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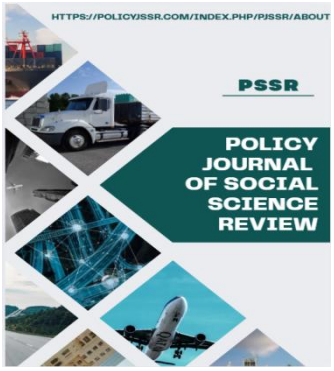

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INDIGENOUS GOLD WASHING SYSTEMS IN THE INDUS RIVER BASIN, EVIDENCE FROM SWABI DISTRICT

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ABSTRACT

Gold washing has been a long-standing practice along the Indus River, with historical evidence suggesting its existence for over 2,500 years. This paper examines the indigenous gold washing systems in the Swabi district, located in the Hazara region of Pakistan, focusing on the traditional tools, techniques, and the socio-economic implications of the craft. By combining historical records, field observations, and interviews with local artisans, the study highlights the evolution of gold washing practices, from their ancient roots to their current state. The paper also explores the environmental and developmental impacts on the profession, particularly the effects of the Tarbela Dam and the Ghazi Barotha Hydropower Project, which have led to significant changes in water flow and sedimentation. Despite the decline in the craft, gold washing continues on a smaller scale, with some communities maintaining the tradition. The findings underscore the importance of preserving these practices and suggest that integrating modern technologies with traditional techniques could revitalize the craft and ensure its sustainability. The paper concludes by emphasizing the need for government attention to support the preservation of this cultural heritage and offers recommendations for future research on the intersection of modernity and traditional artisan mining practices.

Keywords: *Gold Washing, Indus River, Indigenous Crafts, District Swabi, Cultural Heritage Preservation*

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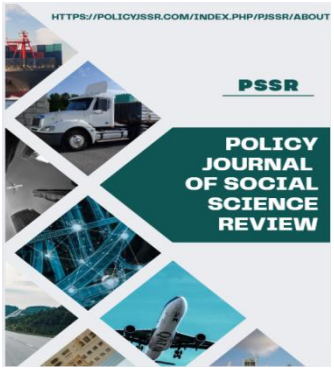

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Introduction

Gold washing has been practiced in various parts of the world since ancient times. Its purpose is to separate the gold particles from the rest of the gold containing sand. Generally gold is obtained from the auriferous sands of a riverside. It usually looks like dust, thin flakes or nuggets. In Europe non-processed alluvial gold is frequently called peasant jewelry (Dawson N 1907: 2) while in Pakistan it is usually called gold dust (Chaudhary M A 2009: 134). Local name for alluvial gold among gold washers in Swabi is thora shaga.

Historical records tell us that the Greeks have been obtaining gold by trading with the tribes of Siberia through Euxine Sea. Significant part of the Imperial Rome's wealth came from the auriferous sands of the Alps and the Pyrenees, while the Phoenicians washed gold from the bed of the river Tagus 1100 BC (Bowie A 1895: 15-16).

The significant rivers of Europe, where gold washing is or has been taking place, are Rhine, Danube and Yser (Dawson N 1907: 2). Dawson further states that likewise gold dust or alluvium is found in the rivers of North America, Southern Africa, Southern Bengal and other regions (Dawson N 1907: 3-4). In pre-partition India gold was washed from rivers of Belgaum, Dharwar and Kaladgi in Mahratta, areas around Madras and Malabar. The auriferous sands of the rivers of Punjab were known to consistently bring high yields of gold (Bowie A 1895: 17-18).

The Indus was reported in the accounts of numerous historians and travelers. It has been known as a gold yielding river for thousands of years. Chinese traveler Xuan Zang called it Sin-to (Beal S 1958: 163). In Sanskrit the Indus is called Sindhu, in Latin - Sindus (Gazetteer 2002: 109) and in Pashto - Abba Sin meaning 'Father of Rivers' (Iqbal Q J 2002: 351). Qari Javed Iqbal also reported that in Arabic, besides more frequent Nahar Al-Sind, the Indus is also known by the name of Bahr uz Zahab which means 'Gold Yielding River' (Iqbal Q J 2002: 351).

The Indus originates in Tibetan plateau, crosses Ladakh in Jammu and Kashmir and runs through Gilgit-Baltistan taking in numerous rivers, springs and streams. Then it flows through Hazara region, where the river Kabul joins it at the southwestern point of district Swabi near Attock. The Indus separates Khyber Pakhtunkhwa and Punjab provinces and then flows down towards Sindh. Its total length is more than 1800 miles (Gazetteer 2002: 109).

Gold washing area of the Indus is vast, from Baltistan and the upper Indus till its junction with the Kabul River near Attock (Chaudhary M A 2009: 127). However, the present research is only concerned with district Swabi (34 24 latitude and 072 45 longitude) thus including in the study the area from Tarbela till Kund Park, across from Attock.

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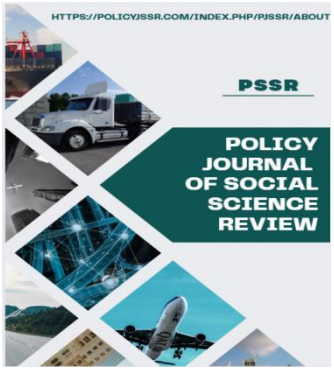

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Historical Perspective

The evidence of gold prospecting in the Indus since ancient times can be found in the works of the Greek historians Herodotus, Strabo and Pliny. As cited by Dr Ahmad Hasan Dani, the ancient Greek records mention the city of Caspatyrus, where gold is being washed by the locals (Dani A H 2001: 121). At the same time Muhammad Bahadar Khan reports that the city named Caspapyros, famous for gold mining, was identified by M.A. Stein near Yar Hussain in district Swabi (Khan, M B 2003: 4). The names reported by Dr Ahmad Hasan Dani, M.A Stein and Bahadar Khan differ only by one letter and it can be presumed that this is the same city. If we support the identification and location reported by M.A. Stein and Muhammad Bahadar Khan, it can be stated that the earliest reference to the gold washing in Swabi region is given by Herodotus (Khan M B 2003: VI). This means that gold washing has been in practice in district Swabi for more than 2500 years.

In the 7th century AD the Chinese traveler Xuan Zang reported processing and work with gold along the Indus (Beal S 1958: 135), but he didn't mention gold washing and mining.

It was only in 11th century AD that Al-Beruni visited Wayhind (present Hund) after it was opened up by the campaigns Mehmud of Ghazna in 1000-1026 A D (Caroe O 2003: 109) and reported gold washing in the Indus River in detail (Khan M S 1976: 97).

"The water of the Indus which passes by Wayhind, the capital of Gandhara, is known as the river of Gold among the people of India... Pits are dug at the bottom of the river at its source. Water passes over these pits which are filled with quicksilver which is found to have been converted into gold. This is because the water near the source flows at a high velocity. The water carries nuggets of gold along with the sand. These nuggets are minute and slender like the wings of the mosquito. When these particles pass over the quicksilver, the gold sticks to the quicksilver and the sand passes over" (Al-Beruni 1989: 203 cited by Chaudhary M A 2009: 134).

The same gold washing practices were followed in the centuries to come. During the Sikh period the groups of the gold washers, known locally as kirigar or soniwal, were paying tax to the Sikh Government. Raverty writes that the tax for a group of gold washers to be paid to the treasury was six rupees. He also adds that during the great flood of 1841 much gold was obtained from this locality and each group paid 36 rupees tax to the Government (Raverty 1976: 271). Muhammad Azam Chaudhary also confirms that gold dust or thora shaga was used for payment of taxes before and during colonial period (Chaudhary M A 2009: 134).

Gold washing in the upper Indus in the Northern areas has been extensively covered by research of Muhammad Azam Chaudhary in 2009 (Chaudhary M A 2009), while the present paper deals

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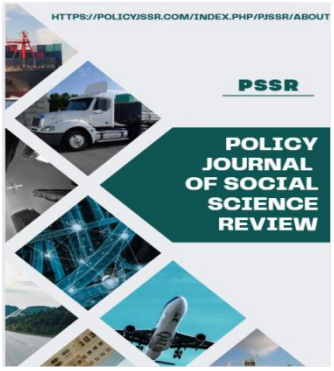

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with the gold washing along the Indus in district Swabi, particularly at Tarbela, Zarobai, Hund and Kund Park.

Examination of historical record suggests that gold washing remained a profitable occupation, but time and landscape changes brought along the decline of artisan mining and the traditional way of gold washing and mining is being left behind. However, it still continues on a smaller scale. Professor Fidaullah Sehrai while describing occupations of the inhabitants of Hund notes it as one of the local crafts (Sehrai F 1979: 7).

Gold Washers And Gold Washing Techniques

Gold washing or prospecting is known as one of the crafts, while professional gold washers are often referred to as artisan miners. In district Swabi local name for gold washing is kiri and the gold washers are known as kirigar. The word kiri is a Sanskrit word meaning 'humble, poor, miserable and ordinary and gar or gur used for making effort (Williams M M 1951: 1324, 359) . On the left bank of the Indus and along the upper Indus, in Hazara and in the Northern areas, gold washers are known as soniwal (Dani A H 2001: 121, Chaudhary M A 2009: 129).

Traditional tools used for gold washing in Swabi are:

1.Nava , which plays a part of a sluice box, it is similar in shape to water shoot. It is made of wooden planks and its size is appr 1 x1.5 m with 1 ft or less depth.

2.Jajakai/Chajakai is a screen made of reeds which are held together by a thread weaved through them, its size is appr. 1.5x1.5m and it is kept on the nava. While, sometime mat pieces also used instead of jajakai.

3.Phalli is a wooden pan, generally round in shape, which is used for separating thora shaga from small stones and other sediment.

4.Jol is a piece of cloth or a bag used for bringing sand to the place of gold washing. Husk bowl locally known as shakari is also sometimes used instead of jol.

Other tools of a gold washer are belcha (spade), ginthri (shovel), rambai (hoe), lota (water vessel), white piece of cloth, brush and a bag, or a small box instead of a bag.

The technique of gold washing is as under:

First the nava (sluice) is slightly raised at one end to make it tilted. Then jajakai (reed screen) is placed on top of it. After that the jol of mixed river sand is emptied on jajakai and water is poured over it (Figgure 2). Whereas, sometime mat piece also used instead of jajakai (Figure 3). The jajakai is then removed and the bigger stones held by it are examined and thrown out. The smaller particles, which came down into nava, are taken out and put on phalli, where they are sorted and mixed with water once again. Gold, being heavier than the other sediments, is separated by rotating the pan and swirling the water, then gold is further purified by mixing it with mercury. The obtained gold dust or thora shaga is dried in the sun and is kept in a separate box. After further cleaning, if

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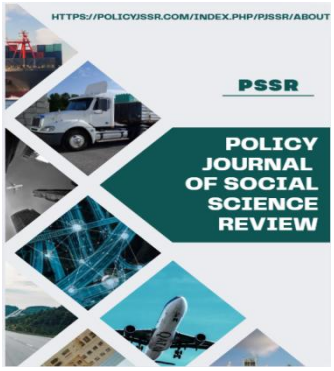

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required, it is supplied to the local markets of Topi and Zaida of district Swabi.

Table 1

Traditional Gold Washing Tools and Their Functions

Tool Name	Function	Dimensions
Nava	Sluice box used for separating gold from sand	1x1.5 meters, 1 ft depth
Jajakai	Reed screen for filtering finer particles	1.5x1.5 meters
Phalli	Wooden pan for separating gold from other sediments	Round, medium size
Jol	Cloth bag for carrying sand to the washing site	Variable size

This table summarizes the traditional tools used in the gold washing process, their functions, and typical dimensions. It supports the detailed descriptions of the tools provided in the gold washing techniques section.

However, technology is progressing and the first gold washing plant, more efficient and cost effective, has already been installed one kilometer above Hund by a Chinese company. (Figure 4)

Environmental and developmental impact on gold washing in district Swabi/ Factors impeding artisan mining

Gold washing has been practiced in the villages on the western bank of the Indus in Swabi since approximately 3000 years before present, but this occupation, previously one of the major crafts, is now facing decline and neglect, and local production of gold has reduced considerably.

There are several factors which are responsible for this decline.

The major factor was the construction and development of Tarbela reservoir which was completed in 1968 (Hussaini S A 1772: 308). Accumulating of water in Tarbela reservoir lowered significantly water level in the Indus, which in turn adversely affected gold washing profession.

Another similar factor was the establishment of Ghazi Barotha Hydropower Project, which was completed in 2005. The lower area of Swabi, till the junction of the Indus with the Kabul River across from Attock, faced further shortage of water affecting artisan mining even more.

Both hydropower projects significantly affected traditional occupations of the villages of lower Swabi, which include, besides gold washing, fishing, grazing of the cattle, agriculture etc.

Furthermore, profession of gold washing has never been given any consideration on the Government level. Though

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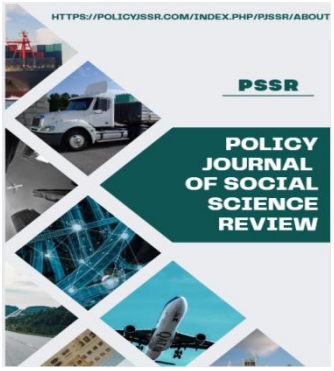

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modern instruments and technologies are available in the developed countries and they can make gold washing faster and more effective, but the lack of knowledge about new methods and the lack of interest in developing of this craft on the part of the local authorities kept gold washing in Swabi primitive.

Thus the traditional craft of gold washing in Swabi, which has been practiced for thousands of years is slowly fading into oblivion and may become extinct soon.

Localities of gold washing along the Indus in district Swabi.

As it has already been mentioned, gold washing has been practiced on the banks of the Indus in Swabi since ancient times. As opposed to the artisan miners along the upper Indus, who live in tents near the river (Chaudhary M A 2009: 128), the gold washers of Swabi are locals, they come from the neighboring villages and go home at night. There are four well-known areas for gold washing – Tarbela, Zarobai, Hund and Kund park. However, the sites, where actual gold washing is performed, are not permanent, they change according to the flow of water and presence of sand known to contain thora shaga.

1. Tarbela

Tarbela is situated 6 kilometers south-east of Topi town and 20 kilometers away from Swabi city (Figure 1). For a long time it remained a well known locality for gold washing and mining. Before construction of Tarbela reservoir, Tarbela area was the largest and the most productive site for gold washing in Swabi compared to the other three in the region - Zarobai, Hund and Kund Park. However, after construction of the Tarbela dam, gold washing here all but vanished. According to Raverty, there were various groups doing gold washing at Tarbela during Sikh rule and each group of the 'kirigar' or 'soniwal' paid Rs 6 tax to the Government on annual basis (Raverty 1976: 271). The payment of tax to the government shows at how large a scale this profession was practiced.

2. Zarobai

Zarobai is a big town located 5km away from Marghuz on Topi-Khunda road (Figure 1). Its eastern part stretches till the bank of the Indus. According to the local tradition, the name Zarobai is derived from "Zar Ab" meaning 'Gold Water' in Pashto. Thus it can be presumed that the name of the town owes its origin and is derived from the primary occupation of its residents of yore. It was the second important locality for gold washing in Swabi and even nowadays, though many residents have left gold washing in favor of other modern occupations, some continue with the profession of their ancestors. Small scale gold washing can easily be seen in the vicinity.

3. Hund

Hund is located 5 km south of Anbar bus stop and about 14 km south-west of Swabi city (Figure 1). It ancient name is Udak-bhanda-pura meaning 'City on the River Crossed with the help of a Pot'. Al-Beruni called it Wayhind. This town enjoyed the position of the third capital

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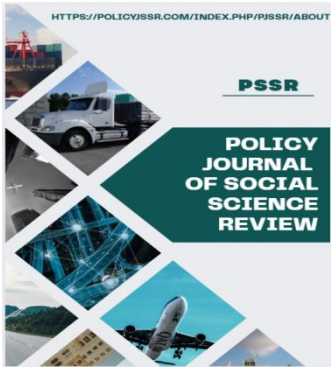

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city of Gandhara during Hindu Shahi period (Dani 1995: 234-36, Jaffar S M 1945: 43-44). Hund has remained one of the important sites for gold washing since ancient times till present. Al-Beruni, who visited the area during the reign of Anandpala Raja, reported that it was a place known for gold washing (Chaudhary M A 2009: 134, Al-beruni 1989: 203). There are still groups in the town who continue with gold washing profession (Sehrai F 1979: 7), but as it has already been mentioned, the construction of water reservoirs has greatly affected gold washing here, as opposed to gold washing in the upper Indus area and Northern Areas.

4. Kund Park

This is the fourth important gold washing spot between Kund Park to the east and Alla Dher town to the west. Kund Park spot can be accessed from Swabi-Jehangira road west of river Indus (Figure 1). We don't have any written records about this locality, however presently there are several groups doing gold washing there.

Conclusion

Gold washing in the Indus River Basin, particularly in the Swabi district, holds significant historical and cultural value, with evidence suggesting that this practice dates back over 2,500 years. From its early documentation by Greek historians to its continuous practice during the Sikh era, gold washing has been a vital local craft for generations. However, as this study reveals, the traditional techniques of gold washing, which once played a central role in the local economy, are now facing a steady decline. Several factors contribute to the fading of this once-thriving profession. The construction of the Tarbela Dam and the Ghazi Barotha Hydropower Project have drastically altered the water flow and sediment conditions of the Indus River, rendering many of the gold-rich sandbars and riverbeds inaccessible. In addition, the lack of government support, coupled with limited technological advancements, has hindered the growth and sustainability of this craft in the region.

Despite these challenges, gold washing continues, albeit on a smaller scale. The local community's resilience and the persistence of artisanal miners in areas like Zarobai, Hund, and Kund Park are testament to the enduring cultural importance of this practice. It is crucial that efforts be made to document and preserve these traditional techniques before they fade entirely, especially in the face of modern development. Furthermore, the potential for integrating modern technology with traditional gold washing practices could help revitalize the craft and sustain it for future generations. This paper underscores the importance of preserving the rich heritage of gold washing in the Swabi district, while also exploring the environmental and developmental impacts that have shaped its current state. A balanced approach, combining technological advancements with respect for traditional knowledge, is essential for

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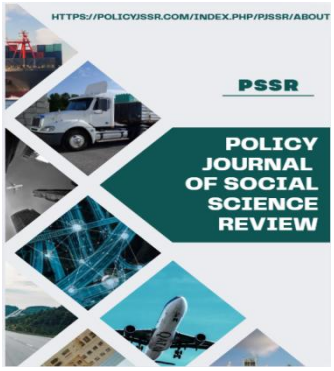

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ensuring the longevity of this unique practice. Future research could explore sustainable methods of integrating modern mining techniques with artisanal practices, offering a pathway to revitalize the gold washing industry while minimizing environmental impact.

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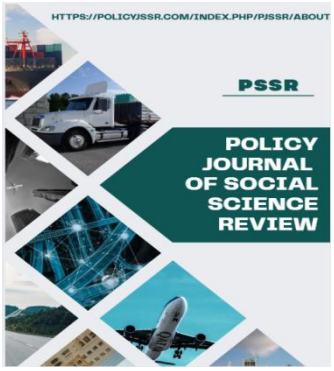

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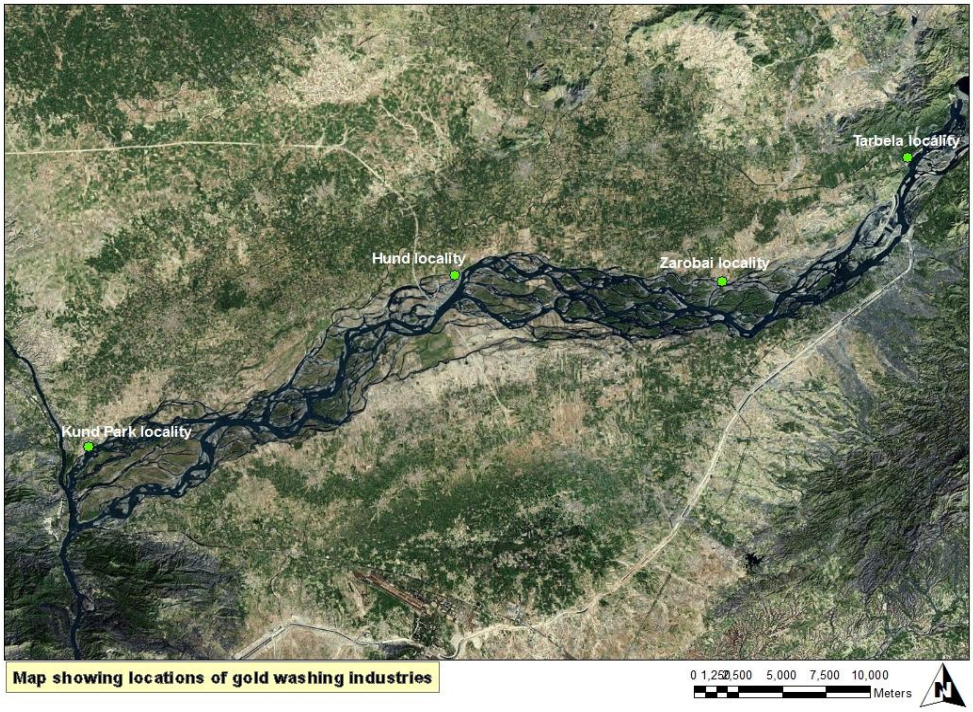
List of Figures

Figure 1: Map of Swabi District



This figure presents the geographical locations in the Swabi district where gold washing has historically been practiced. It includes a map detailing the areas from Tarbela to Kund Park, highlighting the main gold washing sites. The figure is referenced in the introduction to give context to the scope of the study.

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Figure 2: Gold Washing Tools

This image shows the traditional tools used by gold washers in Swabi. The tools include the Nava (sluice box), Jajakai (reed screen), Phalli (wooden pan), and Jol (cloth bag). Each tool is labeled with a brief description of its function in the gold washing process. This figure is referenced in the section discussing the tools and techniques of gold washing.

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Figure 3: Gold Washing Process

This figure illustrates the step-by-step process of gold washing in Swabi. It shows how the Nava is set up, the use of the Jajakai, and the separation of gold particles in the Phalli. The process is depicted in a simple, easy-to-understand visual format. The figure is referred to in the methodology section to support the description of the gold washing technique.

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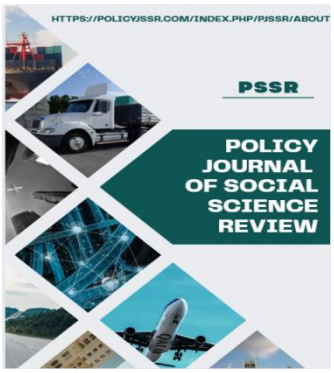

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Figure 4: Modern Gold Washing Plant at Hund

This image depicts the modern gold washing plant installed by a Chinese company one kilometer above Hund. The plant is shown in contrast to the traditional gold washing methods. The figure is referenced in the section discussing the decline of artisan mining and the adoption of new technologies.