

Cultural Heritage Management Challenges: Historical Village of Huta Siallagan in Indonesia

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Abstract

Effective cultural heritage preservation requires a holistic approach, guided by management that integrates governance, planning (including disaster prevention, risk management, promotion, education, community involvement, awareness-raising, and sustainable tourism), financing, and implementation. Despite existing frameworks, many historical sites face conservation challenges, often stemming from gaps in planning and management. This study aims to define the cultural heritage management components for Huta Siallagan, a historical village in Indonesia, located on an island within the UNESCO Global Geopark of Lake Toba. The village has preserved its unique Batak cultural heritage retaining its natural setting, site layout, building structures, while intangible practices continue to be actively maintained. The study examined current legal status of the site through national and international legislative frameworks as well as its overall condition. Findings indicate that gaps remain in planning and management frameworks. The study concludes with recommendations for multi-level strategies and heritage management components to strengthen existing conditions and enhance sustainable development.

Keywords: *Cultural landscape, Historical village, Cultural heritage, Conservation management challenges*

1. Introduction

A proper understanding of approaches to the preservation of cultural heritage as a valuable legacy of the past has been shaped by numerous internationally adopted charters and doctrines since the twentieth century, particularly those promulgated by ICOMOS (International Council on Monuments and Sites) and UNESCO. One significant conceptual shift was the expansion of heritage studies to encompass broader components of the historic environment, introducing new perspectives for defining diverse categories of cultural heritage. Over time, the focus evolved from individual monuments to a more comprehensive view that includes the natural and built environments surrounding heritage properties [1]. Under UNESCO's Convention Concerning the Protection of the World Cultural and Natural Heritage

[2], cultural heritage was categorized into monuments, groups of buildings, and sites, while natural heritage was defined within the same framework. [2] In subsequent years, an integrated approach emerged, recognizing the interrelationship between cultural and natural heritage. This development culminated in 1992 with the introduction of cultural landscapes as a new heritage category, defined as the "combined works of nature and man" [3]. Maintaining tradition and cultural continuity, significance became more than expressed in physical fabric also became important which was emphasised in international charters as a form of new shift.

Thus, cultural landscapes embody the dynamic relationship between humans and their environment, the communities living within and around them play a crucial role in shaping their character. Consequently, cultural

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landscapes are not static and continuously evolve. This dynamic nature raises serious concerns regarding the loss of integrity and authenticity, particularly regarding heritage attributes. In this context, heritage conservation management becomes essential, with the primary objective of maintaining tradition and cultural continuity. Effective heritage preservation requires an understanding of all associative values of a place, extending beyond individual monuments to include cultural, social, natural, and built contexts.

Accumulating experience in heritage conservation, along with heightened threats to heritage properties, has further reinforced the need for a holistic approach. In response, UNESCO adopted the Vienna Memorandum on World Heritage and Contemporary Architecture – Managing the Historic Urban Landscape in 2005 [4], addressing the management of change in historic cities. This was followed by the Historic Urban Landscape (HUL) Recommendation in 2011, which established a framework for a “comprehensive and integrated approach for the identification, assessment, conservation, and management of historic urban landscapes within an overall sustainable development framework,” aiming to balance urban growth with quality of life [5].

For this study, the case study from Indonesia, Huta Siallagan Village will be elaborated on, particularly the village’s heritage conservation and management issue as a part of the island’s cultural landscape. Huta Siallagan is a historic village of the Bataknesse tribe, which is the third most ethnic tribe in Indonesia [6] that has similarities in expressing cultures such as in the form of architecture, textiles, and kinship which is called marga (clan system).

The village is located on an island in the middle of Lake Toba, creating an inseparable cultural landscape since the village’s activities are always connected to the lake. Lake Toba is known as the largest lake in Indonesia and the world’s largest Quaternary Caldera, with its traces of the super-volcano Caldera Eruption, the lake also becomes the largest volcanic lake in the world [6] and is inscribed as UNESCO Global Geopark Network in 2020. UNESCO has also already considered The Toba Caldera as a ‘living museum’ for its significance in scientific development. Lake Toba is one of 10 tourism destinations that are prioritized according to the National Tourism Strategic Area (KSPN), supported by Presidential Regulation No. 49 of 2016 [6].

Therefore, this study elaborates the conservation heritage management of the cultural landscapes of Samosir Island at Lake Toba, by taking the example of Huta Siallagan Historical Village. In doing so, this study will analyze all relevant existing plans and initiatives as well as national and international legislation and principles related to heritage conservation and management, in particular referring to the Huta Siallagan Village as a part of the cultural landscape of Lake Toba. The cultural, economic, and social dimensions, community sustainability aspects, and tangible and intangible assets of Huta Siallagan Historical Village will be portrayed in detail to identify the values, as well as potentials of the historic village.

2. Brief Introduction to the natural and cultural features of Lake Toba And Samosir Island

Lake Toba is located in Indonesia’s North Sumatra Province and extends approximately 87 km from northwest to southeast, with an average width of 27 km. (Figure 1) Situated at an elevation of about 904 meters above sea level, the lake contains roughly 240 km³ of freshwater and reaches a maximum depth of 505 m. The surrounding caldera landscape rises to elevations of approximately 2,000 meters above sea level [6].

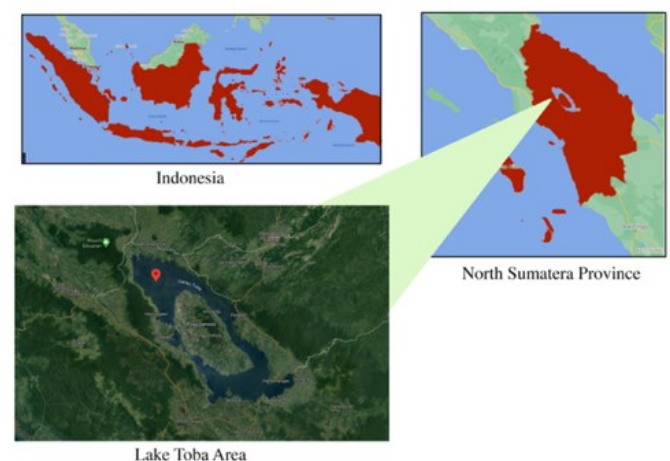


Figure 1. Satellite view of Lake Toba.

Samosir Island and Lake Toba are the site of the original Bataknesse tribe with 5 ethnic groups (Batak Toba, Simalungun, Karo, Angkola-Mandailing, and Pakpak-Dairi) which is the third most ethnic tribe in Indonesia [7]. Bataknesse culture and numerous traditional houses of

Toba Batak are still present and preserved in their original form [8].

Being one of the priority tourist attractions (ODTW) in North Sumatra, the Lake Toba area is designated as a National Tourism Destination (DPN) and a Superior Tourism Destination (DPU) in North Sumatra Province [9]. The government designated the Toba Tourism Area as a National Strategic area for tourism.

Huta Siallagan Historical Village (Figure 2) is widely known as a tourist destination, particularly for the Stone Chairs of King Siallagan, and is located in Ambarita Village, Simanindo District, Samosir Regency, North Sumatra [10].

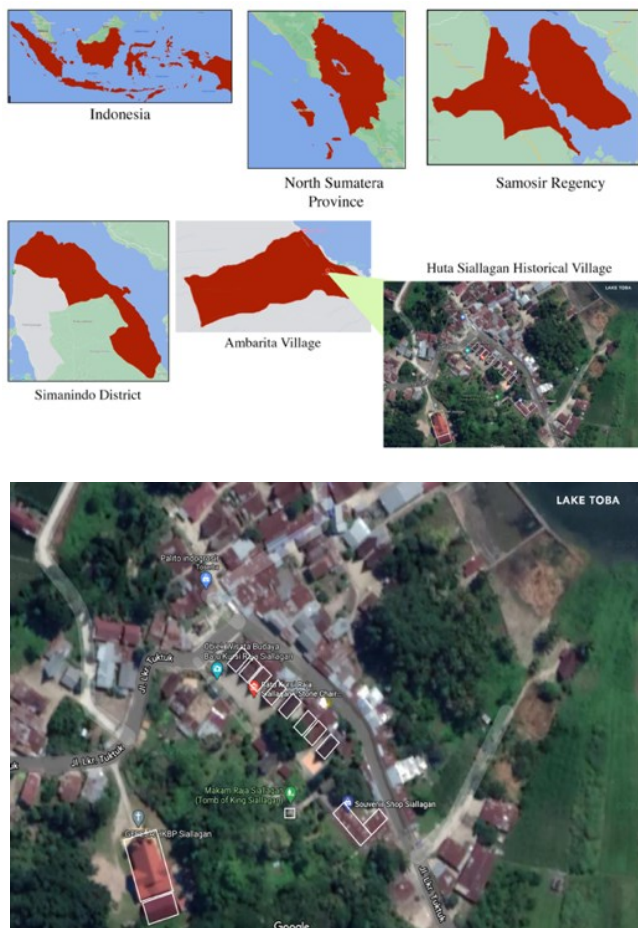


Figure 2. Satellite View of Huta Siallagan with its important buildings (8 houses, 1 granary, 1 souvenir shop, 1 church) (Google Maps, Retrieved from 3 Nov 2020).

In the Batak language, huta refers to a settlement or village established by members of a family clan on cultivated or open land. Accordingly, Huta Siallagan developed as a clan-based settlement of the Siallagan

lineage, descendants of King Naimbaton, who followed King Isumbaon—the second son of the King of Batak—believed to have lived during the sixteenth century [11].

Today, the site continues to function as a residential area and remains well preserved. Its core components consist of traditional buildings set within agricultural fields and framed by the natural landscape of Lake Toba. As a living heritage site, Huta Siallagan also embodies intangible and spiritual dimensions of Batak clan culture, reflecting traditions that remain actively practiced by the community.

A huta, or Batakese village, is formed in accordance with local cultural principles. (Figure 3) Traditionally, it consists of a rectangular area in which houses are arranged in a single row facing the rice granaries, with an open space between them. This central open area functions as a passageway, workspace, social gathering area, and a place for ritual ceremonies. The houses are known as ruma, while the rice granaries are called sopo [12]. In Batak terminology, the residential houses (jabu) and the rice granaries (sopo) are positioned opposite each other, separated by a wide-open space known as the alaman [13]. The houses are aligned parallel to one another, with their front gables oriented in the same direction [14].

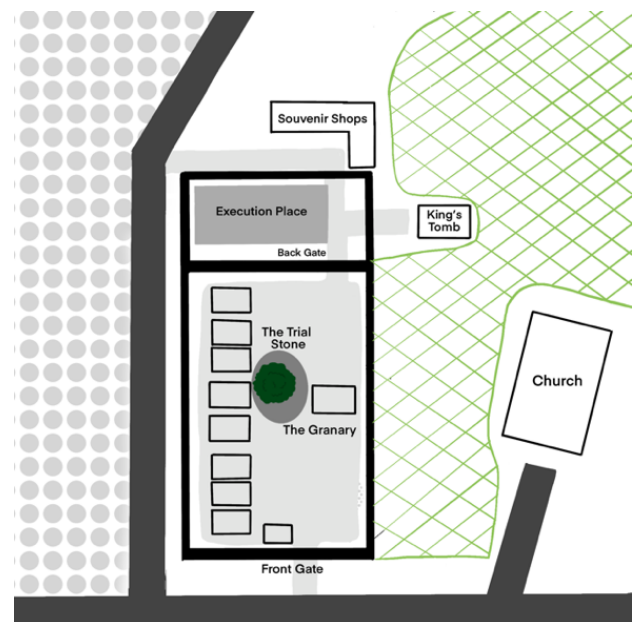


Figure 3. The layout of Huta Siallagan.

Huta Siallagan occupies an area of approximately 2,400 m² and is enclosed by a stone wall measuring between 1.5 and 2 meters in height. The village is arranged in a single linear formation consisting of eight

houses and one rice granary located opposite the king's house. The houses face the mountain, with their backs turned toward Lake Toba. Two statues known as Pangulu Balang, or gatekeepers, are positioned in front of the main entrance, which functions solely as the entry point, while the exit is located at the rear of the village. (Figure 4) The site also contains two stone platforms used for meetings and trials, and at the back of the settlement lies the tomb of King Siallagan [15].



Figure 4. Huta Siallagan's front gate with the image of guardian spirits

A Batak House is built on posts with a gabled roof. The front end of the roof is higher than the back end. The front end symbolizes the children, and the back symbolizes the parents. This is the hope of Batak's people that their children will be more successful than their parents. The concept of cosmology has been applied to the traditional Toba Batak buildings [16]. It represents the existential meanings of the inhabitants, bridging the earth and the sky [15],

The house symbolizes three different distinct realms in Batak cosmology. (Figure 5). The lower part (as a body it symbolized the foot) represents the realms that is believed as the place demons and spirits live, Batak people called it Banua toru. It was used as a warehouse or barn, and at the same time also was used as a jail for guilty people. The people who were put in that part were considered not as humans anymore. He will be there until the village's shaman finds a good date for his trial. The middle part (symbolizing the body) was used for daily living, they called it Banua tonga. The upper part, the roof, (as a body it symbolized the head) represents the upper realms called Banua ginjang, designed for God or ancestors. Because

Batak people still believe that the ancestors' souls may influence the lives and destinies of the children or grandchildren long after the deaths [15] [12]. (Figure 6) Traditional Batak settlements is an architectural formation as a collection of cultural symbols expressing the society's values in everyday life [16].

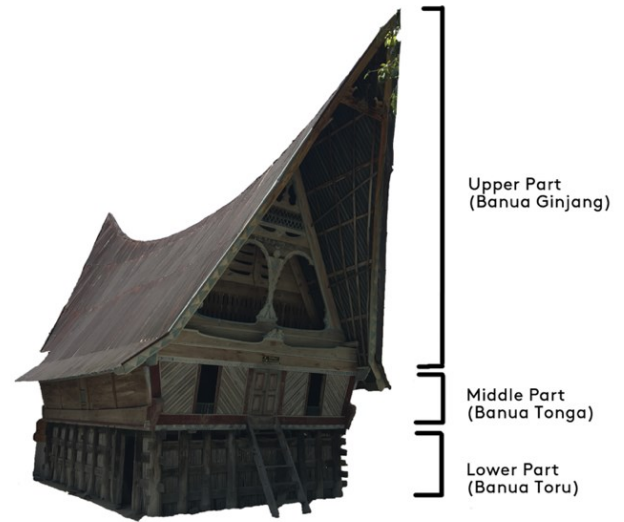


Figure 5. The structure of Batak's house.

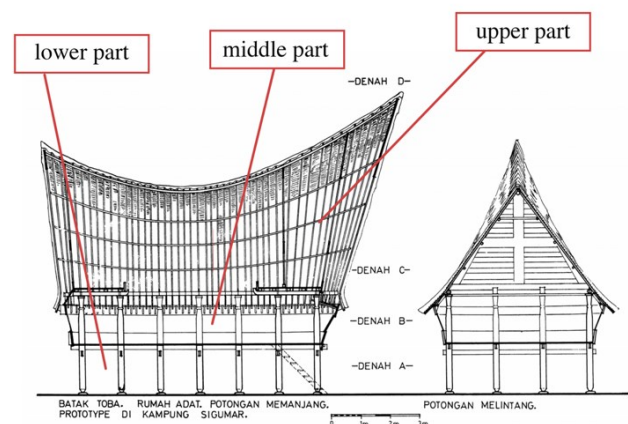


Figure 6. Batak traditional house [17].

The Batak traditional houses are constructed based on earthquake-resistant architecture. When a Tsunami disaster occurs, the house at the same time can be used as a boat. This shows that Bataknese people use their cultural knowledge to connect to geological reality [6]. This building technique piercing wood without nails was transmitted from generation to generation. The timber was made of coleus and Hariara tree. In the past, the roofs were made from wooden structures and palm fiber covers, but nowadays the roofs use zinc material as it is easier to find [16].

There are two forms of Batak's house stairs. First, it was built in front of the door (jewu parpunguan), second, it is from below the door (jewu pangelepan). (Figure 7) People need to bend down to go inside, one of the gestures of respect when entering a house. The house which was built with jewu parpunguan is called Sisampuran house, while the house with jewu pangelepan is called Sitolumbea house [18].



Figure 7. The example of jewu pangelepan (left) and jewu parpunguan (right).

Sets of large stones carved into chairs encircling a stone table called Batu Parsidangan (Stones for Meeting and Trials) is placed under a sacred tree of Batak's tribe, Hariara Tree, at the center of Huta Siallagan. For Batak people, the Hariara Tree is very important. At first, Batak people would plant the Hariara tree on a rock before building a village. If the tree grows, a village will be built around it. The stones of Batu Parsidangan are believed to be over 500 years old. These stones made of volcanic igneous rocks, show that in the past, human-made use of nature in their surroundings to meet their need [6]. Batu Parsidangan is used for criminal case trials. The punishment is then later carried out in the execution place which is in the outskirts of the village (Figure 8).



Figure 8. Houses in Huta Siallagan, Hariara tree and Batu Parsidangan.

In one village, normally there is one granary for all. (Figure 9) Here, agricultural products were stored. There is a unique system in Batak's granary form. In the above of each column, a large flat wood disc could be found to prevent animals eating the food. In the backyard of the village is found an execution place for executing the criminals after being locked under the house.



Figure 9. The Granary in the opposite of the King's house.

The Huta Siallagan is also known for still living intangible heritage, in particular Gorga ornaments, Ulos traditional woven fabric, Batak Alphabet and Calendar (Parhalaan), offering for ancestors and Tortor Traditional Dance.

2.1. Current Condition and State Conservation of Huta Siallagan Village

Since Huta Siallagan relatively belongs to a small local community, the houses are inhabited only by one family. Nowadays, due to resident's living demands, houses are expanded with the new addition of buildings at the back of traditional houses, and the roofs were changed to iron roofs. This causes a lack of architectural value to the buildings. (Figure 10) The landscape and vegetation around settlements have not been preserved. There is also a lack of tourist facilities such as parking lots and homestays.

As Huta Siallagan is recognized as a tourist destination, most of the inhabitants make a living as tourists, guides, performing art and music, and producing crafts and souvenirs. Some illustration figures are also arranged for tourism purposes and the photoshoot place was set up in front of traditional houses [19].



Figure 10. Modern buildings which are built at the back of the traditional one.

Important values of Huta Siallagan of particular heritage assets (tangible and intangible) as a whole could be defined as follows:

- 1) Historical values: especially the local history, laws, and customs
- 2) Architectural values: how to form a village, build a house, protect the village from enemy attacks, and form agricultural land (compiled with stones).
- 3) Cultural & Social Values: burial traditions laws and customs of the Batak people traditional Tortor performance, and kinship system (marga).
- 4) Aesthetic values: fine arts, and decorative arts in traditional houses which have several meanings.

For easier comprehension of the current state reflected in values and potentials as well as risk SWOT analysis has been summarised in Table 1.

Table 1. SWOT analysis of Huta Siallagan.

<p>Strength</p> <ul style="list-style-type: none"> • Preserved authenticity of the Huta Siallagan Village, its tangible and intangible heritage. • Preserved 8 (eight) traditional houses of Bataknese character. • Registered as a cultural and scientific heritage site. • Connection to the other tourist destinations, such as Tuktuk Village, Tomok Village, Sipalaka Siallagan, archeology sites, Sidabutar King’s tomb, Aek Natonang Lake, Sigarattung Waterfall, Huta Hotang Village. • Residents use historical buildings. • Located in the UNESCO Global Geopark Lake Toba as the world’s largest tecto-volcanic lake.
<p>Weakness</p> <ul style="list-style-type: none"> • Limited accessibility to tourist site: connecting infrastructure networks. • The unavailability of parking space for tourists. • The original traditional buildings’ materials have been changed and inserted with new materials. • Fire-fragility of wooden-structure buildings • Inhabitants’ insufficient awareness and knowledge about the values of heritage.
<p>Opportunity</p> <ul style="list-style-type: none"> • Promoting Huta Siallagan in Indonesia and abroad. • Involving the highest levels of government could help to encourage a wider range involvement of central government ministries or agencies and subnational government. • The attention given to Lake Toba prioritized as a National Strategic Area. • The preparation of Integrated Tourism Master Plan. • Local community could improve and support information about the heritage and advocate a better management and promotion. • Tourism sector became a new demand job around the community.
<p>Threat</p> <ul style="list-style-type: none"> • Lake water pollution • Deforestation due to conversion of agricultural functions and other activities. • Inadequate infrastructures and garbage disposal • Regional government insufficiently manage the area without enough support to heritage and tourism potential. • Unregulated heritage preservation activities. • Tourism boosting and commercial pressure.

Table 2. Current plans affecting Huta Siallagan Village

Categories	Urban Plans	Tourism Plans	Cultural Development
Central Government	Integrated Plan of Medium Term-Infrastructure Investment Program (RPI2JM) for the Lake Toba Area	Integrated Tourism Master Plan for Lake Toba 2020-2045 (Ministry of Tourism and Creative Economy)	Master Plan for Cultural Advancement
	Spatial Plan for Lake Toba and Its Surrounding (President Regulation No. 81 of 2014)	Master Plan for Lake Toba Tourism Destinations for 2020-2045 (Ministry of National Development Planning (BAPPENAS))	
	National Medium-Term Development Plan 2015-2019 (RPJMN)	National Tourism Development Master Plan 2010-2025 (RIPPARNAS) (President of the Republic of Indonesia)	
	National Medium-Term Development Plan 2020-2024 (RPJMN) (President Regulation No. 18 of 2020)		
Provincial Government of North Sumatra	Spatial Plan for the Province of North Sumatra for 2017-2037 (Regional Regulation No. 2 of 2017)	Tourism Development Master Plan of North Sumatra Province for 2017-2025	
Municipal Government of Samosir Regency	Samosir Regency Regional Regulation Number 3 of 2018 concerning Samosir Regency Spatial Plan for 2018-2038	-	

3. Current Spatial and Tourism Development Plans Affecting Huta Siallagan Village

There are major government planning systems related to Lake Toba, under which urban plans, tourism promotion plans, and cultural development have been prepared. Table 2. gives summary of the relevant plan with emphasised one that directly affect Huta Siallagan Village. The Spatial Plan for Lake Toba and Its Surrounding (No. 81 of 2014) [19] specifies that the mapping of the Lake Toba area follows the mapping of the Catchment Area Treatment (CAT). The Lake Toba area covers 8 regencies which are referred to as the Tourism Development Area. Then as many as 6 (six) Key Tourism Areas (KTA) were selected to become the focus of detailed development. From this KTA, Simanindo District, the district where Huta Siallagan Village is located, is among those that will be prioritized for the first 5 years. This plan objects to conserve Toba Lake as the living water (Aek Natio) of people, the ecosystem, and the traditional Batak community village; to develop world-scale tourism areas that are integrated with the control of cultivation areas following the carrying capacity of the environment and adaptive to natural disasters. In this plan, the preservation of the village area and the culture of the

Batak Indigenous people was stated. In this Regulation, Huta Siallagan is referred to as Zone L3 defined as a cultural and scientific heritage area. This area is categorized as the product of a high-value human culture and is utilized for scientific development in historical relics, archaeological buildings, monuments, structures, and sites [19].

Samosir Regency Regional Regulation Number 3 of 2018 concerning the Samosir Regency Spatial Plan for 2018-2038 [20] was formed as a means of realizing the implementation of development in the Samosir Regency, which includes 9 districts, including the Simanindo District. To achieve this goal, several strategies were formulated referring to the regency spatial areas which are classified into, protected and cultivation areas. Of the several strategies, which directly affect the Simanindo District are tourism development and cultural heritage as this district is considered as:

- a. nature reserves, nature preservation, and cultural heritage areas which are the district’s protected areas, and
- b. areas designated for tourism and settlements which are the district’s cultivation area.

In the Simanindo district itself, the cultural heritage includes King Sidabutar’s Old Tomb, the cultural tourism

performance of the Sigale-gale Dance, Huta Bolon, Stone Chain Trial of Huta Siallagan, and the Stone Fence Site (Article 32) utilized for the development of science. The designated area for tourism development of culture consists of the [20]. These areas must pay attention to environmental sustainability and cultural preservation structures. The utilization must have a permit from the local government and/or the ministry responsible for the cultural sector [20].

Lake Toba Integrated Tourism Master Plan 2020-2045 is prepared to facilitate a more comprehensive and integrated tourism development for Lake Toba. Huta Siallagan Stone Chair Anthropological Site is defined as a Cultural Attraction. Area arrangement development plans of Simanindo as KTA which affects Huta Siallagan Village are proposed as well, such as restoring cultural heritage buildings, improving the quality of pedestrian pathways between cultural and natural areas, restoring public access to the lakeside, etc [21].

In the Master Plan for Lake Toba Priority Tourism Destination for 2020-2045, Batak traditional settlements are also mentioned where most are considered low in quality terms as to have changed from their initial form. In consequence, it required the revitalization of traditional settlements and their environment, as well as enriching interpretations in the form of storytelling and guidance. In addition, the quality of Ulos mass-produced was also discussed to increase the value of Ulos funds for improving marketing patterns and education for tourists. Furthermore, plans for the restoration of cultural heritage buildings can also be found where the main focus is to restore the original condition and maintain the welfare value of traditional Batak buildings, improving the quality of pedestrian and bicycle paths between cultural and natural areas, restoring public access to the lakeside, both physically and visually, strengthening the position of transportation mode switching areas and increasing information about tourist attraction, and improving the quality and quantity of public facilities according to international standards [21].

The detailed Master Plan for Cultural Advancement is focused on the historic Huta Siallagan Village and is still being prepared by the Directorate General of Culture. It can be observed that some spatial and tourism plans already covered heritage conservation issues in their scope while still lacking several other components such as

implementation, maintenance, control, disaster prevention, and financing.

4. Recommendation and Discussion

As mentioned in the World Heritage Conventions, the ultimate aims of the Conservation and Management Plan is to preserve the OUV, integrity, authenticity of the heritage. Considering that the Huta Village is a part of the UNESCO World Heritage site of Global Geopark, Lake Toba Management Plan is an obligatory document which however needs to be supported by comprehensive plans for heritage conservation issues related to the belonging island and its historic villages. Besides referring to the Geopark management issues have not been prepared or regulated on the local level or level of the cultural landscape. Taking into account all the relevant existing documents, the detailed conservation plan for the Huta Siallagan Village should be prepared while taking into consideration also bound to the natural surroundings. Further on, for better managing changes and improving the status of the historic environment and cultural landscape, heritage conservation planning should be defined under the three levels. Firstly, it is an overall Management Plan for Lake Toba (Global Geopark), secondly is a plan that would focus on the whole area of Samosir Island, and include all the settlements, with both natural and built environment (as cultural landscape) and lastly is the historical villages detailed conservation plan inside of them (e.g. Huta Siallagan Village) (Figure 11).

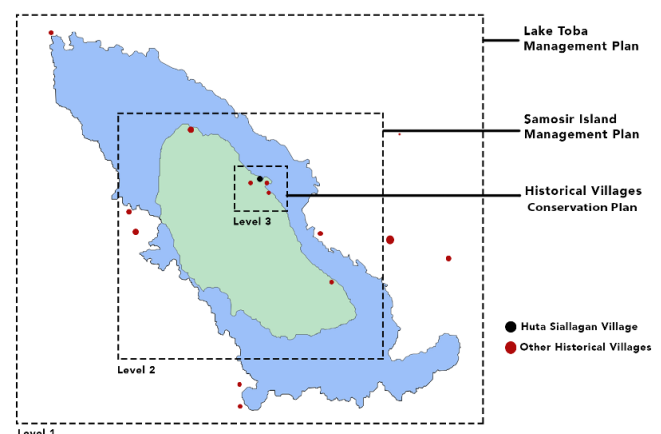


Figure 11. A Framework of The Management and Conservation plan level for the cultural landscape of Samosir Island.

5. Cultural Landscape Samosir Island: Components of the Heritage Management Plan with reference to the Huta Siallagan Village

Cultural Landscapes are multi-layered sites composed of diverse cultural and natural assets that should be further preserved, maintained, and enhanced. To align these efforts toward a sustainable future, heritage management provides a framework within which components - including governing, planning, financing, implementation, risks management, promotion and tourism strategies are defined. For Samosir Island, and particularly with reference to the Huta Siallagan Village, these components are briefly summarised below:

Governing: Establish an organization particularly among different stakeholders such as residents, professionals, and government officials to play the mediating role. Also, residents are expected to be more effectively involved in the conservation of their historic village.

Planning: Management and conservation plan for the cultural landscape of Samosir Island include the conservation of historic villages and their historic sites and of the natural landscape and other natural features considered important for the core of the landscape. The cultural landscape should have marked borders of the core and buffer area, while each historic village inside should have again conservation area. What should be marked as a core zone of protection for cultural landscape includes conservation areas for historic villages as well as the most significant natural elements.

Priority Areas/sites for conservation within the cultural landscape of island are:

- 1) The natural landscape of Lake Toba,
- 2) The village setting (e.g., Huta Siallagan Village),
- 3) The residential area with houses,
- 4) The spiritual area.

According to the current condition and authenticity of Huta Siallagan Village, the conservation area would include elements essential to preserving the village and its traditions with the clan chief's house as the center. It is the most significant part of preserving the historic village and its traditions, the main space in the settlement system

for landscape conservation, and the boundaries are the entire village. As the historic village is a living heritage, the conservation activity should consider the quality of residents' lives by participating residents in formulating the plan.

Huta Siallagan's traditional settlement can be physically preserved through conservation and rehabilitation. The proposed preservation of Huta Siallagan residential houses is the improvement of the physical condition of the Huta Siallagan traditional settlement area in the form of restructuring, landscape improvement, environmental vegetation, and reconstruction and rehabilitation of damaged buildings. The rest is however set within the buffer zone and mostly consists of natural elements around it such as mountains, agricultural land, and lakes.

Financing: It is expected that the governmental bodies will undertake major financial sourcing for the conservation of the village, such as repairing and restoring the houses to their original forms, providing basic tourism facilities, and designing a comprehensive plan for the improvement of the village. Besides, the additional budget should come from other sources such as charges from the visitors for the cultural experience program, then this fund can be used to improve physical facilities in the village.

Implementing: The implementation should provide a cultural landscape following zoning in first place on the core area (with more restrictive regulations) and buffer (with less restrictive regulations). The implementation would include both physical interventions and activities for maintaining and upgrading the condition of the natural and cultural heritage environment. Defining Huta Siallagan as a part of the cultural landscape, implementing the Huta Siallagan conservation plan should follow regulations for the use of land, restoration, and rehabilitation of Huta Siallagan's traditional residential buildings cluster, and other activities defined under the Planning component of the overall Management Plan.

Effective heritage management should actively involve local households in maintaining Batak customs, including traditional ceremonies. Targeted programs can support both conservation and sustainability objectives. For example, converting non-residential buildings into spaces for cultural and traditional experiences can enhance visitor engagement while revitalizing the village

landscape. Minor adaptations may be permitted, provided they do not compromise the overall historical and cultural integrity of the site.

Disaster Prevention and Risk Management: As a part of the overall Management Plan, there should be a section on disasters (man-made and natural). For the entire cultural landscape, it is important to mitigate natural disasters facilities should be also considered to be prepared such as natural disaster early warning systems, Tsunami early warning systems, and safety gear.

When it is about the Huta Siallagan according to 2020 Statistic Data [10], there never recorded any natural disaster in the village. However, as the historical houses of Huta Siallagan Village are established with wood, a fire prevention system is a must for village prevention and should be designated as a 'fire-safe village'. Activities such as anti-fire training especially for the residents and patrolling around the village should be carried out. Fire alarm sensors should also be installed in the houses and residents should practice fire drills regularly. The resident should be trained in using emergency hydrants and other firefighting facilities.

In addition to that, even though there is also rarely a flood disaster recorded in the Huta Siallagan Village Area, it is better to establish water drainage in the entire village as protection from flood disasters that can happen in the future. Mitigating natural disaster facilities should be also considered to be prepared such as natural disaster early warning systems, Tsunami early warning systems, and safety gear.

Promotion, Education, Community Involvement, and Raising Awareness: Promotion should include different advertisements and activities. Community involvement in conservation must also be encouraged such as education and tourism programs for better implementation. However, for proper heritage preservation, raising awareness is among the important issues to encourage inhabitants to keep alive their traditions, and customs, and to stay in place in the long term. Also, as they are the custodians of the place, their enrolment in all the aspects of the plan for preservation is a priority. More transparent and democratic governance procedures are also important.

Sustainable Tourism: Tourism can be defined as 'sustainable' when it generates value for the whole local

system and its actors. It is important to provide different touristic offers on the level of cultural landscape visits and inside the historic villages. Also, it is important to have a clear strategy on how to make a balance between touristic visits and heritage preservation, since tourism also have a negative impact on the site such as more garbage, pollution, intense usage of heritage assets that may cause damage, etc. The step that must be considered is to ensure that tourism contributes to the economy of the village. Tourism facilities and services must be owned by the village and residents are given priority to work, so that income can be reinvested into the village. Moreover, tourism must still harmonize with the original form of the village and the surrounding internal ecosystem, as well as the lifestyle and local communities [22]. There should be developed different variants for tourism routes:

- Cultural landscape visits: this route would include visits to historic villages and natural sites between them.
- Historic village cultural route.

For Huta Siallagan Village one of the routes could start from Huta Bolon Simanindo Museum to Huta Siallagan Village then next to Batak Museum, Sigale-gale Dance Performance, and Sidabutar King's Tomb which are in one place. The visitor can stay near to these three destinations. Because most hotels are located here. Then the tour will continue to the wider area and include cultural landscape visits: Sigarattung Waterfall and Aek Natonang Lake. The tour can be finished here or continue to the optional destination; Silima Lumbu Ecovillage and Huta Hotang to experience the culture and the beautiful scenery of Lake Toba. Overall, this route takes 35 km with an estimated time one day, from morning to evening. (Figure 12).

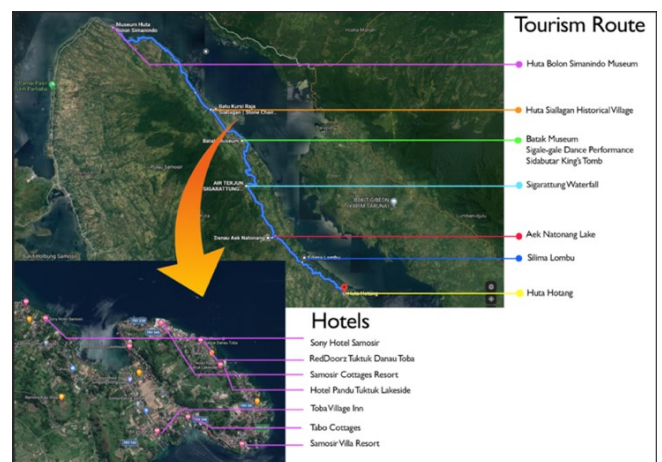


Figure 12. Proposed tourist route.

6. Conclusion

This study highlighted the importance of considering all associated values of a specific area (of its natural and built environment, as well as its cultural and social context), rather than focusing solely on a single monument. This study examined the heritage conservation and management of Huta Siallagan Village and the cultural landscape of Samosir Island as part of the UNESCO Global Geopark Lake Toba, in accordance with national and international legislation and principles.

This study confirms that Samosir Island constitutes a cultural landscape, integrating natural and historic elements for which effective management requires a multi-level approach, in particular: comprehensive management plan for Lake Toba; preservation of Samosir Island as a cultural landscape, encompassing all traditional settlements and their natural surroundings; and a conservation plan for Huta Siallagan Village. The Village has preserved its unique Batak culture for over 500 years, serving as a representative example of traditional Batak settlements. The village retains its original natural setting, site layout, and building structures, while intangible heritage, including cultural practices and rituals, continues to be actively maintained. Findings indicate that while several spatial and tourism master plans had already acknowledged issues related to heritage conservation gaps remain particularly in defining issues on implementation, maintenance, risk management, disaster prevention and financing.

Conservation and management strategies should be aligned with existing planning frameworks and policies, and their development and implementation should involve inclusive dialogue among stakeholders, professionals, government authorities, and local residents. Interdisciplinary collaboration among different specialists is essential for designing comprehensive programs that support heritage preservation and sustainable management. This study contributes to the field of heritage conservation by emphasizing the importance of such integrated, collaborative and policy-aligned approach and strategies.

Competing Interest Statement

The authors declare no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Data Availability Statement

All data generated or analysed during this study are included in this article.

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