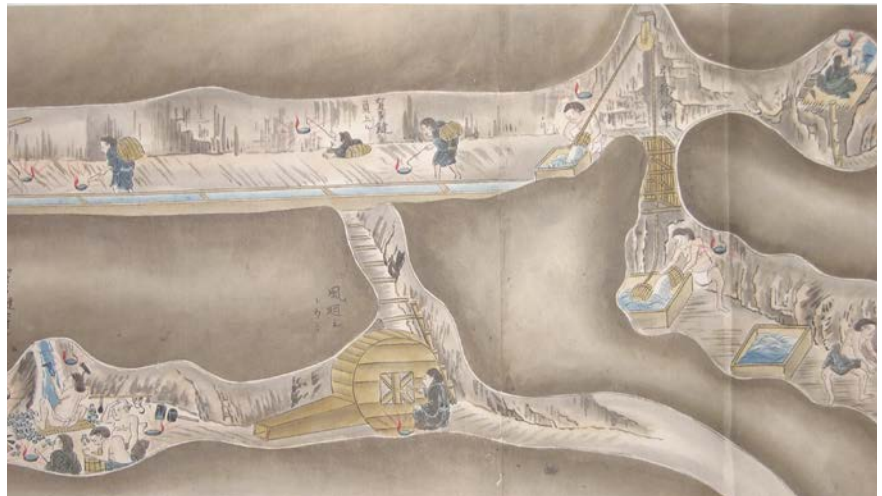
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Adit mouth, the entrance of an early mine in the Aikawa region

©R. Mathias



At the lower left side, workers mine the ore by using a hammer and a wedge which is held with long-handled tongs; in the lower center, a winnowing machine is used for ventilation, Courtesy of TU Freiberg

Gold rush and decline in Aikawa

In the middle of the 16th century a merchant is said to have discovered a rich silver mine on Sado island. This Tsurushi silver mine in the Aikawa area was an important starting point for ore mining and prospered shortly before the turn of the 16th century, not least thanks to the support of experienced miners from Iwami. At that time, gold ore was apparently already being mined, but the real boom began in 1601 with the discovery of the Aikawa gold ore deposits, an exceptionally large and rich vein of gold and silver. This discovery triggered a veritable gold rush. Numerous people – miners, merchants, artisans, along with courtesans and entertainers – flocked to the settlement. The population is said to have grown to 80,000 or more at that time.

For three decades, mining flourished around the city of Aikawa; many of the 300 galleries dug at that time can still be found today. But after 1629, gold mining gradually declined, mainly due to problems with water regulation and drainage. Mine owners experimented with various technical means to solve these problems, and where these experiments succeeded, production increased again, but without ever reaching the previous highs.

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Three kinds of furnaces for different stages in the smelting process. The one on the left is said to go back to western origins; behind each furnace is a wooden bellows operated by hand, Courtesy of TU Freiberg



Koban of the Hoei Period (1704-1711) minted at Sado; the standard size was 6.5x3.5 with a thickness of 0.3cm
Zuroku Nihon Kahei, 1974, vol 3, p11



Production of gold coins – koban – as shown on the scroll Sado kozan kyushiki kogyo zu picture scroll; the koban gets its oval shape by cutting, heating, and hammering under control of its weight

Courtesy of Kyoto University, Faculty of Engineering library, Sign. 56114

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Despite various difficulties in the Aikawa mine, its gold and silver continued to be an important resource for the Shogun's government in Edo. Sado not only sent gold bars to Edo, but between 1621 and 1819, with several interruptions, it was also one of the few places in Japan where gold coins – *koban* – were produced. While retainers were officially paid in rice, trade, crafts, and services used gold, silver, and copper – and sometimes even iron coinage during the Edo Period. Then, demand for these metals considerably increased.

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After 1868, with the beginning of the Meiji Period, several foreign and Japanese mining engineers started reforming the Sado mine, which was now under the control of the new government. In 1896 the mine was sold to the Mitsubishi company, which operated it for nearly another century until it was closed in 1989.



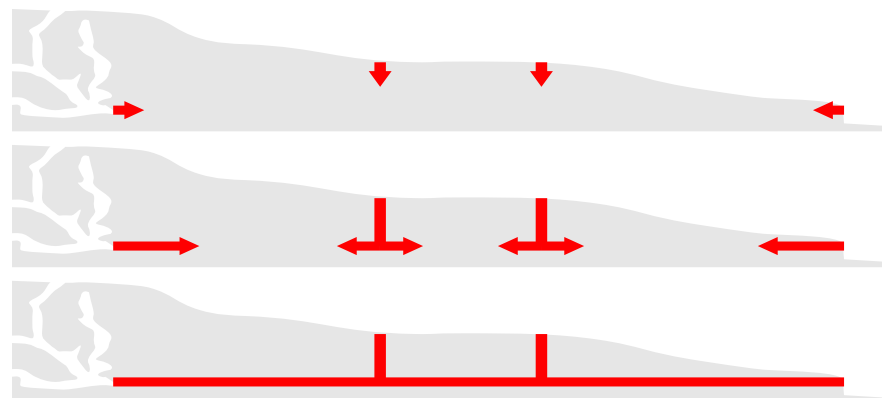
The Great Minamizawa Drainage Tunnel ©R. Mathias

A continuous fight against water

Ever deeper digging caused the mining pits to overflow with water, which repeatedly paralysed operations and led to the closure of certain tunnels and areas. New drainage methods were tried and resulted in short-term production increases, however, the general problem of water ingress remained.

A complex and costly operation in the fight against water was the digging of the Great Minamizawa Drainage Tunnel. This tunnel, almost 1,000 m long, was excavated by workers using only chisels and hammers. Due to the simultaneous advancing from six entry points, it was completed in the extremely short time of six years (1691-1696). The fact that in the end all six parts of the tunnel met with only slight deviations is a prime example of the highly developed art of surveying at that time.

Drilling scheme

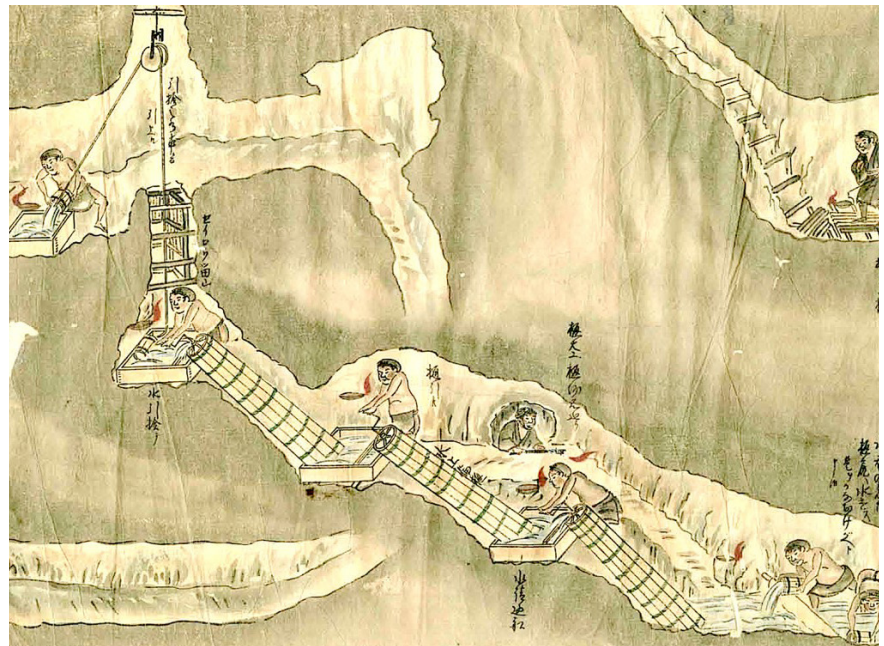


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Draining the mine with buckets and hoist, Sado kozan kyushiki kogyo zu
Courtesy of Kyoto University, Faculty of Engineering, Library Sign. 56114



Draining the mine with suishori Archimedean screws
Sado ginzan oji no kagyo emaki Sado scroll 20, Courtesy of Sado City



Drainage with Archimedean Screws at the Sado Gold Mine Museum ©R. Mathias

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The fight against water also led to the use of another innovative technique. Some handscrolls document the use of Archimedean screws – *suishorin* – for underground drainage. In Japan, and most likely throughout East Asia, this advanced technique was only used in Sado for this purpose. Although Archimedean screws proved to be very effective, they were only used for a short period between 1653 and 1679. This advanced technology was too costly and prone to failure. Therefore, buckets and hoists were later used again. Cheap labour for this work was provided by cities such as Edo, Osaka or Nagasaki, which sent, between 1778 and 1861, more than 1,800 so-called *mushukunin* – literally *homeless people* – to Sado. These were people who had left their native places and flocked to the cities, where they lived unregistered and illegally.

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Grave of 28 drainage workers who died in 1853; the inscription of the large stone gives their names, their places of origin and their ages ©R. Mathias



Although few were guilty of any real crime, most of them worked in Sado until their death, exhausted by hard work. A memorial to 28 of these drainage workers who lost their lives underground in 1853 reminds us of their fate. In memory of them, a Buddhist ceremony is held every year on the third Sunday in April.

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Pair of Illustrated hand scrolls preserved in a wooden box

©R. Mathias, Courtesy of TU Freiberg



Kept in good condition, the Sado picture scrolls are testimonies to Japanese mining ©R. Mathias

Sado today: Heritage sites

Sado's rich industrial heritage has been reassessed over the past decade, not least through efforts to make it a World Heritage Site. As part of these efforts, historical sources have been intensively analysed and new archaeological discoveries have been made. As a result, we now know much more about the history of mining in Sado than we used to.

A special legacy of the past is a large number of illustrated hand scrolls, some of which are more than 20 metres long, depicting ore mining, dewatering, transport underground and above ground, and the various processing stages in the smelting and refinery workshops. Although there are also picture scrolls from other Japanese mines, the Sado scrolls are special because of their long tradition, which goes back to the early 18th century, their large number, and their function as prototypes. Their importance is also shown by the fact that individual scrolls or copies have been sent abroad since the beginning of the Meiji Period and are kept as testimonies of Japanese mining in museums and libraries all over the world.

In many places on the island of Sado one remembers the mining industry. The main mine in Aikawa is partly open to the public. The Sado Gold Mine Museum offers guided tours through the former gold and silver mining area, showing the mining of the Edo period and its modern continuation since the Meiji Period.

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Detail on one of today's signposts in Daiku-machi showing a miner extracting gold ore ©R. Mathias

Digging underground, scene in the Sado Gold Mine Museum ©R. Mathias



Odate shaft ©E. Pauer



Takato winding tower ©R. Mathias



The first tour, focusing on the Edo Period, takes visitors underground. Bilingual panels inform comprehensively about mining; life-sized animatronic models depict various mining activities. These models have undoubtedly been based on depictions in the picture scrolls.

The second tour focuses on technical developments in the modern period, with exhibitions of many machines and equipment as well as the remnants of industrial buildings. The Odate shaft, originally built by the German engineer, Adolph Reh in 1875, was the first western style vertical shaft in Japan. Nearby is an early winding tower, built between 1887 and 1889 by the Japanese engineer Oshima Takato over one of the island's deepest shafts.

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Remnants of the Kitazawa flotation and dressing plant, built in the 1930s; the brick building on the right is a power station ©R. Mathias



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Thickener, built in 1940 ©R. Mathias



Kitazawa is the site of a former flotation plant – where the flow of water carried away lighter sediments, leaving the heavier materials behind – and an impressive thickener which separates solid material from liquid water. Such technical monuments and other remnants of industrial archaeology bear witness to the transition to a modern industry that shaped part of the island until the end of the 1980s.

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*Seat of the magistrate – bugyo-sho; the first magistrate was sent to Sado in 1603
©R. Mathias*



The yose seriba workshop for concentrating and smelting gold ore; this model in the Sado Gold Mine Museum shows the crushing, grinding, and washing of gold ore, which later was smelted and refined ©R. Mathias

In Aikawa, today a city of 7,000 inhabitants, some of the wooden structures of the old town have been preserved and offer visitors a good insight into life in one of Japan's most important mining towns.

The imposing seat of the Sado magistrate, the island's administrative center of the Edo Period, has been reconstructed. The compound also houses storage houses for gold and silver, fuel, lead etc., as well as the reconstructed *yose seriba*, a workshop, where from 1759 onwards ore concentration and smelting work were carried out for the entire mine. This had previously been done in the houses of the individual smelters. The centralization in one place was an act of rationalization to minimize losses. The workshop portrays the process of extracting and refining gold; a model of this *yose seriba* together with various devices and objects related to smelting and the smelters' lives are shown in the Sado Gold Mine Museum.

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Closing Iwami and Sado are just two examples that are representative of many important mines in Japan. Another famous silver mine was the Ikuno mine in Hyogo Prefecture. After the Meiji Restoration in 1868, this was developed with French help into a model for modern mining according to the Western standards. Ikuno has also preserved its industrial heritage and opened its doors to visitors.

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When gold and silver mining declined, copper took a big boost. It was mined in many places in Japan, but one of the largest copper mines in the world at that time was the Besshi mine on the island of Shikoku in Ehime Prefecture, which began operation in 1691 and continued to supply the country with this raw material and important export good, until it was closed down in 1973.

The Tohoku region in northeastern Japan had also large deposits of gold, silver, copper, and other natural resources; mines like Innai (silver), Ani, Kosaka or Ashio (copper) were important suppliers of urgently needed raw materials for the Japanese state during the industrialization and Japan's rise to a modern state.

Japan was not the utopian gold land *Cipangu* that Marco Polo enthused about and Christopher Columbus was looking for. But it was rich in natural resources, including gold, silver, copper, iron, and, towards the end of the Edo Period, coal. Especially after the 16th century, the mining industry gained importance and helped to sustain the rule of the Tokugawa shoguns and feudal lords for more than 200 years. Gold, silver, and copper were also valuable export goods that connected Japan with its neighbours and Europe, even at a time when overseas trade was severely restricted.

The remains of many mines are increasingly being seen as an important legacy of the past and still bear witness to their relevance today.

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Regine Mathias studied Japanese History and History at Ruhr-University Bochum and Kyushu University, Japan. She obtained her Ph.D. from the University of Vienna with a thesis on the development of wage labor in Japanese coal mines. She taught at several universities and worked as a professor of Japanese History at Ruhr-University Bochum from 1996 to 2016. Since her retirement, she has been working at the Centre Européen d'Études Japonaises d'Alsace (CEEJA).

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Her main field of research is Japanese social and economic history, with a focus on Japanese mining and labor history. She has published on labor in Japanese coal-mines, Japanese mining picture scrolls and their value as historical sources as well as on German-Japanese relations and gendered working patterns in pre-war Japan.

ceeja-japon.com

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Places **Aikawa Folk Museum**

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Museum of local history, with special emphasis on objects and documents relating to mining and the production of *koban*, the gold coins of the Edo Period. The building itself is the former Sado branch of the imperial administration, *Sado bugyo-sho*, from 1869 to 1896, when the Sado mine was in imperial possession.

952-1505, Niigata, Sado, Aikawa, Sakashita machi 20

[web-site](#)

Doyu no Wareto

About 50 minutes by car from the port of Ryotsu, Doyu no Wareto is a famous remnant of the Aikawa open-cast mine; the crevice in the mountain, which was created by the mining of the ore, is 30m wide and about 75m deep

952-1500, Niigata, Sado, Aikawa, Ginzan machi 1-1

[web-site](#)

Iwami Silver Mine Museum

The former office of the magistrate, the *Iwami Daikan-Sho*, houses the Iwami Silver Mine Museum as well as an archive in which many important source materials of the long history of Iwami are preserved

694-0305, Shimane, Oda shi, Omori cho ha 51-1

[web-site](#) (Japanese)

Kamaya Mabu Mining Site

The opening of this mine around 1600 triggered an increase in silver production; remnants of ponds and terraced sites where ore concentration was apparently carried out are still visible today

694-0304, Shimane, Oda shi, Omori cho

Kumagai Residence

House of the rich merchant family Kumagai in Omori, who had various functions in the silver mining community; today the house is a museum showing the wealth of this family, their work and life, as well as temporary exhibitions on various topics

694-0305, Shimane, Oda shi, Omori cho ha 63

[web-site](#) (Japanese)

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Places **Okubo Mabu**

Largest tunnel excavated during the Edo and Meiji periods; worth seeing, but can only be visited on a guided tour between March and November
694-0305, Shimane, Oda shi, Omori cho
[web-site](#) (Japanese)

Odate Shaft

Remains of Japan's first vertical shaft 150m deep, which did not have a winding tower at the time of its construction in 1875; designed by the German mining engineer Adolf Reh, who worked together with other foreign engineers on the modernisation of the mine in Aikawa
952-1501, Niigata, Sado shi, Shimo-aikawa 3-2
[web-site](#)

Ryugenji Mabu

Mine in Iwami which was operated in the middle of the Edo Period; after excavations at the end of the 1980s, the tunnel was cleared in 1989 and is now open to visitors
694-0305, Shimane, Oda shi, Omori cho ni 183
[web-site](#)

Sado Gold Mine Museum

Museum established in the former Mitsubishi gold and silver mine, run by the Golden Sado Inc.
952-1501, Niigata, Sado, Shimoaikawa 1305
[web-site](#)

Sado Nishimikawa Gold Park

In the southwest of Sado Island, Nishimikawa is the oldest gold mining area with rich deposits of placer gold; it has been mined since the late 12th century according to the *Konjaku monogatari*, a collection of over 1,000 tales compiled during the late Heian period (794-1185)
952-0434, Niigata, Sado shi, Nishimikawa 835-1
[web-site](#)

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Places **Sado Bugyo-Sho**

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Reconstructed headquarters of the Sado magistrate showing objects related to the magistrate and also a reconstruction of the mining workshop *yose seriba*

952-1531, Niigata, Sado, Hiromamachi Aikawa 1-1

[web-site](#)

Shimizudani Refinery Ruins

Stepping stone remains of a silver mine refinery, where new refining methods were tried out in the 1890s; today beautifully overgrown with apricot trees and grass

694-0305, Shimane, Oda shi, Omori cho, Ginzan ho 203

[web-site](#)

Publications **Furusato Gakushushi: Iwami Ginzan – Gin wo tsukuru – Haifuki-Ho**

Gin no Michi Shinko Kyogikai; 1999; Shimane: Gin no Michi Shinko Kyogikai (Japanese)

Japan mit den Augen des Westens gesehen: gedruckte europäische Landkarten vom frühen 16. bis zum 19. Jahrhundert

Walter, Lutz (ed.); 1994; Muenchen, New York: Prestel Publishing

Zuroku Nihon Kahei, vol 3

Nihon Ginko Chosa Kyoku (ed.); 1974; Tokyo: Toyo Keizai Shinpo Sha (Japanese)

WWW-Sites **Iwami Ginzan World Heritage Center**

List of museums and other important places related to the silver mine

[web-site](#)

Sado Gold and Silver Mine

Overview of destinations on the island with pictures and videos

[web-site](#)

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WWW-Sites

Scenes of Sado Gold and Silver Mine

Hosted by Niigata University Library the site provides interactive details of the scroll showing workers and scenes from the mining, gold smelting, and other processes in Sado of the mid-Edo Period; a glossary of Japanese mining terms completes this scroll, which dates from around 1750

[web-site](#)

The Sado Complex of Heritage Mines

Featuring the three mining sites of the island that in November of 2010 were included in Japan's World Heritage Tentative List and which the World Heritage Promotion Section of Sado city promotes for registration within the UNESCO World Heritage List; detailed descriptions and brief introductions to the respective historical background make this site a very valuable resource

[web-site](#)

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Glossary

Aikawa

Former mining town on the west side of Sado island, today part of Sado city; in the vicinity of the town were some of the richest deposits for gold and silver ore in Japan

- Koban
- Sado Bugyo-Sho
- Suishorin
- Yose Seriba

Cipangu

Legendary gold country, which Marco Polo (1254-1324) reported about after his return from Asia. The name Cipangu, attributed to Japan, first appeared in 1457 on a map by Fra Mauro and in 1492 on the first globe by Martin Behaim. When Christopher Columbus (1451-1506) made his first voyage in 1492, he took Marco Polo's book with him and searched not only for the Spice Islands but also for the Land of Gold.

Cupellation

Separation of gold or silver from impurities by melting impure metal in a cupel – a flat, porous shell of high temperature resistant material exposed to a blast of air that oxidizes the unwanted metals

- Haifuki

Edo Period (1603-1867)

The period when Japan was under the rule of the Tokugawa Shogunate; also called Tokugawa Period

Haifuki

Literally *melting with ash*, this refining process in metallurgy in which precious metals are separated from base metals at high temperatures, is known as the *cupellation method*. To extract silver from lead sulphide, the furnace – cupel – is lined with ash, which reacts with lead and other impurities, leaving the silver on the ash. Used worldwide, this method dates back to the Early Bronze Age. Rudimentary knowledge also seems to have been available in Japan, but it was only in Iwami that the silver-bearing ores could be exploited more efficiently.

- Cupellation

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Hakata

Port in Northern Kyushu, today part of Fukuoka city; historically the most important Japanese port for trade with Korea and China

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Iwami Daikan-Sho

The administrative center of the silver town of Iwami during the Edo Period; office of the magistrate – daikan, who administered an area under the direct rule of the shogun; The remains of the Iwami magistrate in Omori have been partially reconstructed and now house the Iwami Silver Mine Museum.

►Kozan

►Sado Bugyo-Sho

Koban

Medium-sized oval gold coin with a face value of 1 ryo, equivalent to about 187 grams of silver or 4,000 brass coins, although size, weight and gold content varied over the years. 1 ryo could buy approximately the amount of rice needed to feed one person for one year. Because of this high value, koban coins were not widely used among the common people.

[web-site](#)

Kozan

In the Edo period, the term kozan or mine describes not only the mining and smelting facilities as such, but also the community of miners and their habitat. The mine and the houses of the mining community were often surrounded by a fence, and the coming and going of people was strictly controlled at the entrances. An example of this is the Iwami mining area, Ginzan Saku-no-Uchi (silver mine inside the fence), while the administrative centre, Omori, was outside the fence.

Minamizawa Drainage Tunnel

With a length of almost 1 km, this was one of the longest drainage tunnels in the Edo Period; for a time it helped to control water ingress, increasing productivity

[web-site](#) (Japanese)

►Aikawa

►Edo Period (1603-1867)

►Kozan

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Glossary

Niigata Prefecture

Stretching about 240km along Sea of Japan in the Chubu region of Japan's main island, Honshu; fifth largest prefecture by geographic area

[web-site](#)

►Sado

Okubo Nagayasu (1545-1613)

High-ranking official of the Tokugawa shogunate, responsible for the gold and silver mines; he served as bugyo, a magistrate, in Iwami and Sado. When the shogunate discovered financial irregularities after his death, his sons were ordered to commit suicide.

►Edo Period (1603-1867)

►Iwami Daikan-Sho

►Sado Bugyo-Sho

Oshima Takato (1826-1901)

Japanese engineer; 1885-1889 director of the Sado gold- and silver mine in Aikawa

[web-site](#)

►Aikawa

►Kozan

►Sado

Potosi

Name of a legendary silver mine and the adjacent town in Bolivia. The largest silver deposits in the world at that time were mined by the Spaniards from 1545 onwards, becoming the foundation of the Spanish Empire's wealth.

[web-site](#)

Reh, Adolf (1850-1924)

German mining engineer who supervised the digging of the Odate shaft on Sado island between 1873 and 1878, the first vertical shaft in Japan

►Kozan

►Oshima Takato (1826-1901)

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Sado

Japan's sixth largest island, ca 30km off Niigata Prefecture's northern coast; its remote location made it a preferred destination for political exiles, including the former Emperor Juntoku, the Buddhist monk Nichiren, and the founder of No, Zeami Motokiyo

[web-site](#)

►Niigata Prefecture

Sado Bugyo

Magistrate who managed the Sado mine on behalf of the Shogunate. After 1712, there were always two Sado bugyo, one on the island and one in Edo, which shows the importance the Shogunate attached to the gold and silver mine.

- Aikawa
- Edo Period (1603-1867)
- Iwami Daikan-Sho
- Kozan
- Sado Bugy-Sho
- Yose Seriba

Sado Bugyo-Sho

The Sado commissioner's office, established 1603 in Aikawa; restored in 2000 as a museum

[web-site](#)

- Aikawa
- Sado Bugyo
- Iwami Daikan-Sho

Sengoku Period (ca. 1467-1615)

Also known as the *Age of Warring States*; a period of military conflict, in which the central power of the Ashikaga shogunate declined and individual feudal lords became powerful. It ended with the establishment of the Tokugawa shogunate by Tokugawa Ieyasu in 1603.

- Edo Period (1603-1867)

Shimane Prefecture

Facing the Sea of Japan in the Chugoku region of western Honshu, Japan's main island; one of the ancient centers of Japan, rich in silver, copper, and iron sand deposits; today the second least populated prefecture

[web-site](#)

- Iwami Daikan-Sho

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Suishorin

An Archimedean screw drainage technology, said to have been imported either from China or from a Western merchant. The Aikawa mine on the island of Sado was the only place where it was installed underground between 1653 and 1679, when it was abandoned due to high costs and difficult maintenance. The remains were given to farmers who used them to pump water into their fields.

[web-site](#) (Japanese)

►Aikawa

Tokugawa Ieyasu (1543-1616)

Founder of the Tokugawa shogunate; the Tokugawa family ruled Japan from 1603 to 1867

►Edo Period (1603-1867)

Tsurushi Silver Mine

Sado's oldest silver mine, south of Aikawa; its advanced mining and smelting technologies, tunneling and cupellation were probably introduced by the Iwami Silver Mine in the late 16th century. The mine was in operation until 1946.

[web-site](#)

►Aikawa

►Cupellation

►Haifuki

►Kozan

Yama-Shi

Often independent contractors who leased a mine site for a certain period of time and developed it with their own workers. The owner of the mine received a fixed lease or a share of the profits. In large mines operated by the Tokugawa shogunate, yama-shi worked as headmen of a group of miners.

Yose Seriba

Workshop in the Sado bugyo-sho compound, where ores were concentrated and smelted; the centralization of these processes under the supervision of the magistrate was intended to increase efficiency and reduce losses of gold and silver ores

[web-site](#) (Japanese)

►Aikawa

►Sado Bugyo-Sho

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