

Life cycle perspective on tourism management: the case of Borobudur village economic chamber

Zulfahmi Ilman Hindami¹, Hayati Sari Hasibuan^{2,*}, and Ellyna Chairani³

¹Student Magister Program Environmental Science, Indonesia University, Jakarta, Indonesia

²School of Environmental Science, Indonesia University, Jakarta, Indonesia

³Indonesia Life Cycle Assessment Network, Jakarta, Indonesia

Abstract. Borobudur Temple is one of the world cultural heritage owned by the Indonesian nation. The existence of this Borobudur temple has an impact for the surrounding community, one of which led to new tourist destinations. This study aims to analyze the tourism potential of the area around Borobudur Temple in the concept of sustainable tourism. This research was conducted by using life cycle assessment perspective on tourism activity in the district level, including: the primary inputs (resources), process and outputs. The data collected from one of the Village Economic Chambers in the districts surrounding the Borobudur Temple regions, named Borobudur VEC. The Borobudur VEC has provided two products and services: tempe mendoan and lodging services. Those two business products have different characteristics. The tempe mendoan business process requires more raw material than the lodging service business process. Based on the result, emission tempe mendoan production is more than from lodging services.

1 Introduction

Sustainability in the tourism sector is very important, utilizing current tourism resources without damaging the ecological process, and taking into account current and future economic and social impacts. The tourism sector is a strategic sector and important in national development, tourism can encourage and enhance economic, social and cultural development. The development of tourism has been carried out by the government and the private sector to increase the number of regional tourists to other regions. Tourist visits will lead to social interaction between residents around tourist attractions and stimulate the response of the surrounding community in accordance with their ability to adapt well in the fields of economy, society and their culture. Tourism with all aspects of life in it will bring together two or more different cultures, namely the tourist culture and the culture of the people around the tourist attraction. Different

* Corresponding author: hayati.hasibuan@ui.ac.id

cultures and touching each other will have an impact and have an impact on aspects of life in the community around tourism objects [1].

According to RI Law number 10 of 2009 concerning tourism, explains tourism resources and capital are optimally through implementation of tourism activities for increase national income, expand and equalize business and employment opportunities [2].

The UNWTO World Tourism Organization states that tourism is one of the driving forces of global economic growth. At present the tourism sector is able to provide 1 in 11 jobs worldwide, by providing access to decent employment opportunities in the tourism sector. The tourism sector contributes to the creation of the field in 2030, namely designing and implementing policies to promote sustainable tourism that creates jobs and promotes local culture and products [3]. Sustainable development is perceived as an alternative development that bridges the developmentalist or environmentalist paradigm. Sustainable development requires a process of integration between economics and ecology through the formulation of paradigms and policy directions that focus on partnerships and participation of development actors in managing resources [4].

There are 10 priority tourism destinations, including Borobudur in Central Java, Lake Toba destination in North Sumatra, Mandalika in West Nusa Tenggara, Bromo Tengger Semeru in East Java, Labuhan Bajo East Nusa Tenggara, Tanjung Kelayang Bangka and Belitung, Islands Thousand in DKI Jakarta, Tanjung Lesung in West Java, Morotai in North Maluku and Wakatobi in Southeast Sulawesi [5]. At present Borobudur Temple is one of 10 priority tourism destinations. Borobudur is one of several cultural products in Indonesia. As a cultural product, its existence is a special attraction because it stores historical values, sources of science, and technology. Viewed from the perspective of tourism economics, Borobudur is a cultural asset that is economically beneficial [6].

The development of Borobudur Temple tourism activities provides an attraction for villagers around Borobudur Temple working in the tourism sector. However, the income earned is not sufficient for their needs, thus demanding that they find a side job [7]. On the other hand there is the potential of villages that can be used as tourism objects, so as to improve the economy of the village community. BPS Magelang Regency stated that in 2014 there were 3 leather industries, 39 wood industries, 60 woven industries, 365 pottery industries, 3 woven fabric industries, and 241 food and beverage industries in 20 villages in Borobudur Subdistrict. In 2017 the Ministry of BUMN in collaboration with several BUMN facilitated the community around Borobudur Temple by creating a Village Economic Center (Balkondes). Balkondes aims to be a means of developing the community's economy and preserving local culture in the area [8].

2 Method

2.1 Research approach

This research uses the Life Cycle Assesment (LCA) Perspective and Life Cycle Cost (LCC) Perspective approaches on the one Village's Economic Chamber (in bahasa Indonesia called Balai Ekonomi Pedesaan or abbreviated as Balkondes). This VEC named by Borobudur, is the biggest one among the 15 others VEC. The LCA and LCC are applied to analyse the two of VEC's products : (1) hotel/accomodation services and

(2) cullinary product. The analysis of LCA on both of products will assess : the input-process-output.

The Steps of LCA and LCC Perspectives are including : (1) set the boundary system of (a) hotel services and (b) mendoan cullinary product ; (2) identify the inputs of each system of (a) hotel services and (b) mendoan cullinary product ; (3) identify the process in each system of (a) hotel services and (b) mendoan cullinary product ; and (4) identify the output in each system of (a) hotel services and (b) mendoan cullinary product,

2.2 Study area

This research located on one Village's Economic Chamber (in bahasa Indonesia called Balai Ekonomi Pedesaan or abbreviated as Balkondes). This VEC named by Borobudur, is the biggest one among the 15 others VEC in Magelang City, Yogyakarta Province. This Borobudur VEC located at Borobudur Village, Borobudur Subdistrict. From this site, the view is Borobudur temple and the favorite one, seeing the beauty of the sunrise and sunset.

3 Results and discussion

The Borobudur VEC has two main products or services : cullinary (mendoan tempe) and hotel or home stay services. Both of products/services from the Borobudur VEC are the subject been identified to evaluate how environmentally friendly, economically efficient, and sustainability of the products or services.

3.1 Cullinary Tempe Mendoan Business Process

The Cullinary Tempe Mendoan is the main product of cullinary that been provided by Borobudur VEC. Tempeh/Tempe is made by a natural culturing and controlled fermentation process that binds soybeans into a cake form.

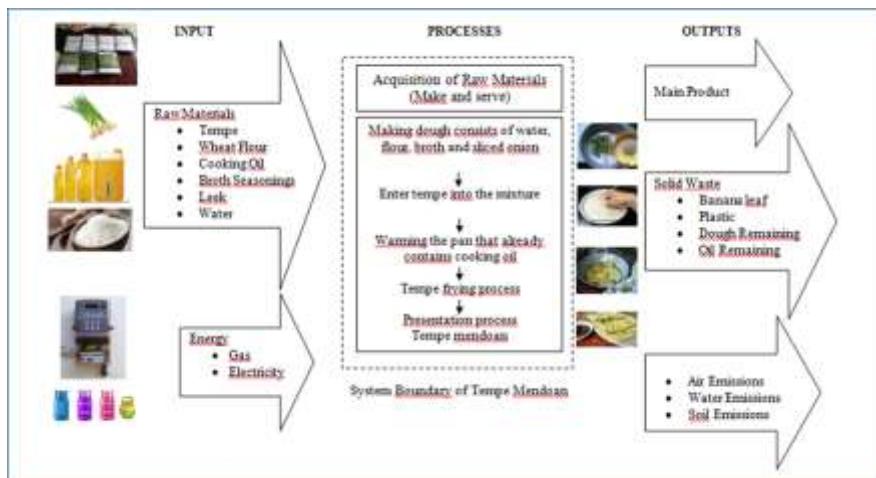


Fig. 1. Tempe mendoan bussines process.

This process of making Tempe Mendoan need some inputs, such as followings : raw materials (tempe, wheat flour, cooking oil, brooth seasonings, leek, and water) and

energy (gas and electricity). The tempe mendoan business process at the Borobudur Village Economic Center included the process of making dough, adding tempe to the dough, heating the pan which contained cooking oil, the tempe frying process and the process of serving tempe mendoan. The output of the tempe mendoan business process at the Borobudur Village Economic Center includes the main products, solid waste, air emissions, water emissions and soil emissions. The costs of inputs showed in table 1.

Table 1. Costs of inputs.

Inputs	Stocks per month	Units	Costs/month (IDR)
Tempe	180	Block	900,000
Cooking Oil	9.6	Litter	59,000
Wheat flour	10	kilo gram	86,000
brooth seasonings	0.5	Pack	30,000
Leek	0.5	kilo gram	8,000
Total expenditure per month			1,083,000

As shown in table 1 the total cost of inputs for making Tempe Mendoan as IDR 1,083,000 per month. The cost of tempe is 83 percent of the total cost. While the rest of inputs is only 17 percent of the total cost.

Table 2. Operational cost.

Inputs	Stocks per month	Units	Costs/month (IDR)
Staff	1	Person	150,000
Electricity	1	pack per month	50,000
gas (5 kilo grams)	2	per month	140,000
total expenditure per month			340,000

There is at least a need for tempe about 180 beams tempeh per month, where each 6 beams can produce 20 tempe mendoan. So it can be concluded that there are 600 tempe mendoan sold at a price of Rp. 2,500 per piece, then Balkondes Borobudur gets a turnover of Rp. 1,500,000 per month.

3.2 Lodging Service Business Process

The other business provided by the Borobudur's VEC is the lodging service, hotel. This hotel has 7 single rooms, 4 couple rooms, and 12 family rooms. Each room is equipped with AC, TV, water heater, wardrobe, dressing table, table lamp, tea set and chairs.



Fig. 2. Hotel accomodation of Borobudur VEC.

Table 3. Asset of lodge

Asset Type	Units	Total	Rate per night (IDR)
Single Room	Room	7	450,000
Couple Room	Room	4	400,000
Family Room	Room	12	500,000

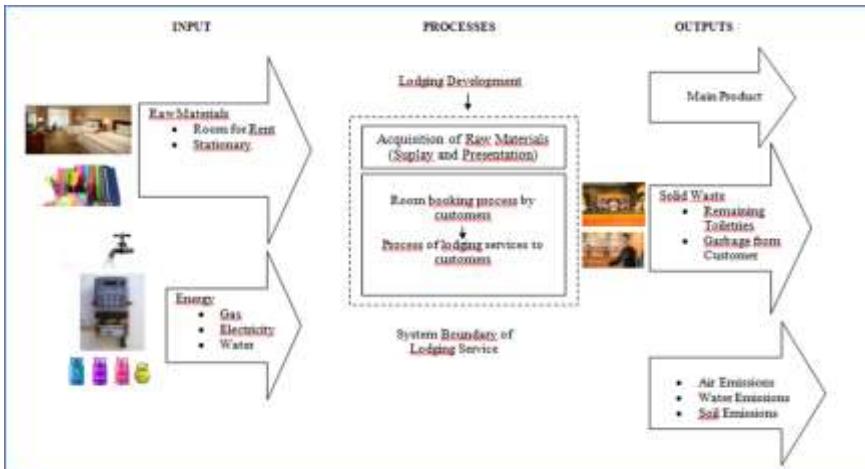


Fig. 3. Lodging service bussines process.

The process of lodging services at the Borobudur Village Economic Center includes the provision of raw materials, including the availability of ready-made rooms and stationary. While the energy used includes gas, electricity and water. The process of the lodging service business process at the Borobudur Village Economic Center includes the process of booking rooms by customers and the process of lodging services to customers. Output of lodging service business process at the Borobudur Village Economic Center includes the main products, solid waste, air emissions, water emissions and soil emissions. On average there are 30 rooms rented every week by customers who are mostly domestic tourists with an average stay of 1 night. So it can be concluded if 120 rooms are rented for one month with a rate of Rp. 450,000 per room per night, then Balkondes Borobudur gets a turnover of Rp. 54,000,000 per month.

4 Conclusion

The Borobudur VEC has two life cycle process in two product business: tempe mendoan and lodging services. Those two business products have different characteristics. The tempe mendoan business process requires more raw material than the lodging service business process. The tempe mendoan business process is impromptu, in contrast to the lodging service business process carried out long before there are consumers who rent. Raw material in the tempe mendoan process business is not durable, it is different from raw material in lodging services, where the preparation of rooms can last long even though there is no room tenant. The cost of capital required

in the business model of lodging services is greater than that of the tempe mendoan business process. Both of business process cause air, soil and water emissions, but in this paper the emissions not yet counted. Profit generated by the lodging service business is greater than the tempe mendoan business.

Acknowledgements

The author would like to give appreciation to the School of Environmental Science Indonesia University, and grant for final task and publication number 2576/UN2.R3.1/HKP.05.00/2018 from Directorate Research and Community Services Universitas Indonesia for providing necessary support and fund for author's research and paper publication.

References

1. A.O. Yoeti, *Perencanaan dan Pengembangan Pariwisata* (PT Pradnya Paramitha, Jakarta, 2008)
2. Undang-undang Republik Indonesia nomor 10 Tahun 2009 Tentang Kepariwisataan.
3. United Nations Environment Programme and United Nations World Tourism Organization, *Making Tourism More Sustainable: A Guide for Policy Makers* (UNEP/UNWTO, 2005)
4. M. Baiquni, *Integrasi Ekonomi dan Ekologi dari Mimpi Menjadi Aksi. dalam Wacana III*, 12 (2002)
5. Pembangunan Destinasi Pariwisata Prioritas 2016-2019. Kementerian Pariwisata. Kemenpar.go.id. (2017)
6. Islam, Muh Ariffudin, Dewa Ruci **8**, 3 (2013)
7. Biantoro, Ma'arif, Jurnal Teknik PWK **3**, 4 (2014)
8. Kementerian BUMN.Jokowi Apresiasi Pembangunan Balkondes. Kementerian BUMN.<http://bumn.go.id/berita/1-Jokowi-Apresiasi-Pembangunan-Balkondes>