









accessibility. The Kandi tourism area is referred to as a haunted place by the public. However, in 2003 the area was conserved by converting it into an artificial lake, equipped with a game arena, zoo, garden, and camping ground under the concept of family recreation, as shown in Fig. 2.



Fig. 2 Kandi tourism complex after its conservation

The Sawahlunto City Government also explores various legacies from past mining activities and converted them into family attractions to attract visitors. This case is like the conservation of a former swimming pool to Waterboom Tourism by the Dutch officials from the late 19th to the mid-20th century. The Puncak Cemara tourist attraction also complemented this sight. It is a park built in the City hills in order to view the natural landscape and architecture of the Old Dutch mining town from the hill (Fig. 3).



Fig. 3 Waterboom and Puncak Cemara recreational tourism in Sawahlunto

In addition to conserving ex-mining land as a natural tourist attraction and recreation, revitalization efforts are also carried out on dilapidated buildings linked to the history of mining during the Dutch Colonialism. These buildings are revitalized into a cultural reserve and museum. Approximately 64 cultural heritage sites and the former industrial buildings, as well as residential homes for officials and employees, have been linked to mining activities in Sawahlunto since the Dutch Colonialism. However, 3 of the building were revitalized as mining museums.



Fig. 4 The changing of a former mining company public kitchen into a Goedang Ransoem museum

Firstly, the Goedang Ransoem Museum is set up in an old building that was formerly used as a public kitchen by the coal mining company to produce staple food for miners. The museum contains 6000 collections of utensils that were used during the Dutch colonial period, as shown in Fig. 4.

Second, the Mbah Soero Mining Hole Museum was erected above the mine pit, which consists of a tunnel that was approximately 185 m long. This mining pit also constitutes an essential aspect of history, which marks the miners' activities that were mostly prisoners all over Indonesia. They need to serve their jail terms, which involve hard labor without pay, and they were to remain chained with exploited feet. The locales referred to them as 'chain people.' The stories behind the struggles of this chain are now being brought back to the museum. The purpose is to remind the public about the history of the Sawahlunto ancestors, as shown in Fig. 5.



Fig. 5 Recycling Soero Hole into the Mbah Soero mining hole museum

Third, the Railway Museum was established in a building formerly used as a coal transportation train station, transiting from Sawahlunto to the port to export coal abroad. The building, which was initially used for coal transportation activities for relatively 100 years, becomes an abandoned space due to a lack of extended functions. The train station and its equipment meant a lot to the people of Sawahlunto City for over a century. The station was revitalized into a railroad museum, thereby exhibiting approximately 106 equipment used for coal transportation, as shown in Fig. 6.



Fig. 6 Changing functions of the railway station into the railway museum

The revitalization of the former mining industries into three museums is an effort to revive historic buildings that contain memories from the past. These buildings were initially dilapidated because they have been abandoned for a long time. Presently these buildings are productive and tend to reveal the past glory of coal mining, which is the pride of the Sawahlunto community. Rejuvenation of the former mining industrial area resuscitated the Sawahlunto community. The location, which was initially considered a threat to the environment and the livelihoods of urban

communities, became a significant resource that is reckoned in Indonesia and recognized worldwide. The various former mining sites were transformed into mining heritage areas within ten years. The process of development and rejuvenation in Sawahlunto is shown in Fig. 7.

The chart states the processes involved in developing a former mining industrial area to a mining heritage site. After the mining industry's cessation, there were two possible directives for the rejuvenation of the region. Firstly, it becomes an abandoned and damaged slum, assuming it is left unattended to and neglected by the city stakeholders. Secondly, it is revitalized into a productive area, based on the condition that the rejuvenation of the former mining industry location becomes valuable and attractive. Therefore, the city stakeholders decided to rejuvenate the former mine's various relics into a heritage site and tourism object.

This process is divided into two, namely the rejuvenation of locations into natural mining attractions and the management of sites into cultural heritage. The natural landscape includes former mining pits and areas around the mine excavation, converted into a mine lake, and a recreational park equipped with children's playground. The cultural heritage includes buildings of the former mining industry, mining equipment, history, and stories associated with mining activities and various traditions formed due to social interaction with the mining community. It is further enshrined in mining heritage sites, such as museums, cultural reserves, and multiple attractions in festivals or carnivals that bring back memories of mining activities to the local people and visitors.

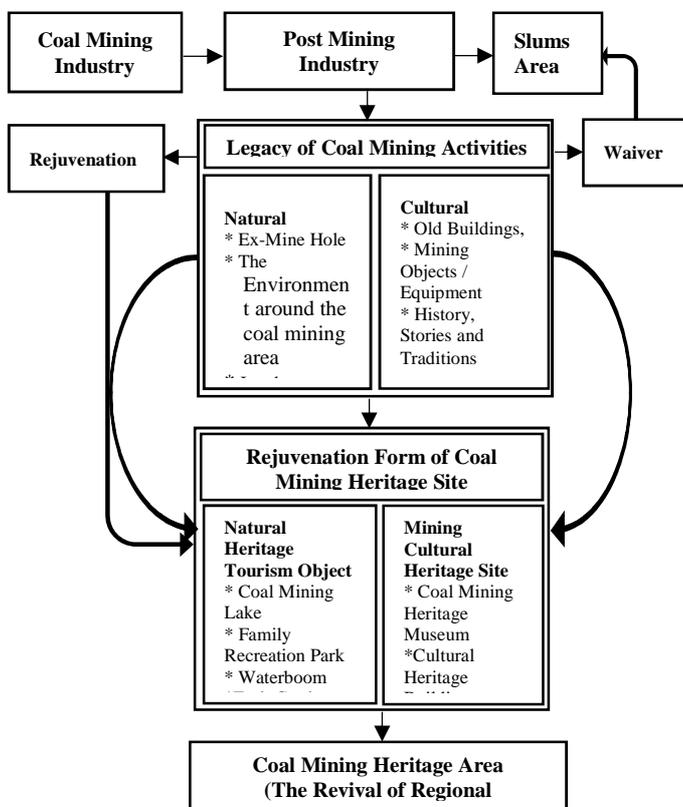


Fig. 7 Flowchart of development of the former area of the coal mining industry become a heritage site of coal mining in Sawahlunto

Re-utilization of the former mine site as a tourist attraction in Sawahlunto is reported to revive the productivity of the area simultaneously. It also protects the city from the threat of environmental damage. Presently, it is having been transformed into a comfortable and fascinating place to visit. The success of the rejuvenation is evident in the increased number of visits on a yearly. However, in 2004 approximately 14,425 visitors, were reported while in 2018, the number of visits was relatively 733.721 visitors [28].

The success of this development is also evident in the revival of Sawahlunto from the slump. The city that was initially labeled a ghost town was presently one of the calculated tourist cities in Indonesia. The history of coal mining since the Colonialism era has become a high-value heritage, which made it possible for Sawahlunto to be recognized as one of the world heritages by UNESCO on the 9<sup>th</sup> of July, 2019.

Many visits to the city, the resurgence of ex-mining land productivity, and the establishment of Sawahlunto comprises a world heritage. It is evidence that the rejuvenation of the former mining area is an alternative solution to overcome various threats and problems that arise after the halt of the mining industry in a field. It is also a new source of livelihoods for the people residing around the mining area, thereby automatically reducing social problems, such as poverty, population, unemployment, and crime.

The research analysts in several countries that have suffered similar incidents are interested in rejuvenating the area into a site for mining heritage and tourism objects. Hashimoto Tefler reported that Japan's Gunkanjima Island needs to rejuvenate after being abandoned and dubbed a ghost island after the cessation of mining activities on the island [1]. Conversely, Bruce Preadeaux, and Dallen J. Timothy [5], stated that tourism is an effective way to rejuvenate mining areas that have lost their productive functions. Similar research was conducted by Conlin Joliffe [2], which stated that the mining industry does harm the environment. Instead, it leaves a legacy that needs to be revitalized into an attractive and valuable selling location.

Various locations and buildings of the former mining industry are considered valuable. Also, it is stored with the history and memories of various past related activities. [29] In terms of sustainability, it boosts the economy of the surrounding community [30], and in some cases, it is the beginning of the community's social and cultural life. This means that the mining industry also relates to the identity of the local community [10]. Therefore, disregarding the various relics of the former mine implies ignoring history, which is the pride and identity of the present society. However, when various former mining sites are managed into a legacy that is frequently visited by the local people and migrants, it protects the environment from the threat of damages. It preserves the historical values relating to such activities that tend to be passed down to the next generation.

Re-management of the location into an industrial heritage site is the appropriate strategy to generate the productivity of a city labeled as dead, as is the case in Sawahlunto, Indonesia. Various former mining sites are driving forces for the city's sustainability to curb its threat to the environment and social life. Presently, Sawahlunto is developing a mining

heritage city that is visited and recognized, both on a local, national, and global scale.

#### IV. CONCLUSION

The rejuvenation of the former coal mining area into a mine heritage site and tourist attraction is a practical approach for the sustainability of the region. Also, this strategy restores the abandoned area's productivity and prevents it from being labeled a dead city. Sawahlunto was transformed from a city that was almost dead to a tourist destination. Presently, Sawahlunto is recognized by UNESCO as one of the world's coal mining heritage. This recognition shows that the mining industry does not always damage, pollute the environment, and become extinct. However, it also leaves a variety of inheritance re-managed as the leading resource for the sustainability of life around the former mining area.

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