

Development of Asahan River Tourism Activities in Support of National Tourism Strategic Area of Lake Toba

¹Beta Budisetyorini, ²Deddy Adisudharma, ¹Dicky Arsyul Salam, ¹Mega Fitriani Adiwarna Prawira*, ¹Wisi Wulandari, ³Eko Susanto,

¹Jurusan Kepariwisataan
Sekolah Tinggi Pariwisata
Bandung, Bandung,
Indonesia

²Jurusan Perjalanan, Sekolah
Tinggi Pariwisata Bandung,
Bandung, Indonesia

³Jurusan Administrasi Niaga,
Politeknik Negeri Bandung

Abstract

Following up on the Development of The National Tourism Strategic Area of Lake Toba, which was directed in the study "Integrated Tourism Masterplan for Lake Toba" (ITMP Danau Toba) in 2018, one of which was the development of river-based natural tourism attractions allocated in the Asahan Watershed including Asahan Regency, Tanjung Balai Municipality, Toba Samosir Regency, and Simalungun Regency. Regarding the policy of river-based tourism attractions, this research is focused on developing river tourism activities that will have implications for the development of the natural attraction of the Asahan River. This study has produced a mixed method of sustainable tourism development strategies by prioritizing the benefits of the ecological, socio-economic and cultural environment. Development is directed towards packaging special interest tourism products following the characteristics of available resources.

Keywords: river tourism; tourism destination; Asahan River

INTRODUCTION*

Referring to the National Tourism Development Master Plan 2010 - 2025 (Peraturan Pemerintah RI Nomor 50 Tahun 2011 Tentang Rencana Induk Pembangunan Kepariwisataan Nasional Tahun 2010-2025, 2011), established the National Tourism Strategic Area of Lake Toba which was followed up with the determination of integrated tourism masterplan for Lake Toba (ITMP) and master plan and detail plan (RIRD) of KSPN Lake Toba. The policy divides KSPN Lake Toba into 19 tourist areas following the characteristics of tourism resources and primary tourist attractions. One of them is the development of natural tourism attractions based on The Asahan River, Asahan Regency, and Toba Samosir Regency, North Sumatra Province, which can be seen in figure 1.

Asahan River has the tourist resources of the river, flows for 147 km, flows in Lake Toba, and ends in the Strait of Malacca as its downstream. The 3,741 km² Asahan River Watershed covers Parapat, Porsea, Balige, Kisaran and Tanjung Balai. The highest altitude point in the Asahan River Watershed is Mount Dolok Sibutan (2,457 Agl), while the lowest point is in Tanjung Jumpul (0 Agl).

*Correspondence address:

Mega Fitriani Adiwarna Prawira

Email : mega.fitriani@stp-bandung.ac.id

Address : Jl. DR. Setiabudhi 186 Kota Bandung

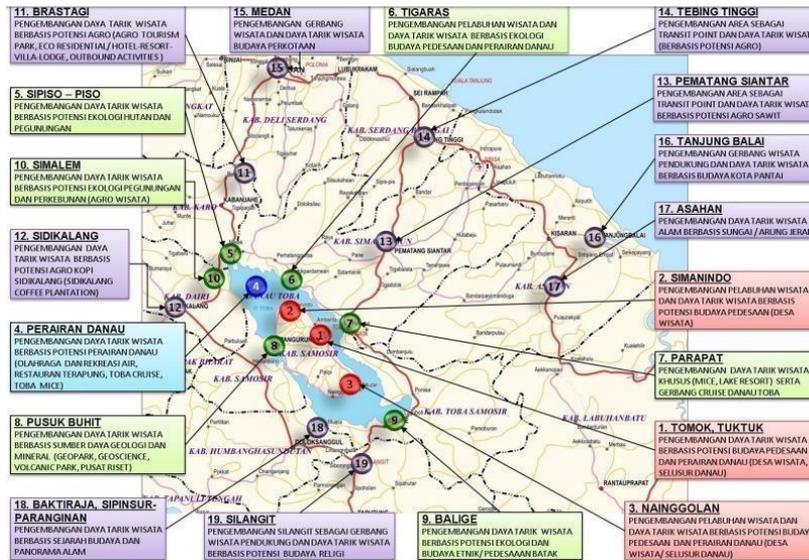


Figure 1. National Tourism Strategic Area

Source: (Peraturan Pemerintah RI Nomor 50 Tahun 2011 Tentang Rencana Induk Pembangunan Kepariwisata Nasional Tahun 2010-2025, 2011)

Following its resource characteristics, The Asahan Watershed is a tourist area focusing on developing river-based tourism activities and watersheds. This view refers to (Prideaux & Cooper, 2009), where the river resources related to tourism are: 1) the river can present the beauty of the diversity of attractions and the location of the unique event (spectacular setting); 2) recreational facilities (recreation facilities); 3) have an atmosphere worth cultural heritage and adventure experiences, and 4) links with the environment and natural world. The potential of tourist resources of the Asahan River Watershed as the attraction of river tourism, then the development of activities needs to be studied from the supply side (Budisetyorini et al., 2021; Mousazade et al., 2019; Nurlaila et al., 2021). This concept means that the development of tourist activities determines the capacity of the destination's offering to its target market. Tourism development is closely related to maintaining ecological conditions while gaining economic and social benefits (Ananda et al., 2021; Prawira & Budisetyorini, 2021). The sustainable tourism approach seems to be the central theme of river tourism development in various regions (Calgaro et al., 2014; Espiner et al., 2017; Hall, 2019; Niñerola et al., 2019).

The primary tourist attraction of the Asahan River that utilizes the Asahan watershed is identified as spread across three potential tourist areas, namely: 1) The Range Area – Tanjung Balai, Asahan Regency includes Turunan Bolon Waterfall, Unong Sisapa Waterfall, Simonang-monang Waterfall, Bagan Asahan Port, Ponot Waterfall, Tani Natural Waterfall, and Asahan Suspension Bedeng Bridge, 2) Porsea-Balige Area, Toba Samosir Regency includes Porsea Bridge DTW, Sigura-Gura Dam, Sigura-Gura Waterfall, Simanimbo Waterfall, Beautiful Swallow Waterfall, Asahan Rafting, as well as 3) Parapat Area, Simalungun Regency includes DTW Jambua Indah Waterfall, The Entrance of Lake Toba Parapat Tourist Area.

The attraction of the above tourism will be studied more in-depth based on clusters and activity analysis in determining the thematic development of Asahan River tourism activities supported by the concept of resources-based river tourism (Nurlaila et al., 2021; Prawira et al., 2021) as a model of activity development. The development of river tourism activities is expected to support the Master Plan and Detail Plan (RIRD) policy of KSPN Lake Toba. It is expected that this research will contribute long-term to the development of the Tourism Industry of KSPN Lake Toba, especially investment, infrastructure development, and competitiveness of tourist products as a follow-up to strengthening the implementation of RIPPARNAS in PP. No. 50/2011.

METHOD

The research uses a mixed-method approach that describes one situation in actual terms, especially the development of the Asahan River tourist area as the basis for developing Asahan River tourism activities. Hybrid approaches are chosen because the research emphasizes observation or observation activities. The purpose of research activities is to formulate a model for developing Asahan River tourism activities based on the characteristics of river resources and supply-side studies through activity and resource-based cluster analysis.

Three stages are carried out: 1) the pre-survey or before the research: preliminary preparation. Starting with the study of various literature related to the development of river tourism activities, continued the preparation of data gathering tools and the selection of informants related to and related to the development of Asahan River tourism activities; 2) Survey stage: is a data collection activity by making observations or observations based on guidelines that have been compiled. Interviews are conducted with tourism stakeholders, parallel with literature study activities; and 3) post-survey stage: analyzing field findings with tourism activity cluster analysis (Mill, 2008) where each type of tourist activity can be sorted based on criteria adapted to the character of the tourist activity, among others, as follows: skill level, from low to high: interaction patterns, from individual to group; leadership required, from minimum to maximum; the equipment required, from none to required; education benefit, from low to high; social culture benefit, from low to high; conservation benefit, from low to high; local participation, from low to high; social culture uniqueness, from low to high; local wisdom conservation, from low to high and local people participants, from low to high.

RESULT AND DISCUSSION

Identification of Asahan River Tourism Resources

Characteristics of the Asahan Watershed Region

Asahan watershed is one of the priority watersheds in Sumatra, which is included in 108 priority watersheds in Indonesia across three districts and one municipality, namely Asahan Regency, Tanjung Balai Municipality, Kabupaten Toba Samosir, and Simalungun Regency with three areas of Asahan watershed with tourism potential. Table 1 shows the Asahan River Sub-Watershed, grouped into three potential tourism areas.

Table 1. Three Areas of Asahan River Watershed Potential Tourism

No.	Area	Sub Area	Size (Ha)	City/Region	Size (Ha)
1	Kisaran – Tanjung Balai	Piasa	26.554,99	Asahan	26.554,99
		Sakur	31.723,14	Asahan	31.723,14
		Ambalatu	11.372,60	Asahan	11.372,60
		Kuasan	39.173,87	Asahan	39.173,87
		Sukaraja	40.823,65	Asahan	40.823,65
		Kepayang	31.632,53	Asahan	31.632,53
		Baru	32.392,68	Asahan	30.018,94
				Tanjung Balai	2.373,75
				Silau Hilir	41.787,32
2	Balige - Porsea	Asahan Hulu	47.835,62	Asahan	21.506,78
				Toba Samosir	26.554,99
3	Parapat	Silau Hulu	50.473,95	Asahan	41.958,26
				Simalungun	8.515,69
TOTAL			353.770,34		353.770,34

Source: research data, 2021

Refer to Table 1, the overall area of the Asahan Watershed is 353,770.34 Ha, administratively dominated by Asahan Regency, covering an area of 311,689.88 Ha (88.11%); Toba Samosir Regency covers an area of 26,328.84 Ha (7.44%); Simalungun Regency covers an area of 8,515,69 Ha (2.41%), and Tanjung Balai City

covers an area of 7,235,94 Ha (2.05%). A Watershed can be interpreted as a land area separated from other areas around it by the topographical barrier of the ridge that receives rainwater, accommodates, stores, and flows from the tributary to the main river to the lake or the sea. In general, the Watershed consists of two main parts: the head of the river area (upstream part) is a catchment area in the hills and mountains, and the coastal region's central and downstream water distribution area. In the development of river tourism activities, consideration of the identification of the characteristics of the Asahan Watershed area aims to provide an overview of the potential and constraints of the utilization of river resources for the development of Asahan river attraction and activity.

Territorial characteristics of the Asahan Watershed can be identified based on topographic, land use, climate, hydrological and socio-economic conditions that support river tourism activities as presented in Table 2 as follows:

Table 2. Characteristics of Three Areas of Asahan Watershed Potential Tourism

Area	Topography Character	Land use character	Climate Character	Hydrology Character	Social Economic character
Kisaran - Tanjung Balai, Kab. Asahan	The slope of land: Flat (0-8%) : 94,857 Ha Ramps (8-15%) : 78,825 Ha Bumpy (15-25%): 40,3 Ha Steep (25-40%) : 22,277 Ha Very Steep (40-60%): 7,265 Ha Steep (>60%) : 12,148 Ha Land height: 0 - 1000 Agl	Dominant soil types: yellow, red podsol, regosol and latosol, brown podsolic complex, and cytosol. Dominant land use in the form of forests, mixed gardens, swamps, shrubs, rice fields, fields, and plantations	Tropical climate with a dry and rainy. C1 climate type with wet month number: 5-6 months and dry month: 0-1 month	Max debit: 306 m ³ /s Debit min: 0.57 m ³ /sec Shows large fluctuations in discharge.	The population of Asahan Regency: is 718,718 people. Population Density: 192.53 people/km ² . The labor force participation rate is 64%, predominantly working in the industrial business field (52.3%), community services (39%), hotel restaurant trade (4%) The dominant level of education graduated from high school - graduate by 70.70% Majority of religions: Islam (88.8%) and Protestant Christianity (9.15%) Dominant ethnic groups: Asahan Malays and Batubara Malays
Balige - Porsea, Kab. Toba Samosir	The slope of land: Flat (0-8%) : 3,680 Ha Ramps (8-15%) : 9,514 Ha Bumpy (15-25%): 6,7 Ha Steep (25-40%) : 9,612 Ha Very Steep (40-60%): 4,901 Ha Steep (>60%) : 13,391 Ha Land height: 900 – 2200 Agl	Dominant soil types: brown and latosol podsol complexes, red podsols, and regosol and latosol. Dominant land use in the form of forests, shrubs, mixed gardens	Tropical climate with a dry season and rain. Type of climate E2 with the number of wet months: 0-2 months and dry months: 2-3 months	Max debit: 306 m ³ /s Debit min: 0.57 m ³ /sec Shows large fluctuations in discharge.	Population of Kab Toba Samosir: 181,790 people. Population density: 89.91 inhabitants/km ² Labour force participation rate (80.30%), with dominant employment in agricultural enterprises (42.2%), industry (23.6%), and transportation (11%) for the restaurant hotel trade (2%). High school/vocational/STM (76.65%), baccalaureate, and undergraduate (18.91%) The majority of religions: are Protestant Christianity (85.42%), Catholic (6.60%), and Islam (6.20%). Dominant tribe: Batak Toba
Parapat Kab. Simalungun	The slope of land: Flat (0-8%) : 11,561 Ha Ramps (8-15%) : 6,314 Ha Bumpy (15-25%): 13, Ha Steep (25-40%) : 12,018 Ha	Dominant soil types: brown and latosol podsol complexes, regosol, and latosol. Dominant land use in the form of forests, mixed	Tropical climate with a dry season and rain. Type A climate with the number of	Max debit: 306 m ³ /s Debit min: 0.57 m ³ /sec It Shows large fluctuations in discharge.	Population of Kab Simalungun 854,489 people Population density: 195 inhabitants/km ² Labour force participation rate (69.43%) with dominant employment in agricultural businesses (54.60%) and

Area	Topography Character	Land use character	Climate Character	Hydrology Character	Social Economic character
	Very Steep (40-60%) 9,557 Ha Steep (>60%) : 7,723 Ha Land height: 0 - 1400 Agl	gardens, and shrubs	wet months: 10 - 12 months and dry months: 0- 1 month		restaurant hotel trade services (31.71%). The level of education graduated from junior high school (21,605), high school / vocational school (41.43%), and Diploma / Bachelor (7.32%) Majority of Protestant & Catholic Christians (47%) and Islam (46.6%) Majority of tribes: Batak Simalungun.

Source: research data, 2021

Analysis of Asahan River Tourism Resources

Assessment of Asahan River tourism resources based on four components, namely spectacular setting, recreation facilities, sense of heritage and adventure, and link environment and the natural world, is assessed with a scale of 1 - 5 as presented in Table 3.

Table 3. Assessment of Asahan River Tourism Resources

Area	Spectacular Setting	Recreation Facilities	Sense of Heritage & Adventure	Link with environment & Natural World	Total Nilai
Kisaran – Tanjung Balai, Asahan	5	4	5	4	18
Kawasan Porsea Balige, Toba Samosir	5	3	5	5	18
Parapat, Simalungun	4	5	4	5	18

Source: Research Processed Results, 2019

Asahan Watershed Area : Kisaran Area – Tanjung Balai, Asahan Regency

According to Table 3, it was concluded that the potential of asahan river tourism resources has a value of 18 with conditions in spectacular setting components and a sense of heritage adventure has excellent value and the components of recreation facilities and link of environment, and the natural world has good value. The condition explains that the Tanjung Balai, Asahan Regency, has the potential for river tourism with the largest area of about 90.16% or 318,952 Ha of the total area of the Asahan Watershed. The spectacular setting has the most beautiful scenery because the area downstream of the river directly empties into the Strait of Malacca, with a large riverside area, and has a Tanjung Balai field on the downstream coast of the Asahan River. The landscape area, dominated by rocks and green hills, has many waterfalls, such as Turunan Bolon Waterfall, Simonang-Monang, Ponot, and Alam Tani.

Based on the value of the sense of heritage and adventure, Tanjung Balai, Asahan Regency has a uniqueness and high adventure value, especially in the downstream part of the Asahan river because it was once the center of the Sultanate of Asahan. The area has many relics of the Sultanate of Asahan in religious rituals, traditional medicine Gobuk and Gubang, buildings in mosques, and some of the Sultanate of Asahan. Meanwhile, the value of adventurers, specifically in the Area of Kisaran-Tanjung Balai, Asahan Regency, there are still many areas that have not been explored, especially in tropical forest areas around the banks of the Asahan river flow (e.g., Dolok Surungan Wildlife Reserve Area).

Assessment of recreation facilities in The Area of Kisaran-Tanjung Balai, Asahan Regency is suitable for boating activities and outdoor recreation of the river coast that has been supported by boat facilities, simple piers, fishing equipment, and camping areas, and play areas on the riverbank. The assessment of the Link with Environment and Natural World component, Kisaran-Tanjung Balai Area, Asahan Regency, has a natural heritage character that is still very natural and has not been commercially exploited for River tourism activities.

The Asahan River water source is still used for hydropower purposes. Sigura-Gura Dam is for clean water needs in Asahan, Toba Samosir, and Simalungun regencies. On the other hand, the character of flora in the Asahan Watershed is still dominated by tropical rainforest plants and endemic fish fauna *Neolissochilus Sumatranus* or Batak Fish.

Asahan Watershed Area: Porsea – Balige Area, Toba Samosir Regency

Table 3 shows that the potential of Asahan River tourism resources has a value of 18 with conditions in spectacular setting components, a sense of heritage and adventure, and a link with the environment and natural world has excellent value. The recreation facilities component is quite good. The condition explains that the Porsea-Balige Area, Toba Samosir Regency, also has the tourism potential of the river that utilizes the Asahan Watershed with an area of 7.44% of the total area of the Asahan Watershed around 26,328 Ha.

Although not as wide as the Area of Kisaran-Tanjung Balai in Asahan Regency, the assessment of the link with the environment and natural world has the advantage of being directly adjacent to Lake Toba, which is the largest lake in Indonesia, created from volcanic eruptions, and Lake Toba also has UNESCO Caldera Geopark status. Based on the value of the sense of heritage and adventure, Porsea-Balige Area has the uniqueness of Malim belief (religion) as a local religion from Batak land, and there is still traditional knowledge such as Dampol Siburuk, Dampol Tongosan, Parhalaan, and others. There is also the art of Dideng-Dideng and Batak opera, relics of the ancient Batak kingdom, and the funeral of King Sisingamangaraja XII. Tourist activities that have an adventurous value in this area are still similar to the Kisaran-Tanjung Balai Area, Asahan Regency, where many areas around the headwaters of the Asahan River have not been explored.

Spectacular setting conditions are excellent in this area due to the utilization of the Asahan watershed; in addition to the Sigura-Gura Dam hydropower plant, there are other river tourism activities with the character of agricultural land and plantations, upstream of the Lake Toba river with views of the Barisan hill mountains and Lake Toba Caldera to be one of the spectacular settings in this region supported by Sigura-Gura waterfall, Simanimbo Waterfall and Tejun Indah Swallow Water.

The assessment of recreation facilities for river tourism activities in this region is quite good. Traveling in Sigura-Gura Dam, Sigura-Gura Waterfall, and Simanimbo Waterfall can only be seen from afar, with limited entry permits for tourist entry, so tourists cannot move directly at the waterfall or dam. While recreational facilities for asahan rafting activities are sufficient, the reservation system and the number of boats and rafting support equipment are still limited due to the fluctuating natural conditions of river currents, so not all tourists can do so rafting activities at any time.

Asahan Watershed Area: Parapat Area, Simalungun Regency

Table 3 presents the potential of Asahan River tourism resources in the Parapat area; Simalungun regency has a value of 18 with conditions in the component of recreation facilities and link of environment, and the natural world has excellent value. In contrast, the spectacular setting component and sense of heritage adventure have good value. Although the Parapat has the smallest area, about 2.41% of the total area of the Asahan watershed that can be used for river tourism activities, the assessment of recreation facilities and the link between the environment and nature has advantages. It is related to the strategic location directly adjacent to Lake Toba as the entrance of tourists to Lake Toba, the largest lake in Indonesia, created by volcanic eruptions. Lake Toba also has UNESCO Geopark Caldera status. Lake Toba and Asahan River also have endemic fish fauna, *Neolissochilus Sumatranus*, better known as Batak Fish.

The recreational facilitation is complete and has many options, such as boat activities in Parapat, ranging from a canoe, kayak, sail, cruise, and water bike. In addition, there are fishing facilities in the Samosir Island area, a water playground on the edge of Lake Toba, which is located close to the pier, and there is Jambura Indah waterfall with complete facilities. From assessing spectacular settings and a sense of heritage and adventure, Parapat Area has cultural arts value that can support Asahan River tourism activities such as traditional Tortor mass cup dance, Haruan Bolon, Tortor six tribes, Tortor Mukat Malehat, and traditional martial arts performances. There is also an exiled house of President Soekarno, Sutan Sjahrir, and H. Agus

Salim on the shores of Lake Toba. As for adventure activities, there are still areas that have not been explored in the form of hills and forests in the Parapat Area, although not as much as in the Area Of Kisaran-Tanjung Balai in Asahan Regency and Balige-Porsea Area in Toba Samosir Regency.

Supply Side Analysis of Tourist Destinations in the Asahan River Area

In reviewing the supply side of the Asahan River Area based on four components, namely accessibility, and transportation, tourist facilities, infrastructure, and tourist attractions are assessed with a scale of 1 - 5 as presented in table 4 as follows:

Table 4. Asahan River Tourism Area Supply-Side Assessment

Area	Accessibility and Transportation	Tourist Facilities	Infrastructure	Attractions	Total
Kisaran – Tanjung Balai, Asahan	2	2	4	5	13
Porsea Balige, Toba Samosir	4	4	3	5	16
Parapat, Simalungun	3	3	4	2	12

Source: research data, 2021

Asahan Watershed Area: Kisaran-Tanjung Balai Area, Asahan Regency

Based on table 4, the supply side condition in the Area Of Kisaran-Tanjung Balai, Asahan Regency, has a value of 13. For accessibility and transportation conditions are very lacking because the road to tourist attractions in Asahan Regency is damaged, perforated, and prone to landslides. Transportation to the tourist attractions of Asahan Regency is still rare and difficult to access for tourists. Tourists who will go to the tourist attraction of Asahan Regency must rent a vehicle from the Provincial Capital because public transportation is limited to only ± 90 units of buses, and the conditions are not comfortable for tourist transportation. Tourism facilities in this area still lack support for river tourism activities that are, on average, outside the capital area of Asahan Regency. Tourist facilities such as accommodation, restaurants, and travel agents are still dominated in the capital of Asahan Regency, namely Kota Kisaran and Tanjung Balai Municipality.

Infrastructure in Asahan Regency, in general, has been well available. Electricity flow services are provided by PLN and have reached the entire region. Clean water services are available only in downtown Kisaran and surrounding areas, in rural areas still using river water or self-dug drill wells. Gas stations are available on the main lines across provinces and districts. While in the district line and its branching, there is a Mini Gas Station owned by the community. Cellular telecommunications and internet networks have been available in Asahan Regency with service coverage to rural areas, but there is a "blank spot" at some point. The attraction of river tourism in the Area of Kisaran-Tanjung Balai Asahan Regency is perfect, with the uniqueness of each of the natural physical characteristics of the waterfall and the view of the hills and expanses of tropical rainforest plants such as those in The Turunan Bolon Waterfall (TURBO), Unong Sisapa Waterfall, Simonang-monang Waterfall, Bagan Asahan, and Alam Tani Waterfall.

Asahan Watershed Area: Porsea – Balige Area, Toba Samosir Regency

Based on table 4, the supply side conditions in Porsea - Balige Area, Asahan Regency, has a value of 16. The condition of the road to tourist attractions in the Porsea - Balige Area, Kab Toba Samosir, is good with the type of hot mix road, although some roads are still used for tourist vehicle parking. Transportation to tourist attractions in Porsea - Balige, Kab Toba Samosir can be passed by air, land, and river transportation. Air Transportation uses three airports: Kualanamu International Airport, Sibisa Airport, and Silangit Airport, while through the river using the port of Ajibata. Land transportation can be used for taxis, buses, and car rentals.

Availability of tourist facilities that support river tourism activities in the Porsea-Balige area, Toba Samosir regency is supported entirely by non-star and starry accommodation facilities that provide online room reservations to souvenir shops and tourists information centers, and Travel Bureaus or travel agents are available in this area. Infrastructure in the Porsea-Balige area is quite adequate, including the provision of PLN electricity that has covered the entire area and clean water from PDAM, but the quality is still not good. Places

of worship are already available, but it is still challenging for Muslim tourists to find a mosque because there are only four mosques, besides the absence of halal restaurant labels, so it becomes difficult for Muslim tourists in particular. Porsea - Balige area, Kab Toba Samosir, has attractions and beautiful scenery created from the cluster of Bukit Barisan. The attraction has a blend of natural beauty, historical settings related to World War II, and practical educational value for tourists. The tourist attractions that utilize the water resources of the Asahan River in this area include Sigura-Gura Dam, Sigura-Gura Waterfall, Simanimbo Waterfall, Beautiful Swallow Waterfall, and Asahan Rafting.

Asahan Watershed Area: Parapat Area, Simalungun Regency

Referring to table 4, the supply side condition in the Area of Kisaran-Tanjung Balai, Asahan Regency, has a value of 12. Transportation to Parapat Area, Simalungun Regency, is complete because the area is used as one of the entrances of the Lake Toba area. The entrance of tourists via Air Transport is from Kualanamu International Airport. In contrast, the mode of public transportation used is by bus vehicle. The Parapat area also has the port of Ajibata to cross Lake Toba and has a railway station. Road conditions in the Parapat area, Simalungun Regency, are pretty adequate, but there are still roads prone to landslides on some routes, narrow road width with sharp bends. Tourism infrastructure in Parapat Area is good, including the provision of electricity and water that has reached the entire region and mobile phone and internet signals.

Parapat Police and Polsek Dolok Panribuan provide security services in the Parapat area. Healthcare infrastructure is undoubtedly no less necessary for tourists. Parapat area has Parapat Hospital and one Parapat health center that can serve tourists if they have an accident or illness during tourist activities. Banking services for money exchange needs and other transactions are already widely available in this region. Daya tourist attraction Parapat Area, Simalungun Regency has not had much use of the Asahan Watershed for river tourism activities, but because of its strategic location directly adjacent to Lake Toba as the entrance of tourists to Lake Toba, the development of tourist activities is more dominated for recreational lake tourism with very varied recreational tourism activities. At the same time, those who use the Asahan Watershed are only Jambua Indah Waterfall and have not been well organized.

Activity Analysis and Cluster of Asahan River Tourism

Adventure Tourism Activity Analysis

In reviewing asahan river adventure tourism activities based on four parameters, namely skill level, interaction pattern, leadership local guide, and equipment and facilities required will be assessed with a scale of 1 - 5 with an explanation (1) Very low, (2) low, (3) relatively high, (4) high, (5) Very high. The assessment can be seen in Table 5 as follows:

Table 5. Adventure Tourism Activity Assessment

Area	Skill Level	Interaction Pattern	Leadership Local Guide	Equipment & Facilities Required	Total
Kisaran – Tanjung Balai, Asahan	4	3	4	4	15
Porsea Balige, Toba Samosir	4	3	5	2	15
Parapat, Simalungun	1	1	1	1	4

Source: research data, 2021

Asahan Watershed Area: Kisaran Area – Tanjung Balai, Asahan Regency

Table 5 shows that the cluster of *adventure* activities in the Area of Kisaran-Tanjung Balai, Asahan Regency has a value of 15. It can be explained that the tourist attraction in the Area of Kisaran-Tanjung Balai, Asahan Regency, which utilizes the Asahan River Watershed as a river tourism activity, is still dominated by the tourist attraction of waterfalls where the character of waterfalls in this area can provide adventure challenges for tourists for *adventure activities*. It requires a high skill level, especially for the tourist attraction of waterfalls at an altitude of 500 - 1000 meters above sea level.

Asahan Watershed Area: Porsea – Balige Area, Toba Samosir Regency

Table 5 shows that the cluster of adventure activities in Porsea - Balige Area, Toba Samosir Regency, has a value of 15. Although it has the same value as adventure tourism activities in Tanjung Balai, what distinguishes the tourist attraction in the Porsea Area – Balige has the character of utilizing the Asahan Watershed not dominated by waterfalls but dams for hydropower and river flow for white water rafting activities that require high skills (skill levels) also for tourists. This is because the Sigura-Gura hydroelectric dam and Sigura-Gura waterfall have special requirements for tourists who want a special interest in tourism activities in the dam area. While the rafting activity in the Asahan Watershed that crosses Toba Samosir Regency also has a high water discharge and heavy currents, local tour guides in this field are needed. The interaction between tourists with the natural physical condition of the river can be said to be high because the activities carried out depending on the level of river stability. In addition, equipment that supports the level of security in the region is still deficient. So river tourism activities in the Porsea-Balige area, Toba Samosir regency, can be categorized as adventure tourism. However, several other tourist attractions, such as Indah Walle Waterfall and Porsea Bridge, lack adventure value and challenges.

Asahan Watershed Area: Parapat Area, Simalungun Regency

Referring to Table 5 known cluster of adventure activities in the Parapat Area, Simalungun Regency, has a value of 4. This score is due to recreational river tourism activities with deficient skill levels, such as the tourist attractions of Jambura Indah Waterfall and Lake Toba Resort. The interaction of tourists with the physical condition of nature in this region is also shallow because it does not require special equipment to carry out tourist activities at the Lake Toba Resort. In addition, the existing local tour guides only tell the history and uniqueness of Lake Toba. Therefore, Parapat Area, Simalungun Regency, can not be categorized as having adventure tourism activities.

Ecotourism Activity Analysis

To review the ecotourism activities of the Asahan River based on four parameters, namely *education benefit*, *social culture benefit*, *conservation benefit*, *local participation* is given an assessment with a scale of 1 - 5 as presented in Tabel 6 as follows:

Table 6. Ecotourism Activity Assessment

Area	Education Benefit	Social Culture Benefit	Conservation Benefit	Local People Participation	Total
Kisaran – Tanjung Balai, Asahan	4	4	5	4	17
Porsea Balige, Toba Samosir	4	4	5	4	17
Parapat, Simalungun	4	4	5	4	17

Source: research data, 2021

Asahan Watershed Area: Kisaran-Tanjung Balai Area, Asahan Regency

Based on table 6, the *ecotourism* activity cluster in the Area of Kisaran-Tanjung Balai, Asahan Regency, has a value of 17. The tourist attraction of the river in this area has the potential to provide educational value knowledge about the ecosystem of the natural environment of forests, hills, river coasts, and plantations in the Asahan watershed area, including flora and fauna habitats, as well as the use of the function of the land managed by local communities as a source of livelihood and lifestyle of the community that has the dominant characteristics of Malay Asahan and Malay tribes. Coal. For the value of conservation of the function of the land - the land also has an educational potential for tourists, where local communities play an active role in preserving and utilizing environmentally friendly.

Asahan Watershed Area: Porsea – Balige Area, Toba Samosir Regency

Based on table 6, the ecotourism activity cluster in Porsea - Balige Area, Toba Samosir Regency, has a value of 17. This score is based on the potential of *ecotourism* in this region has a high value where the community's

attention to maintaining and preserving the natural environment of forests, shrubs, and mixed plantations is a priority. The value of education for tourists also has a high value because tourists can move in the natural environment, socio-culture, and community involvement in managing the tourist attractions contained in this region has a uniqueness and special character. Utilization of Asahan Watershed as a source of hydropower and rafting tourism activities, waterfalls, and typical Batak Toba culture thick as a pattern of social life and livelihood systems in agricultural businesses can provide tourists with high educational value.

Asahan Watershed Area: Parapat Area, Simalungun Regency

Based on table 5, the ecotourism activity cluster in Parapat Area, Simalungun Regency, has a value of 17. This score is due to the potential of ecotourism in this region, although the use of the Asahan Watershed as a special character is not dominant. However, because of its strategic location bordering Lake Toba as a tourist entrance with the character of lake resort activity, this provides high educational value also for tourists, especially knowledge of Lake Toba as the largest lake in Indonesia which becomes a Unesco Geopark, the history and function of Lake Toba for local, regional, national and international communities. The socio-cultural value felt by tourists is also obtained because most people in this region are dominated by the Batak Simalungun tribe, who have different socio-cultural life patterns. In addition, the involvement of local communities in managing and utilizing this area both for tourism and non-tourism interests is very high by participating actively as accommodation managers, restaurants, travel agents, rental boat owners, as well as workers in other tourism businesses and tour guides have also tried to maintain the environmental sustainability of lakes, rivers, forests and mixed plantations as their source of livelihood.

Analysis of Indigenous Tourism Activities

In reviewing the activities of indigenous asahan river tourism based on four parameters, namely social culture uniqueness, local wisdom conservation, and local people participants, the interaction pattern is assessed with a scale of 1 - 5 as presented in table 7 as follows:

Table 7. Assessment of Indigenous Tourism Activities

Area	Social Culture Uniqness	Local Wisdom Conservation	Local People Participants	Interaction Patterns	Total
Kisaran – Tanjung Balai Asahan	5	4	5	4	18
Porsea Balige, Samosir	5	4	5	4	18
Parapat, Simalungun	5	4	5	4	18

Source: research data, 2021

Asahan Watershed Area: Kisaran-Tanjung Balai Area, Asahan Regency

Referring to Table 7, the cluster of indigenous tourism activities in the Kisaran-Tanjung Balai Area, Asahan Regency, has a value of 18. Based on the socio-cultural uniqueness of the people in this region, this score has uniqueness dominated by the Asahan Malay Tribe, which is the naturalness of the mix of Acehese and Marga Simargolang and Batubara Malay tribes that are descendants of the mixed Batak Toba, Batak Simalungun and Angkola Mandailing. Both tribes arise from the history of Asahan as the forerunner of the Sultanate of Asahan, which began from the journey of the Sultan of Aceh, "Sultan Iskandar Muda," to Johor and Malacca, who had rested in the upstream area of the river which was later named Asahan and met with King Simargolang and married the king's daughter. The marriage gave birth to a son named Abdul Jalil, who has crowned Sultan of Asahan I in 1630 and assisted by grandfathers in coal and other small kingdoms by the sultanate government. The Dutch and Japanese held the Sultanate of Asahan I - XI government. In 1946 Asahan Regency was inaugurated with the Regent of Asahan. Based on the history of Asahan until now, local wisdom (local wisdom) Asahan Malay tribe and Malay Batubara still maintain their respective customs and traditions.

Asahan Malay tribe adheres to the maternal lineage (Matrilineal), while the Coal Malay Tribe adheres to the male lineage (Patrilineal), and both tribes adhere to Islam with culture-outlined descendants. Another

characteristic is seen in villages with models of high-ground stilt houses facing the sun and erected following the river's flow or the beach. Each village has a means of worship in Mosque or Surau and is led by a grandfather or handler. Although predominantly Muslim, one tradition is still held firmly as ancestral heritage, especially for coal Malays who live on the coast and away from urban areas. It is, namely, the tradition of Puako as a belief in supernatural forces to cure diseases, prevent disasters, and others through the worship ceremony of Puako (jinn people who are friendly to Malays). The Malay Asahan tribe adheres to Kisik Kisik, a tradition of treatment through the spirit, because it does not heal after going through the path of medical treatment and healers. This Kisik-Kisik tradition can be done independently or together, accompanied by a seesaw ritual (ceremony with chicken eggs and plants rubbed on sick people) and Manyonggots (ceremonies carrying wages in the form of yellow glutinous in a rectangular container).

The involvement of local communities that is typical in tourism in this region is the tradition of making coal Songkets with distinctive motifs in the base of dark green and dark blue as tourists' souvenirs. In addition, they help tourists as local tour guides and become workers in the business of accommodation, restaurants, and travel agents. The interaction pattern between the community and tourists is highly rated because of the unique and true patterns of life and culture, making tourists more careful and tend to have social interactions with them.

Asahan Watershed Area: Porsea – Balige Area, Toba Samosir Regency

Table 7 shows that the cluster of indigenous *tourism* activities in the Porsea-Balige area, Toba Samosir regency has a value of 18. This score is based on the socio-cultural character of the community dominated by the Batak Toba Tribe, which is the result of the acculturation of Batak culture with Indian culture has a distinctive uniqueness, among others, Tortor customs, heritage division system, the position of wives according to Batak heritage law, marriage and kinship system, traditional bones excavation ceremony (Mangongkal holi), Gondang Naposo Party, Marhori-hori wall. In addition, in maintaining the value of local wisdom, the Batak Toba community still adheres to traditional knowledge in the form of Dampol Siburuk, Dampol Tongosan, Parhalaan (forecasting through days, dates, and months), Naniura (cooking that is cooked without cooking), Si Sarang Udan Parnalis (rain charmer), Sibaso (smart person in the field of medicine, fortune-telling, spirit intermediary). Traditional technologies that are still maintained today include the architecture of Batak House, Solu (wooden canoe), Huddon Tano (clay pot), the manufacture of traditional musical instruments, Tampi crafts, Baskets, and Ampang, and weaving Ulos as cloth and Songket (shawl).

The art that became typical of the Toba Batak tribe, such as Dideng-dideng, Batak Opera, Carving Wood (Manggorga, Mangaontik), sculpting stones, and folk singing music Uning-Uningan is also still preserved and done in the season of performances or cultural festivals. Including folk games such as Marsitekka (Engklek), Marhutessa (puzzle), Marultop-Bambu, and others. Traditional sports include Marjalengkat (enggrang), Solu, and Mossak (martial arts). Other historical and cultural relics that can be used as a cultural heritage tourist attraction in this region include Batu Basiha, HKBP Balige Old Church, Tugu D.I Panjaitan Monument, Balerong Balige Traditional Market, Parmalim Huta Tinggi Laguboti Ritual Market, Matogu Promise Stone Tomb, Mual raja Sisingamangaraja XII, Rumah Si Piso Somalim, Batu Raja Unggul Tomb 2 Siahaan, Tomb of Sonak Malela Monument (Baling Dragon Monument) and Tomb of King Sisingamangaraja XII.

The level of involvement of local people in cultural tourism in this region is very high, considering the typical Batak Toba culture to be the main tourist attraction visiting the Porsea-Balige area, Toba Samosir regency. Forms of community involvement as local tour guides, managers, and workers in tourism businesses include accommodation, restaurants, travel agents, souvenir shops, and tourist attractions. The pattern of interaction between tourists and local communities is highly valued because the local community in the region is open to the presence and visit of tourists, although sometimes still experiencing obstacles in the communication of language use and behavior of the Batak Toba Tribe.

Asahan Watershed Area: Parapat Area, Simalungun Regency

Based on table 7, the cluster of indigenous tourism activities in the Parapat Area, Simalungun Regency, has a value of 18. This score is based on the socio-cultural character of the local community, which the Batak Simalungun Tribe, a combination of Batak Toba and Batak Karo tribes with thick customs, dominates. One of them that becomes unique is the Tortor kinship system which has an important role in community life related to spiritual and social life. Tortor is also one of the Batak cultural identities believed to have high values and norms in running a traditional ceremony. One is Tortor Tukkot Malehat, which accompanies the traditional Mamagari Huta (performed by people who have not embraced religion). After the community adheres to most religions, namely Islam and Christianity, in this region, Tortor Tukkot Malehat is no longer used and transformed into dances and entertainment performances. Tortor's kinship system is believed because most Simalungun people have not adhered to religion, and there are still those who adhere to the Parbegu system (worship idols) or believe in the spirits of ancestors, sacred trees, sacred places, and Parsinumbahan (places of worship).

The value of local wisdom towards Batak cultural identity for the Simalungun community still believes in Tortor as a kinship system for non-religious and Tortor as a dance (entertainment) for people who have embraced Islam and Christianity. The interaction pattern between tourists and local people in the Parapat area, Simalungun Regency, has a high value and is friendly to all tourists and immigrants as workers and entrepreneurs in tourism.

Analysis of the Asahan River Tourism Cluster

Based on the results of the analysis of adventure tourism activities (Table 5), ecotourism (Table 6), and indigenous tourism (Table 7), formulated river tourism clusters in three areas of asahan watershed potential tourism can be classified as in table 8. Asahan Watershed Area in The Range Area – Tanjung Balai, Asahan Regency, and Porsea – Balige Area has the potential for river tourism based on adventure tourism, ecotourism, and indigenous tourism activities. While the Parapat Area, Simalungun Regency, has the potential for river tourism based on ecotourism and indigenous tourism activities.

Table 8. Analysis of Asahan River Tourism Cluster

Area	Adventure Tourism	Ecotourism	Indigenous Tourism
Kisaran – Tanjung Balai Kab. Asahan	15	17	18
Porsea Balige, Kab Toba Samosir	15	17	18
Parapat, Kab. Simalungun	4	17	18

Source: research data, 2021

CONCLUSION

In developing Asahan River tourism activities in support of KSPN Lake Toba, it is advisable to create a model of developing river tourism activities based on resources-based tourism, including adventure tourism, ecotourism, and indigenous tourism activities increasing the supply-side capacity of tourist destinations per watershed area. Asahan has the potential to travel in (1) The Area of Kisaran-Tanjung Balai, Asahan Regency; (2) Porsea-Balige Area, Samosir Regency; (3) Parapat Area, Simalungun Regency. The direction of the development of Asahan River tourism activities in the three areas is as follows:

1. Asahan River Tourism Activity Development Model in Kisaran-Tanjung Balai Area, Asahan Regency
 - a. Focus: Integrated development of indigenous tourism, ecotourism, and adventure tourism activities with the theme "Eco-Adventure Tourism Sungai Melayu Asahan and Melayu Batubara."
 - b. Development of river tourism activities

Exposing the heritage values of the Sultanate of Asahan and socio-cultural Asahan Malays and Coal Malays through the development of river tourism activities in the downstream region of the river, such as coastal and coastal tourism activities of Tanjung Balai supported by fishing village tourism activities

that display the cultural character and socio-economic life patterns of local communities, and in the central downstream region such as coastal activities of the Kisaran river supported by rural and coastal tourism activities. Forestry blends with boating, canoeing, Batak fishing (*Neolissochilus sumatranus*), hill trekking, cross country, cycling, observing flora and fauna, camping, dance and singing arts workshops, and crafting coal Songkets.

- c. Increase in Destination Side Supply Capacity
Develop traditional rural and rural homestay accommodation facilities, Muslim and non-Muslim restaurants, souvenir shops, tourist information centers including certified local tour guides, supporting facilities for beach tourism activities, coastal and river shores, as well as telecommunication infrastructure, lighting, sewage treatment, then access roads, walkways, as well as parking and local transportation, directional interpretation boards. In addition, they are improving the quality of existing tourist attractions, such as improvements in tourist facilities and services, tourist information through online marketing, and tourism extension training to local communities and existing tourism workforces.
2. Asahan River Tourism Activity Development Model in Porsea-Balige Area, Toba Samosir Regency.
 - a. Focus: Integrated development of indigenous tourism, ecotourism, and adventure tourism activities with the theme "Sigura-Gura Special Interest River Tourism."
 - b. Development of River Tourism Activities
Mengusung theme of Sigura-Gura Special Interest River Tourism in Porsea-Balige Area, Toba Samosir Regency, the development of river tourism activities is directed to activities with a "hard level" level has challenges in interacting with natural physical conditions and involvement with socio-cultural and socio-economic activities of local communities more intensively. Special interest activities under these conditions include white water rafting, hill cliff climbing, outdoor survival activities, exploring rivers and forests, studying socio-cultural life patterns of the Batak Toba people, forest environmental research, water resources, archaeology, architecture, and culture.
 - c. Increase in Destination Side Supply Capacity
Adopting the principle of special interest tourism, the development of supply-side components is directed at road accessibility and transportation. As well as, tourism facilities and infrastructure that are low density means that they have limitations in quantity but can ensure the level of safety and security of tourists in tourist activities, both in terms of regulation and completeness of equipment and equipment—service to first aid in accidents and maintain the value of originality (authenticity) and naturalism atmosphere.
 3. Asahan River Tourism Activity Development Model in Parapat Area, Simalungun Regency.
 - a. Focus: Integrated development of indigenous tourism and ecotourism with the theme "Recreation of Ecotourism of Asahan River and Local Wisdom of Batak Simalungun Tribe."
 - b. Development of River Tourism Activities
With the theme of the development of Asahan River Ecotourism Recreation and Local Wisdom of The Batak Simalungun Tribe, the development of river tourism activities that utilize the Asahan Watershed in the Parapat Area will tend to be "soft level" in the form of activities that tourists can do without having to have special skills such as picnics on the river coast and waterfalls, Batak food culinary tours, Traditional souvenir shopping tours as well as souvenirs typical of Batak, watching Tortor art performances, cultural recreation by building Batak Simalungun Cultural Park, natural recreation of Lake Toba by building natural scenery photography spots from the entrance of Parapat Lake Toba, Batak fishing activities (*Neolissochilus sumatranus*), on the Asahan River and Lake Toba, asahan River outbound recreation, Study the culture and history of the Batak Simalungun tribe.
 - c. Increase in Destination Side Supply Capacity
Improving the quality and quantity of river tourism attractions in the Parapat Area requires the arrangement of tourist facilities and the construction of cultural recreation tourism attractions, river natural recreation tourism, culinary tourism, and shopping tours by highlighting the values of the local

wisdom Batak Simalungun Tribe. Tourist facilities such as accommodations and existing restaurants must improve hygiene and sanitation, tourism information services, accommodation services, and restaurants.

Further research suggested follow-up from modeling the development of Asahan River tourism activities in support of KSPN Lake Toba. It reviews the market component (demand-side capacity) to get market segmentation, target the number of tourists who are the target segment, and position Asahan river tourist destinations in creating branding and images that will support marketing strategies increasing the number of visits. Tourists to KSPN Lake Toba generally, especially those in the Asahan River tourist area.

ACKNOWLEDGEMENT

The research team thanked the financing support of STP Bandung and the Ministry of Tourism and Creative Economy of the Republic of Indonesia for this study. Awards are also given to all parties who have provided data support for this research.

REFERENCES

- Ananda, A., Fujianti, A. R., Nugraha, A. S., & Susanto, E. (2021). Movie Induced Tourism in the Young Millennials Tourist Segment. *Journal of Tourism Sustainability (JTOS)*, 1, 9–15. <https://doi.org/10.35313/jtos.v1i1.1>
- Budisetyorini, B., Adisudharma, D., Prawira, M. F. A., Salam, D. A., Wulandari, W., & Susanto, E. (2021). Pengembangan Pariwisata Bertema Eco-Forest dan Sungai di Bumi Perkemahan Tangsi Jaya. *Jurnal Kepariwisata : Destinasi, Hospitalitas Dan Perjalanan*, 5, 75–88. <https://doi.org/10.34013/jk.v5i1.220>
- Calgaro, E., Dominey-Howes, D., & ... (2014). Application of the Destination Sustainability Framework to explore the drivers of vulnerability and resilience in Thailand following the 2004 Indian Ocean Tsunami. ... of *Sustainable Tourism*. <https://doi.org/10.1080/09669582.2013.826231>
- Espiner, S., Orchiston, C., & Higham, J. (2017). Resilience and sustainability: A complementary relationship? Towards a practical conceptual model for the sustainability–resilience nexus in tourism. *Journal of Sustainable Tourism*. <https://doi.org/10.1080/09669582.2017.1281929>
- Hall, C. M. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism*, 27(7), 1044–1060. <https://doi.org/10.1080/09669582.2018.1560456>
- Mill, R. C. (2008). Resorts: Management and Operation. In *Resorts: management and operation* (Issue Ed. 3). John Wiley & Sons, Inc.
- Mousazade, H., Akbarzadeh, F., Branch, L., Mousazadeh, H., & Branch, G. (2019). *Investigating the Impacts of River Tourism on the Quality of Life of Citizens (Case study: Gohar rood River of Rasht City, Iran)*. 6(2), 69–80.
- Niñerola, A., -Victòria Sánchez-Rebull, M., & -Beatriz Hernández-Lara, A. (2019). Tourism Research on Sustainability: A Bibliometric Analysis. *Sustainability*, 11(5), 1–17. <https://doi.org/10.3390/su11051377>
- Nurlaila, S. S., Susanto, E., & Afgani, K. F. (2021). The Identification of Potential Rafting Tourism Products in Citepok Village, Sumedang Regency , West Java Province. *Journal of Tourism Sustainability (JTOS)*, 1(1), 32–42. <https://doi.org/10.35313/jtos.v1i1.3>
- Peraturan Pemerintah RI Nomor 50 Tahun 2011 Tentang Rencana Induk Pembangunan Kepariwisata Nasional Tahun 2010-2025, Pub. L. No. PP No. 50 Tahun 2011, 1 (2011).
- Prawira, M. F. A., & Budisetyorini, B. (2021). Fishing Tourism Business Planning Strategy To Increase People's Income in Lancang Island, Kepulauan Seribu. *Journal of Tourism Sustainability*, 1(1), 1–8. <https://doi.org/10.35313/jtos.v1i1.2>
- Prawira, M. F. A., Budisetyorini, B., Adisudharma, D., & Salam, D. A. (2021). Model Pengembangan Aktivitas Wisata di Kawasan Sungai Cilimbung Kabupaten Garut. *Jurnal Pengembangan Wiraswasta*, 23(2), 77.

<https://doi.org/10.33370/jpw.v23i2.573>

Prideaux, B., & Cooper, M. (2009). River Tourism. In B. Prideaux & M. Cooper (Eds.), *Angewandte Chemie International Edition*, 6(11), 951–952. CABI.