TOBA LAKE TOURISM OBSERVATORY
Solid Waste

Technical INSTO Webinar on Solid Waste
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31 sub-district in 7 regencies around Lake. Due to COVID19 restrictions, monitoring focused on 4 KTA sub-districts with 10 issues.

- Simanindo
- Pangururan
- Girsang Sipangan Bolon
- Balige

- The biggest Volcano-Tectonic Quarter Caldera in the world
- The largest lake in Southeast Asia.
- Part of The Five Indonesia Super-priority Tourist Destinations
Monitoring Activities
2021

FEB
- Participated the Seminar on Spatial Planning of North Sumatra Province

APR
- Book Publishing

JUN
- Attend 2021 Global Virtual INSTO Meeting

AUG
- Participated the Training of Auditor for Village Sustainable Tourism Certification

OCT
- Auditor for sustainable tourism village “tourist village assessment”

DEC

JAN
- Determination of the Indicators, Issue, & Area for monitoring 2021

MAR
- Attended INSTO Informational Session on COVID-19

MAY

JUL

SEP
- Organized FGD multi-stakeholder on tourism 2021

NOV
- Regular monitoring
Tourism in Lake Toba

• During this pandemic, the number of tourist visits to North Sumatra in April 2020 declined from the previous few months. In March, arrivals amounted to 7,800 visits, 20,000 visits in February, and January 24,000 visits.

• The highest foreign holidays in North Sumatra came from Singapore and Malaysia, which reached 50% to 60%. This is because people from that country are still hesitant to travel, thus causing a decrease in the number of tourists from North Sumatra, especially Lake Toba (https://regional.kontan.co.id/news/kunjungan-wisatawan-dilistrik-didominasi-tourist-local-to-year-end?page=all, 2020)

• Local governments and Micro, Small and Medium Enterprises (MSMEs) are trying to survive tourists can visit Lake Toba using health protocols. The tourism industry is expected to rise, one of which is by improving the image of Lake Toba tourist destinations in the eyes of the public, both domestic and foreign
Solid Waste

- Solid waste refers to the range of garbage materials—arising from animal and human activities—that are discarded as unwanted and useless. Solid waste is generated from industrial, residential, and commercial activities.

- Waste can be categorized based on material, such as plastic, paper, glass, metal, and organic waste. Categorization may also be based on hazard potential, including radioactive, flammable, infectious, toxic, or non-toxic wastes.
Monitoring in Lake Toba is carried out in 4 sub-districts, namely Simanindo sub-district, Girsang Sipangan Bolon sub-district, Pangururan sub-district, and Balige sub-district.

There are 4 baseline indicators:

- Volume of waste generated by destinations
- Number of business units in the tourism sector that implement waste type segregation
- Number of business units in the tourism sector that recycle waste
- Tourist perceptions of the image of the cleanliness of the destination
  - Location is very clean
  - The streets are very clean
  - No trash scattered in public places
  - Easy to find trash cans
Available Data

Primary Data
- Related Research from USU
- Related Data from Government, NGOs and other Institutions

Secondary Data
- Field Observation
- Depth Interviews
  - Questioner
Process of Analysis

**SECONDARY DATA**
- Related Research from USU
- Related Data from Government, NGOs and other Institutions

**PRIMARY DATA**
- Field Observation
- Depth Interviews
- Questioner

**DATA ANALYSIS AND EVALUATION**

**MONITORING METHODOLOGY DEVELOPMENT**

**RECOMMENDATIONS FOR STAKEHOLDERS**

**IDENTIFICATION OF MONITORING ISSUES AND INDICATORS**
- Local Satisfaction
- Destination Economic Benefits
- Employment
- Tourism Seasonality
- Energy Management
- Water Management
- Wastewater Management
- Solid Waste Management
- Governance
- Community Participation in Tourism
### Solid Waste
#### Current Situation

<table>
<thead>
<tr>
<th>Destination</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMANINDO</td>
<td>1534.2</td>
<td>2224.5</td>
<td>2914.8</td>
</tr>
<tr>
<td>GIRSANG SIPANGAN BOLON</td>
<td>281.1</td>
<td>287.7</td>
<td>294.3</td>
</tr>
<tr>
<td>PANGURURAN</td>
<td>0.81</td>
<td>0.81</td>
<td>1.63</td>
</tr>
<tr>
<td>BALIGE</td>
<td>1</td>
<td>1</td>
<td>1.5</td>
</tr>
</tbody>
</table>

- In Simanindo, the volume of waste generated by destinations has increased every year. It increased by 45% in 2019 and 31.03% in 2020.
- While in other sub-districts, there is no increase in volume addition.
The number of business units in the tourism sector that implements waste type segregation also did not increase from 2019 to 2020.
Balige sub-district is the only sub-district that has a business unit in the tourism sector that recycles waste with a percentage increase in 2019 of 42.85% (from 7 business units to 10 business units) while in 2020 there is no increase or remains as many as 10 business units.
• Tourist perceptions of the cleanliness image of destinations in the Simanindo sub-district have decreased by 7.47% in 2021.

• While in the Balige sub-district it has increased by 1.77%. This is because solid waste management in Balige sub-district applies several processing systems including: open dumping, composting, and recycling. This causes an increase in cleanliness in tourist destinations which leads to increased tourist satisfaction.
Solid Waste Transport Process

2 units of garbage truck
(8 truck attendants)

1 unit of motor rickshaw
(2 motor rickshaw attendants)

Garbage is taken from each destination

1 time in 2 days

TPA [Landfills]
SOLID WASTE MANAGEMENT PROCEDURES

1. Solid waste is not selected
2. Solid waste management is not well coordinated
3. Solid waste is burned
4. Solid waste disposed into the lake
5. Solid waste disposed to final disposal

EFFECT

1. The amount of solid waste in the final disposal is a lot
2. The final disposal concept is only moving the problems from the source to the final disposal
3. If the final disposal is full, then it will disturb the community, tourism and investment activities.

SOLID WASTE REDUCTION KPI UP TO 70%
Findings

- Monitoring conducted on the issue solid waste management found that conventional system is used in the lake’s KTA and non-KTA.

- Periodically, domestic and industrial solid waste are carried by garbage trucks without prior sorting activities to classify the waste’s types.

- The existing final disposal landfill uses open-dumping system, which is terribly bad for the environment as the waste is left unprocessed.

- To remove the waste, the community practices open-burning and garbage-dumping to the small creeks.

- Availability of TPS3R trash bins.

- There is a waste bank program that has continued from 2019 until now and will continue.

- The existence of training and counseling on waste management from the government to the community.
• Three students from the State University of Medan created a garbage hauling device that floats in the waters of Lake Toba through the Student Creativity Program-Kansa Cipta (PKM-KC) in 2019 and was funded by the Ministry of Research, Technology and Higher Education entitled Prototype Toba Lake Trash Cleaners using Trash Skimmers Technology.

• The Clean Indonesia Movement Program in Toba Regency, North Sumatra, succeeded in influencing a population of 3,000 community members and schools to change to integrated waste management. The assessment was carried out four months after the training was given to 50 teachers from 25 schools in the area in December 2020.

• Lisda Sundari, Chair of Lentera Anak, explained that the involvement of 25 schools in Toba is also an effort to educate waste handling behavior from an early age. Changing the mindset and behavior of the younger generation in handling waste through habituation in schools is considered very important, especially the composition of the millennial generation and the younger generation which makes up more than 41 percent of the total population in Indonesia.
Challenges

- Lack of specific tourism data in toward the environmental aspect
- In-digitalized data
- The limitation of mobility for the research team
THANK YOU
TERIMAKASIH

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