

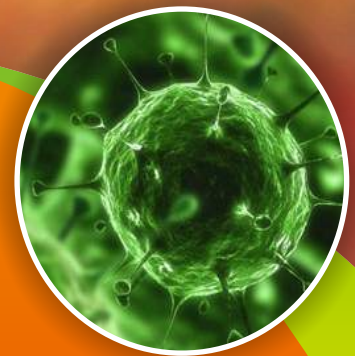
Proceeding



International Conference

The 186th Symposium on Sustainable Humanosphere

Kihada Hall, Uji Campus, Kyoto University
Kyoto, 8-10 October 2011



Sustainable Future for Human Security

Organized by



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The Second International Conference on Sustainable Future for Human Security (Sustain'2011)

The 186th Symposium on Sustainable Humanosphere

**Kihada Hall - Uji Campus, Kyoto University
8-10 October, 2011**

Organized by

**Indonesian Student Association (ISA) Kyoto
Indonesian Student Association (ISA) Kansai**

Co-hosted by

**Global Center of Excellence on Energy Science, Kyoto University
Center for Southeast Asian Studies, Kyoto University
Global Center of Excellence on Human Security Engineering, Kyoto University
Research Institute of Sustainable Humanosphere, Kyoto University**



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e-mail: secretariat@sustain-kyoto.com

website: www.sustain-kyoto.com

INTRODUCTION

We are living in an important historical point. The rise of Asia had brought waves of optimism across Asian nations. This brings many opportunities to shape a sustainable future for human security in Asia. However, there are still many problems and challenges lie in various aspects and levels, from community to governance, from politics to economy, and from global to local.

The shift of pendulum generated some consequences; some of them lead to natural resources depletion, shortage of carbon based energy, shortage of food and water, as well as over-utilization of natural and human resources. The future economic and technology heavily rely on either the proper utilization of Asian natural resources, or well-prepared human resources.

To create breakthroughs for ensuring the prosperous future of the Asian people, deep understanding of problems and the dynamics shaping them is at paramount importance. Thus, students and scholars are at the forefront of this process.

Learning from the advanced West is important. However, it is clear that “one size fits all” is not always applicable. Asia, with its unique and vibrant culture, history, and socio-political contexts, offers various different kinds of wisdom and solutions. It depends on us to answer this intellectual challenge. Thus, we believe that building a network of students and scholars working on various aspects and levels of challenges for the future of Asia with various academic backgrounds is an important step to find creative and fresh answers.

However, scholarly understanding of challenges and their creative answers to problems should not stop at books, journals, and conferences. They should inspire policies and actions, both by the government and civil society. We should create bridges to bring ideas to realities.

Therefore, to answer above some mentioned issues, an international annual conference 2010 was carried out by the Indonesian Student Association (ISA) in Kyoto, Japan. Regarding related issues and its effort to continue provide international gathering, this year ISA continue and organize this event entitled ‘The 2nd International Conference on Sustainable Future for Human Security’ (SUSTAIN 2011).

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THE POSSIBILITY OF COMMUNITY-BASED CULTURAL LANDSCAPE MANAGEMENT THROUGH RURAL TOURISM IN BOROBUDUR, INDONESIA

Titin Fatimah*

Doctoral student, Dept. of Architecture, Graduate School of Engineering, Kyoto University

*Corresponding author: fp.titin@archi.kyoto-u.ac.jp or titin.fatimah@gmail.com

ABSTRACT

This paper aims to clarify the possibility of community-based cultural landscape management through rural tourism activities in villages surrounding Borobudur heritage site. First, it explains the actual conditions and current policy planning of the site's cultural landscape management. We find that conservation policies are present but insufficient to be implemented by the villagers. This is unfortunate because the cultural landscape around the temple should be conserved in an applicable and sustainable way. Despite the lack of strong policy, community initiatives on rural tourism have emerged and prevailed in many villages during the recent years. These activities utilize the villages' potentials to attract tourists and thus encourage villagers to maintain the potentials in their respective villages. The villagers' efforts can be considered as beneficial to the conservation of landscape elements. Therefore, the paper shows that community-based rural tourism activities are a possible approach of cultural landscape management.

Keywords: cultural landscape, management, community-based, rural tourism, Borobudur Sub-district

INTRODUCTION

Research background

The concept of cultural landscape had emerged since the early of 20th century and attracted the attention of landscape experts and practitioners since the early 1990s[1]. Cultural landscape is the combination of both nature and culture as its elements[2]. It is characterized as the balanced relation between ecological system and human influence[3]. Therefore, managing cultural landscapes should involve managing both natural resources (ecological features) as well as cultural resources (human activities[4]. Many cultural landscapes are situated in countryside or rural areas hence cultural landscape conservation efforts nowadays take numerous forms such as through the introduction of rural tourism. 'Pure' rural tourism is tourism that is located in rural areas, is rural in scale, character and function, reflecting the differing and 'complex pattern of rural environment, economy, history and location'[5]. Sustainable rural tourism should aim to sustain the culture and characters of host communities as well as the landscape and ecological habitats[6]. In other words, tourism is seen as an agent of rural economic re-generation and as a way of valorizing conservation[7].

In the case of Borobudur, several rural tourism initiatives have emerged in the last few years. Those initiatives have spread awareness among Borobudur residents of the importance of conserving Borobudur Temple surrounding villages. Our previous study shows that a number of citizen organizations were established and some community initiatives were taken place in Borobudur during the year of 2003-2005[8]. Some parties such as local guides and local NPOs, for example, took tourists to the villages in order to reduce the overcrowding problem that started to emerge during that time. One important step was the establishment of Candirejo Village as the 'Community-based Ecotourism Village' in 2003[9]. In the more recent years, noticeable development includes the spread of various village tours around the temple carried out by local guides.

Research objectives

This research focuses on how rural tourism activities conducted by local people could take part in cultural landscape conservation in Borobudur where official policies are neither sufficient nor effective. This paper aims to clarify the possibility of cultural landscape management based on the spreading of community-based rural tourism and its policy planning.

Research Methodology

Firstly, field investigation was conducted to know the actual conditions of cultural landscapes in Borobudur. Secondly, literature review and interviews were conducted to document the current official policy of Borobudur conservation system and the problems thereof. Thirdly, additional field investigation and interviews were conducted to explore how rural tourism activities carried out by local people. Finally, analysis was made to assess the possibility of community-based cultural landscape management through rural tourism activities.

BOROBUDUR TEMPLE AND ITS SURROUNDING CULTURAL LANDSCAPES

The current conditions of Borobudur cultural landscapes

Borobudur Temple, the world's biggest Buddhist temple built around 7th – 8th Century, is surrounded by the vast rural landscapes of *Kedu* Plain. The temple was officially opened for public in 1983, and inscribed in the World Heritage List in 1991. It is now a major tourist destination in Indonesia. The temple is located in Borobudur Sub-district, Magelang, Central Java which administratively comprises of 20 villages. Agriculture still dominates the livelihood of the sub-district with around 40% of the residents work as farmers. Situated in the centre of *Kedu* Plain, Borobudur Temple is surrounded by Mount *Merbabu* and *Merapi* to the northeast, Mount *Sindoro* and *Sumbing* to the northwest, and *Menoreh* Hills to the south. This area is a highly fertile plateau which earns the nickname of 'the garden of Java' [10]. In addition, the combination between the landscape and the temple offers beautiful panorama such shown in Figure 2.

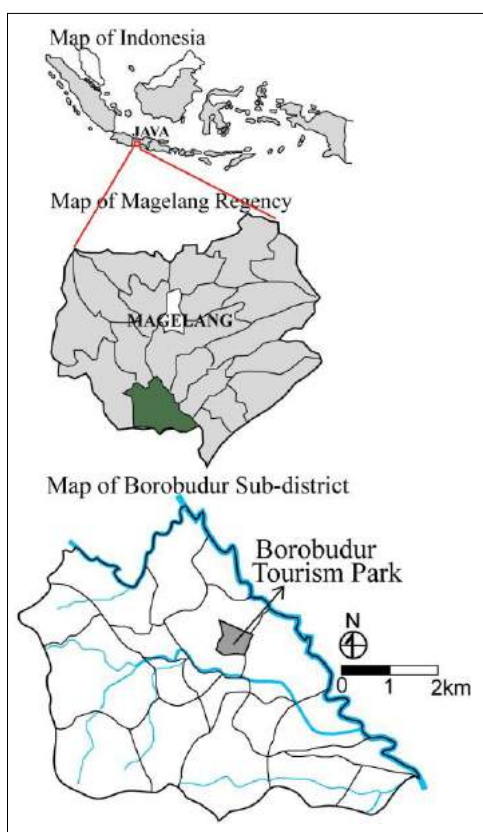


Figure 1. Site context
(source: drawn by author)



Figure 2. Rice fields near Borobudur Temple
(source: Larisa, 2002)

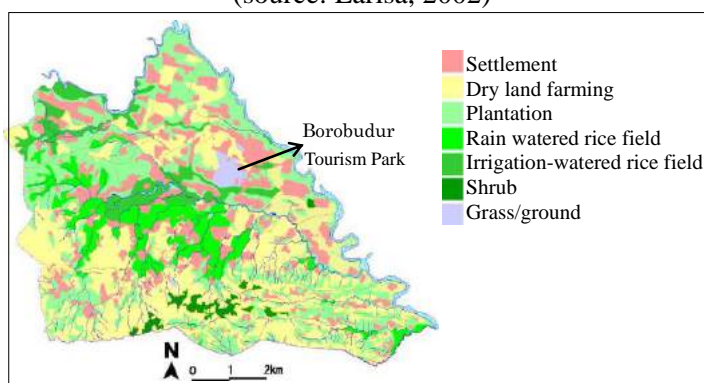


Figure 3. Borobudur Sub-district land use map
(Adapted from: Bakosurtanal, 2003)

Previous research shows that the landscape around Borobudur Temple has significantly changed over the centuries. In 20.000 BC, the area around Borobudur Temple was a lake which shrunk and disappeared due to the eruptions of Mount Merapi[11]. Today residential areas occupy most of the temple's proximate area with only a few rice fields still exist on the south side. Recently, there is serious concern over the cultural landscape's degrading quality due to the increasing problems of physical, visual and cultural pollutions. For example, the deforestation of Menoreh Hills has

undermined the temple's surrounding environmental quality.

Current policies on Borobudur cultural landscapes conservation

Borobudur Temple and its surrounding beautiful landscape are an inseparable unity. This has become an important consideration in designing Borobudur conservation policy. In 1979, *JICA* compiled a master plan which divided Borobudur area into 5 management zones. The Indonesian government strengthened this plan and elevated its status by issuing *Keputusan Presiden* (Presidential Decree, hereafter PD) no. 1/1992 (see Figure 4). Current management of Borobudur Temple and its surrounding area based on the PD can be described as the followings: (a) zone 1 is managed by Borobudur Conservation Office, under the Ministry of Culture and Tourism, (b) zone 2 is managed by *PT. TWCBPRB*¹, (c) zone 3, 4, 5 are under the management of local government of *Magelang* Regency. In reality, only zone 1 and 2 were clearly regulated and managed while zone 3, 4 and 5 are still untouched. Neither *JICA* master plan nor the under PD no. 1/1992 provides clear rules and regulations on how to manage the cultural landscape of the surrounding rural areas. Therefore, it is difficult for the local people to participate in or implement the policy for conserving the landscapes.

In recent years, government is compiling a new policy of managing Borobudur Temple and its surrounding area called *KSN (Kawasan Strategis Nasional=National Strategic Area)*². The policy only covers zone 1-3, therefore the planning and management for the broader area is still needed.

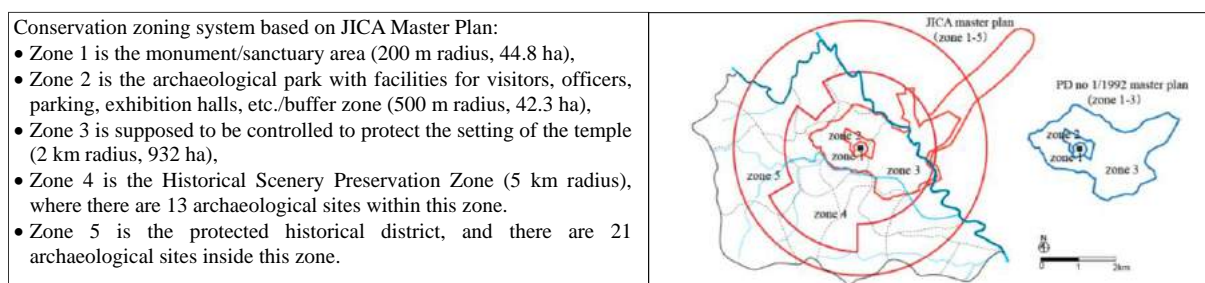


Figure 4. Borobudur conservation zoning system
(Adapted from JICA, 1979 & PD no 1/1992)

COMMUNITY-BASED RURAL TOURISM IN BOROBUDUR

The beginning of rural tourism initiatives

The economic crisis and political instability that hit Indonesia since late 1997 had caused serious impacts on the life of villagers around Borobudur Temple. Economic difficulty had forced these villagers to come to Borobudur Tourism Park to seek livelihood by becoming street vendors in the park. The increasing number of these vendors had crowded the park and made it inconvenient for the visiting tourists. This condition urged UNESCO-ICOMOS³ to send a monitoring mission in 2003 to assess the problems and recommend possible solutions.

The condition had also urged several citizen organizations to take action to solve the problem. *JAKER* (*Jaringan Kerja Kepariwisata Borobudur ; Borobudur Tourism Network*), one of those citizen organizations, started to compile a database containing village potentials in Borobudur. *OVOP* (*One Village One Production*) was one of their ideas to develop the villages. They also tried to promote this idea to the tourist by offering village visit tour packages.

Village tour was firstly started individually by local guides and lodge owners in the 1990s. For example, a guide from Candirejo took tourists to his house and did sightseeing around his village⁴. Another place that was frequently visited is *Klipoh Hamlet* in *Karanganyar Village*, a traditional hamlet known for its pottery industry. In 2000, local guides and *andong* drivers agreed to organize these tours better. They agreed to standardize tour packages, routes, prices, and so forth.

Village tours in Borobudur Sub-district

Currently, of 20 villages in Borobudur Sub-district, there are 10 villages which are involved in rural tourism activities. The most noticeable of such activities is village tour in which some guided tours started to visit villages surrounding Borobudur Temple. This type of tour had started since the 1990s but gained substantial momentum after the 2003 *PSJJ* problem⁵. Typically, the tours are organized in the form of *andong* (horse-drawn passenger cart) rides in which tourists are guided to explore the villages through several predetermined routes created by local guides (see Figure 5).

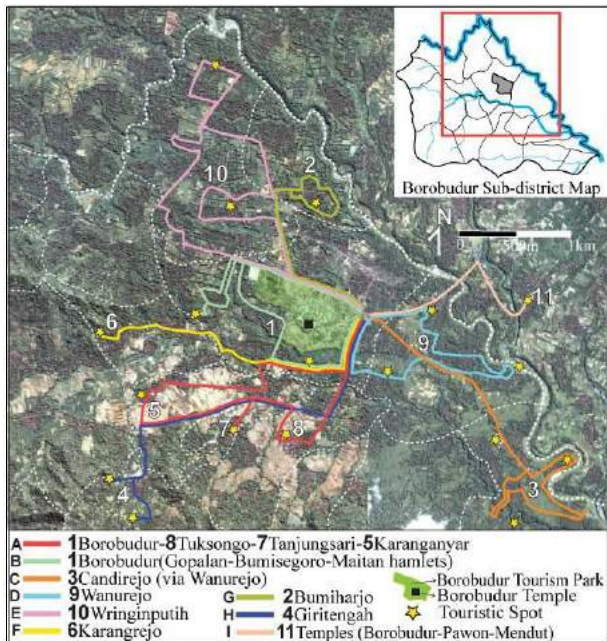


Figure 5. Route of village tour (source: field survey, 2009)

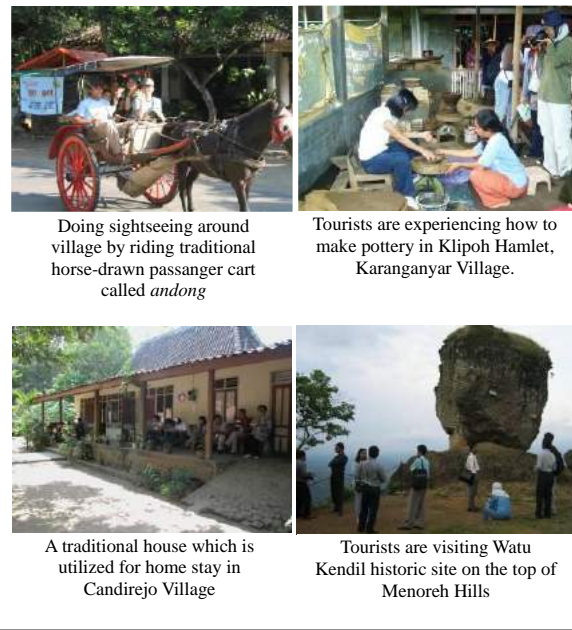


Figure 6. Rural tourism activities (source: field survey, 2004-2010)

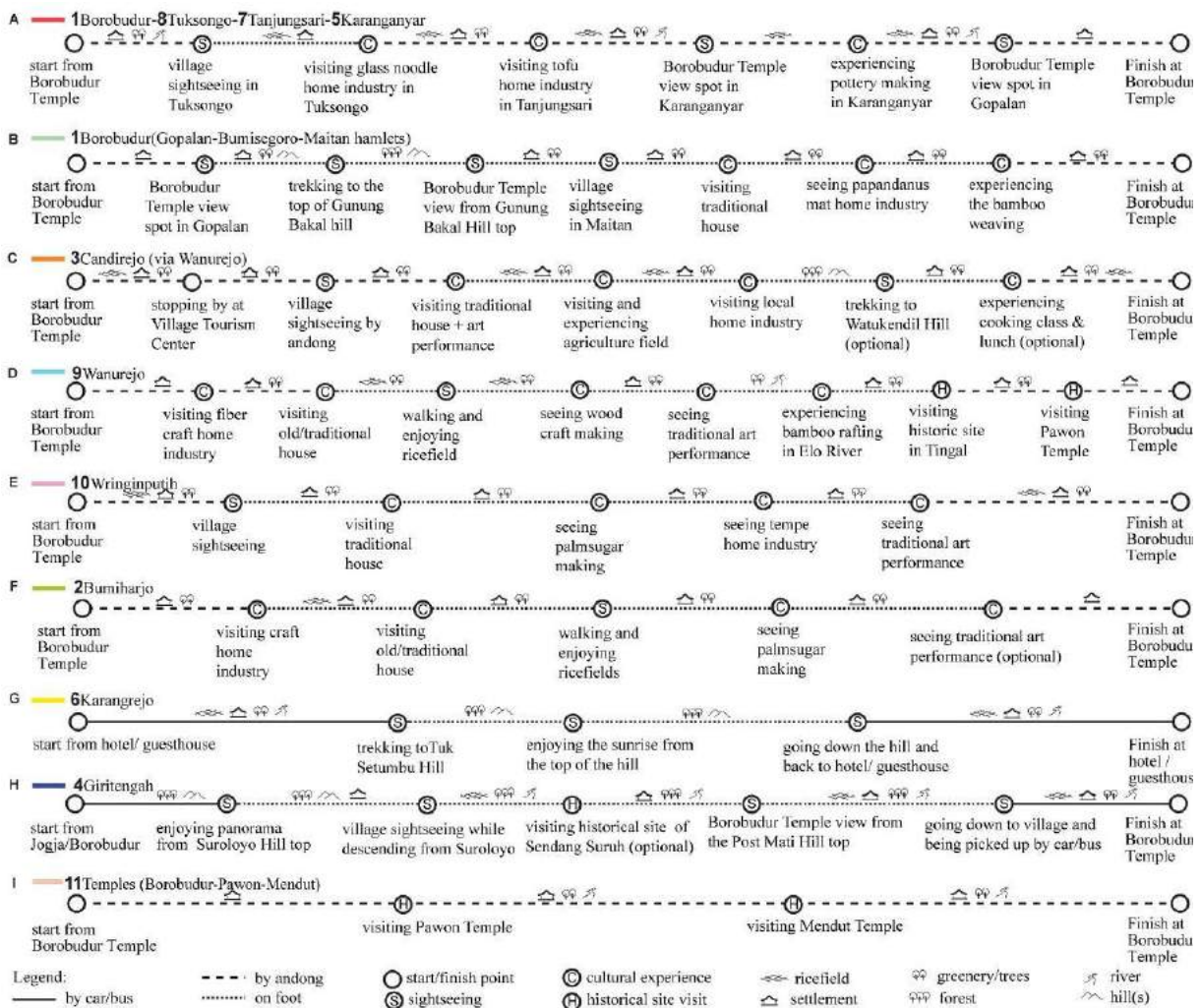


Figure 7. Detailed itinerary of each village (source: Author's field survey, 2009)

Figure 7 shows that during the village tours tourists could enjoy rural atmosphere e.g. see, visit or try pottery making, traditional art performance, traditional houses, etc. The routes illustrated in Figure 7 are the standard and popular routes. However, they are flexible and can be changed depending on situation, time availability and the tourists' interests.

These routes can be classified into 3 types: 1) 'single village routes' in which tourists visit and explore one village only (Route B~H); 2) 'multiple village route' in which tourists visit and explore several villages (Route A); and 3) 'temple visit route' specially designed for tourists who want to visit Borobudur, Mendut and Pawon temples in a single trip (Route I). In each tour, the tour guides coordinates with the local people of the visited village(s) beforehand especially when the tour itinerary needs preparation (such as scheduling an art performance, pottery-making experience, a lunch course, and so forth).

THE POSSIBILITY OF COMMUNITY-BASED CULTURAL LANDSCAPE MANAGEMENT THROUGH RURAL TOURISM

The contents of village tour activity

Tourists come to Borobudur villages to enjoy the villages' attractiveness which is different from the attraction in Borobudur Temple and Park. The villages' attractiveness can be classified into two main categories: natural resources and cultural resources. Natural resources include rural scenery landscapes with its biodiversity while cultural resources include the villagers' traditional customs, culture, and so on. Both elements are important for effective rural tourism. Rural tour packages should show both the villages' landscape beauty as well as provide interesting activities to attract tourists.

Based on to the detailed itinerary and tourists activities during village tour as shown in Figure 7, the villages' attractiveness and the way they are utilized for rural tourism activities are classified in Table 1. The table indicates that both natural and cultural resources are the villages' main attractions to the tourists. Hence, they are important part of rural tourism activities. Detailed description and analysis of each village are presented in the next section

Table 1. Village attractiveness and its utilization for rural tourism
(source: Author's field survey, 2009)

| Village's attractiveness (that attract tourists) | | How to utilize for rural tourism activities |
|---|--|---|
| Natural Resources | Village natural view | sightseeing |
| | Village traditional atmosphere | sightseeing |
| | View to Borobudur Temple | sightseeing |
| | Agriculture | farming lesson |
| | Topography | trekking |
| | Traditional foods and fruits | culinary |
| Cultural Resources | Historic places | ritual, pilgrim tour |
| | Traditional music and art performances | performances |
| | Traditional houses | sightseeing, home stay |
| | Local craft making/home industry | craft making |
| | Traditional cuisine | culinary, cooking lesson |

Case study: Candirejo Village

Candirejo is chosen as a case study to know how village community initiated rural tourism and especially how to they manage village potentials and resources related to environmental and landscape conservation. This village is regarded as the most successful in managing their tourism activities and becomes a good motivation for other villages to carry out similar initiatives. Candirejo Village was officially inaugurated as 'Community-based Ecotourism Village' in 2003, but actually had started the initial stage since the early 1980s.

Figure 8 shows the maps of Candirejo Village land use, village tour routes and visited places. Topographically, Candirejo consists of the hilly area of Menoreh Hills range at the south side and the flat area between Sileng River and Progo River. The village land use is dominated by dry farmland and plantation. The maps thus show the kind of places and attractions offered to tourists.

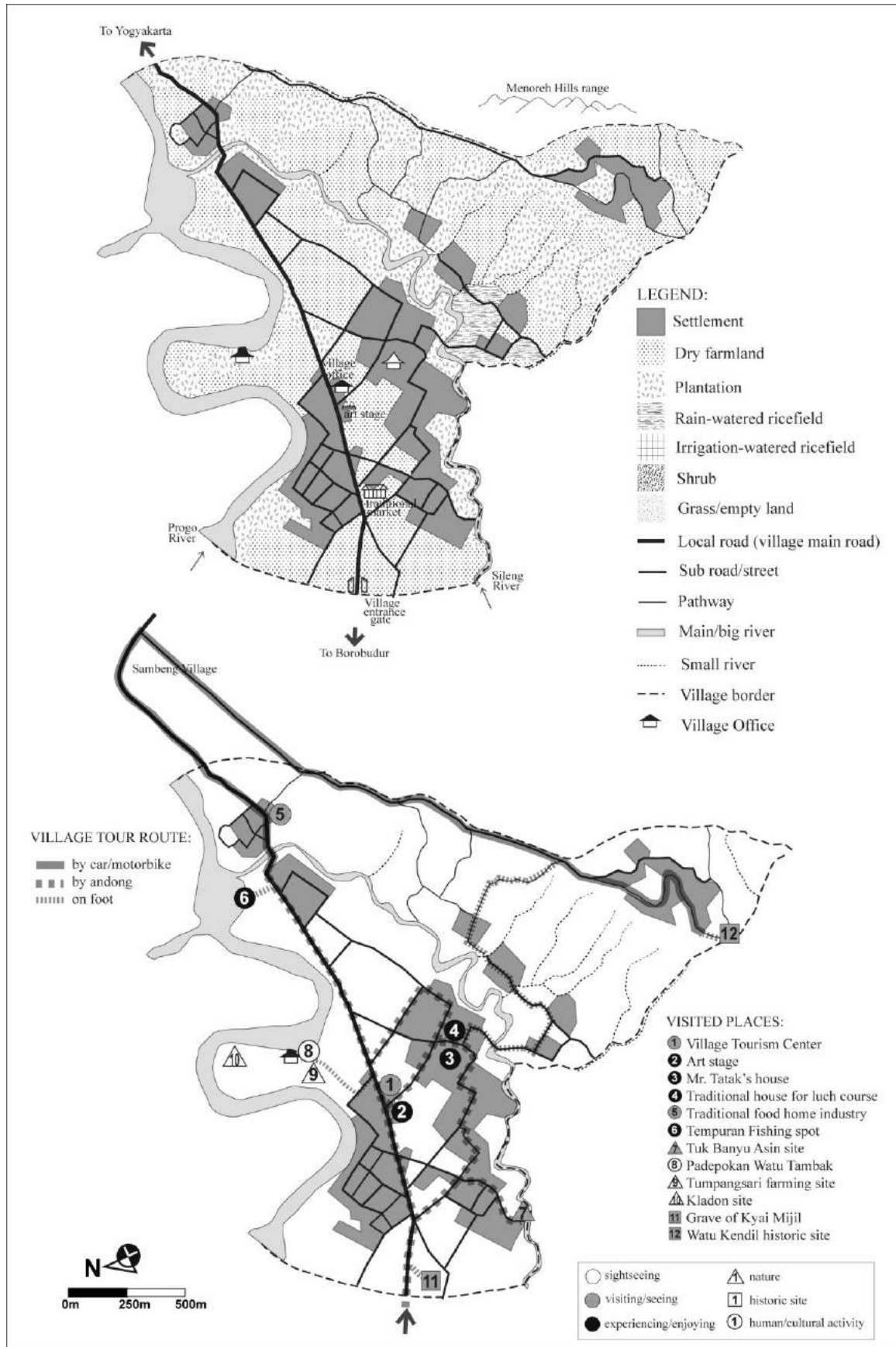












Figure 8. Land use map and detailed village tour activity in Candirejo Village (source: Author's field survey, 2009)

Figure 8 also shows that although the village tours focus on visiting the flat area, they actually cover almost all of the village area. It thus implies that maintaining the entire village environment and landscape is necessary. Related to this point, Table 2 shows some villagers activities intended to maintain the quality of their environment surrounding landscape.

Table 2. Rural tourism activities related to landscape conservation in Candirejo Village
(source: Author's field survey, 2009)

| No | Name of place | Photo | Description |
|----|--------------------------------------|---|--|
| 1 | Village entrance gate |  | In early 2008, a new village entrance gate was built to replace the old small gate. The new one was constructed from <i>batu candi</i> (temple stones) as it reflects Borobudur Temple in shape and the name of their village Candirejo (' <i>candi</i> ' means 'temple'). This gate has become an important landmark of the village. |
| 2 | Green fences |  | Villagers managed to grow ' <i>teh-tehan</i> ' plantation for fences along pathways inside the settlement and around their house yard. Some of these green fences replaced the previous concrete fences. Therefore, they offer a more natural and beautiful rural atmosphere and landscape. |
| 3 | Rambutan plantation |  | In 1980s, Candirejo village community started to improve the village environment through a garden utilization program. At that time, many bamboo and other trees wildly grow inside the settlement, making the environment dirty and gloomy. Those plants were replaced by useful crops such as <i>rambutan</i> trees. Since then, villagers usually plant <i>rambutan</i> trees in their garden/house yard. |
| 4 | Pathways inside settlement |  | Following the garden utilization program, Candirejo village community tried to improve the whole village improvement, such as by renovated pathways inside the village. They use stones, paving block, and sometimes asphalt as the material. Now, the settlement environment is much cleaner and tidier than before. |
| 5 | Pathway to Watu Kendil historic site |  | Villagers cover the pathways leading to Watu Kendil historic site on the top of Menoreh Hill using natural stones instead of asphalt or cement concrete. They also plant Pandanus and other greeneries along the pathway side. This gives the road a more natural nuance. |
| 6 | Bamboo bridge |  | There is a bamboo bridge for crossing the Sileng River. This bridge is also often visited by tourists during village tour in Candirejo Village. Until now, villagers still keep the original bridge with its uniqueness, and do not replace it with new materials. They appreciate the locality of the bamboo bridge. |
| 7 | Reuse of empty traditional house |  | In Mangundadi Hamlet, there is an empty traditional house because the occupants moved to another place. The empty house is then moved to a place near the village secretary's house and finally utilized as a model house for visitors. Sometimes it is also used as a venue for lunch course for visiting tourists who reserved the place. |
| 8 | Pandanus plantation |  | Supported by Patra-Pala Foundation ⁶ , villagers planted Pandanus along the pathways/road to Watu Kendil historic site. Pandanus leaves are usually used for handicraft such as mat, bag, hat, and so forth. Pandanus has large strong prop roots which are good for landslide prevention. |
| 9 | Agroforestry |  | Agroforestry is developed on the hill areas where villagers plant big trees while intercrop (e.g. orange, chili, cassava) farming is adopted below the hill. This system has been applied since 1977-1979. It is aimed are to detain erosion and to strengthen the soil structure. |
| 10 | Tumpangsari |  | <i>Tumpangsari</i> (mixed cultivation/intercropping) is an agriculture method in which various crops are planted inside one area. For instance, farmers plant chili as the main crop, and then they also grow eggplant, bean cassava and papaya. This method gives farmer to have various crops in different times during one planting season. |

Description shown in Table 2 explains the village community's effort to improve their village attractiveness as well as environment condition. It also shows that some of these activities were done according to villagers' consideration on how to create better village environment. This consideration is quite important as it indicates the villagers' awareness about the importance of surrounding environment conservation. Their awareness also could be actualized in daily life activities such as farming, regularly cleaning the house yard, growing and keeping greeneries in their environment, conserving the tradition and locality, and so forth. Daily practices of keeping the village environment as well as its potentials and attractiveness could be regarded as important actions to sustain their surrounding landscape, especially in the area where the policy and regulation is not sufficient.

As mentioned in the previous section about the current policies on Borobudur conservation, neither JICA nor PD no. 1/1992 provides clear rules and regulations in how to manage the cultural landscape of Borobudur surrounding rural areas. This condition urged many parties to re-think and attempt alternative ways of managing Borobudur Temple including the surrounding cultural landscapes. Therefore, community involvement is necessary for the alternative cultural landscape management, especially for conserving the areas beyond Zone 3. For instance, such community involvement could be realized through rural tourism activities.

Rural tourism is a new type of tourism in the form of exploring Borobudur village potentials and locality. This type of tourism is different from the so-far typical tourist activities of visiting only Borobudur Temple and park. Rural tourism can be regarded as an alternative type of tourism conducted by villagers to promote their village attractiveness. This activity encourages villagers to maintain their village's resources and environment for tourism purposes as well as conservation purposes. Therefore, rural tourism activity gives the possibility for villagers to conserve their surrounding cultural landscape

CONCLUSIONS

From analysis of this study, we can conclude that:

- 1) Borobudur world heritage site and its surrounding area is an inseparable unity, and categorized as a cultural landscape.
- 2) There are two main policies on managing the Borobudur Temple and its surrounding area: JICA Master Plan and PD no. 1/1992. However, both policies are insufficient for wide-scale Borobudur cultural landscape management.
- 3) From the field survey, there existed 9 village tour routes in which 10 villages around Borobudur Temple were involved. There are 3 types of tours –single village visits, multiple village visit, and temple visit-. These tours were coordinated by local tourist guides and residents of the visited villages.
- 4) The villages' potentials and attractiveness are elements of cultural landscape and are important to be maintained to realize sustainable cultural landscape conservation.
- 5) Candirejo Village as a case study shows that village community's efforts in rural tourism initiatives are related to their rural environment and landscape conservation. Some activities were done according to villagers' consideration which indicates their awareness of the importance of conserving their surrounding environment and landscape.
- 6) Rural tourism activity is an alternative type of tourism which is different with the so-far typical tourism. It focuses on exploring the village potentials and locality. Such continuous activity, in long term, gives the possibility for community-based cultural landscape management.

SUGGESTIONS

From the findings, there are some suggestions regarding the possibility of integrating rural tourism activities into cultural landscape conservation.

Landscape conservation is best when it is adaptive and continual –a long term process, not a one-short project[12]. Community-based rural tourism takes part in the effort of cultural landscape conservation as it is embedded in the villagers' ordinary activities. Village potentials can be nourished and maintained through villagers' daily activities such as farming, keeping their environment clean, growing and keeping greeneries, practicing traditional customs, etc. Those village potentials are elements of cultural landscape and therefore maintaining village resources and potentials is

contributing to the effort of cultural landscape conservation.

Figure 9 shows the scheme of rural tourism initiatives and its relation with cultural landscape conservation. If rural tourism initiative scheme proposed in this figure could be managed successfully, in long term it can play important role in cultural landscape conservation.

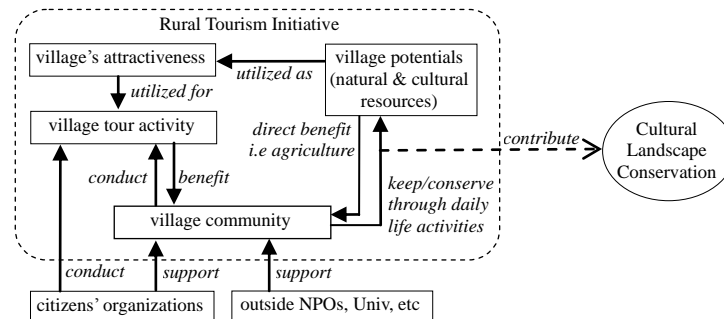


Figure 9. Scheme of community-based management for cultural landscape through tourism

ACKNOWLEDGMENT

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References

- [1] Droste, von B, Plachter, H and Rossler, M, 1995, *Cultural Landscape of Universal Value*, Gustav Fischer, New York.
- [2] Antrop, M. : Why Landscapes of the Past are Important for the Future, *Landscape and Urban Planning*, Volume 70, Issues 1-2, 15 January 2005, Pages 21-34, 2005
- [3] Kanki, Kiyoko and Misaki, Toshihiro, 2003, From Monologue to Common Wisdom, Idea of 'Landscape Use' for Cultural Landscape Conservation in: *Managing Heritage Environment in Asia, International Symposium Proceeding, Yogyakarta, January 2003, II-1*, Indonesia
- [4] O'Donnell, Patricia M : Thirty Years of Landscape Rescue, *VIEW Magazine*, Summer 2008, pp 10-14, 2008
- [5] Lane, Bernard, 1994, What is Rural Tourism?, *Journal of Sustainable Tourism*, Vol. 2, Nos. 1&2.
- [6] Lane, Bernard, 1994, Sustainable Rural Tourism Strategies: A Tool for Development and Conservation, *Journal of Sustainable Tourism*, Vol. 2, Nos. 1&2.
- [7] Bramwell, B. (ed.), 1990, *Shades of Green: Working Towards Green Tourism in Countryside*. London: English Tourist Board.
- [8] Fatimah, Titin and Kanki, Kiyoko, 2009, A Study on Citizens' Organizations Relationship for Cultural Landscape Conservation Initiatives in Borobudur Sub-district Level, Indonesia, *Journal of the City Planning Institute of Japan* No. 44-3 pp 205-210, The City Planning Institute of Japan.
- [9] Fatimah, Titin and Kanki, Kiyoko, 2008, A Study on the Realization Process of Community Based Green Tourism in Candirejo Village, Borobudur, Indonesia, *Journal of the City Planning Institute of Japan* No. 43-3 pp 517-522, The City Planning Institute of Japan.
- [10] Taylor, Ken, 2003, Cultural Landscape as Open air Museum: Borobudur World Heritage Site and Its Setting, in *Humanities Research* Vol. 10 No. 2, 2003 pp. 5, The Australian National University.
- [11] Murwanto, H., Y. Gunnell, S. Suharsono, S. Sutikno and F. Lavigne, 2004, Borobudur monument (Java, Indonesia) stood by a natural lake: chronostratigraphic evidence and historical implications. *The Holocene*, 14 (3): 459-463.
- [12] Naveh, Z., 1995, Interactions of Landscapes and Cultures, *Landscape and Urban Planning* No. 32 (1995) 43-54.

Notes

¹ PT. TWCBPRB (PT Taman Wisata Candi Borobudur, Prambanan dan Ratu Boko) is a state-owned company set up to handle the management of the park according to the PD no. 1/1992.

² KSN is a new policy based on Government Regulation no. 26/2008. This regulation designated 75 sites in Indonesia as strategic area. Borobudur was listed as number 28 and categorized as criteria I/B/2 which refers to 'development/improvement of quality of the area'. Currently, the KSN policy for Borobudur is still on going process.

³ UNESCO: United Nations Educational, Scientific and Cultural Organization. ICOMOS: International Council on Monuments and Sites

⁴ Based on a personal interview with Taryudi, a local guide who is native of Candirejo Village, he said that he took tourists to the village to offer tourist a different atmosphere to the temple. At the first time, he took tourist to come to his house and did sightseeing around the village. The tourist was impressed; hence he initiated to continue the scheme.

⁵ Around end of 2002 - early 2003, the Provincial Government of Central Java commissioned a consultant to design a vendor management system to be operated in Borobudur Tourism Park. This plan was called PSJJ ('Pasar Seni *Jagad Jawa*' or *Jagad Jawa* Art Market). PSJJ was aimed to gather the vendors in an art/souvenir market integrated with the parking area in Zone 3. However, the plan was controversial and invited unfavorable reactions from both the local communities in Borobudur and some heritage conservation organizations. A number of protests and demonstrations took place to reject the proposal.

⁶ Patra-Pala Foundation is an NPO based in Yogyakarta which focusing on social ecology and tourism. Patra-Pala conducted a project named NRM-LCE (Natural Resources Management for Local Community Empowerment) in Borobudur supported by JICA (2001-2004). Candirejo Village was the base camp for this project and had become pilot project.