SUSTAINABLE TOURISM AND FIRE SAFETY OF ACCOMMODATION FACILITIES IN TOURISM VILLAGES

I Dewa Gede Agung Diasana Putra[1], Anak Agung Gde Agung Yana[2], Ngakan Ketut Acwin Dwijendra[3]

[1, 3]Department of Architecture, Udayana University, Jimbaran, Badung, Indonesia
[2]Department of Civil Engineering, Udayana University, Jimbaran, Badung, Indonesia
diasanaputra@unud.ac.id[1]

ABSTRACT

Since tourism has a role to generate the world economy, the concept of sustainable development in tourism activities is now getting important. One concept of sustainable development is safety in which the protection of buildings from fire hazard gets essential attention from tourists. This phenomenon gives rise to a question about the condition of fire protection elements in tourism facilities such as accommodation buildings. To what extent do tourism accommodations apply fire protection standard? By examining the setting, forms and fire protection elements in tourism accommodations in the cultural tourism village of Ubud, this study will draw on an extensive fieldwork that has documented the conditions of tourism accommodations. The building will then be assessed using a fire hazard evaluation scoring system. This will be then contextualized through interviews and broad literature reviews. A descriptive analysis of the study discusses the application of a fire protection standard in tourism accommodations. In Ubud, tourism accommodations have had little attention to fire protection. Therefore, sustainable tourism especially related to safety will face problems in the future.

Keywords: Sustainable; tourism; fire protection.

A. INTRODUCTION

As a tourism destination, tourism facilities and tourists in Bali have increased in number. Some facilities especially accommodations were built by local people in their traditional houses. Some of them are located in small roadsor alleyways. The buildings usually use woods, timbers and bamboo to express traditional style that is usually as a tourist attraction. Unfortunately, such materials are flammable. On the other hand, since tourism has a role to generate the world economy, the concept of sustainable development in tourism activities is now getting important. One concept of sustainable development is safety in which the protection for buildings from fire hazard gets more attention from tourists. This is a paradox phenomenon in which traditional materials and location make tourists get what they want, in the same time, that conditions do not safe in term of a fire safety design.

A building design is very important in a fire safety system. Inaccuracy of spatial arrangements of a building causes difficulty for residents to reach a safe area or it is difficult for fire brigades to evacuate residents or to fight a fire so that it can threaten occupants in a fire. Some important aspects in a building design to addressfire safety are an evacuation system and compartment (Cote 1994, Stollard 1994, Schultz 1985). These aspects are related to how residents are easily to reach safe areas; how the structure of a building can isolate fire and how a fire brigade can safely fight a fire and safely evacuate residents. However, since accommodation facilities in tourism village like Ubud are usually managed by local people, the facilities are not designed based on a fire safety rule, but just to accommodate the Balinese traditional architecture that usually uses flammable materials to attract tourists. Central to this paradoxical phenomenon is the discussion of fire safety issues in the use of the traditional architectural design in accommodation facilities. This paper argues that accommodation facilities do not address fire safety aspects in their design so that the aim of this paper is to investigate this paradoxical phenomenon and to explore the conflict that exists between the use of traditional architecture elements in accommodation facilities and the issues of fire safety in accommodation buildings.

The paper begins with an exploration of sustainable development and the issues of fire safety in buildings. The following section explores the condition of fire safety elements in accommodation facilities in Ubud. Finally, fire protection and building design aspects at tourism accommodation facilities are presented along with some conclusions.

B. SUSTAINABLE DEVELOPMENT AND FIRE SAFETY

The main motivation of sustainable development is to sustain human beings (Plessis 2002) that was explained in the Rio Declaration. The key concern in such development is to keep earth conditions addressing human life needs. Therefore, the development should pay attention to the carrying capacity of the earth and meet the needs of future generations (Plessis 2002: p. 5,WCED 1991). Based on this goal, sustainable development has three elements including development, needs and future generations (Blowers 1995). Development is a qualitative concept that is related to the notions of an improvement and a progress in terms of culture, social and economy. The second element is "needs." This element relates to the equality of a distribution of resources. Future generationsare the third element. The major component of this element is the principal of intergeneration equity. In this element, present generations have moral imperative to protect future generations. This component explains that present generations have not inherited the earth from their fathers but have borrowed the earth from children (Brown 1981). This means that the present and past is a cycle of life in which every generation has opportunities and responsibilities to protect the environment (Blowers 1995). This environmental protection is related to adoption of new and better ways of using materials and energy. This adoption is basic requirement of sustainability (Vallero & Brasier 2008). Therefore engineers and designers are central to the application of sustainability by applying the concept of a green architecture and engineering as a part of a sustainable design **(**Figure 1**).**

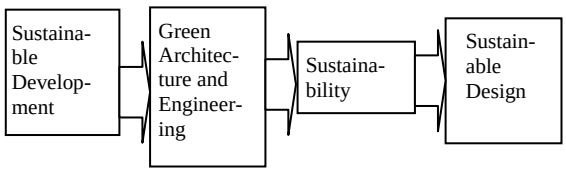

Figure 1. The diagram of sustainable development anda sustainable design
Source: Vallero & Brasier 2008

The paradigms of sustainability are now interpreted and expressed in tourism industries that have traditionally concerned on environmental and cultural sensitivity. Popular tourist destinations have begun to adopt a green design in which sustainability become more profitable and important. However, tourism industries should change their perspective of doing a business that is less risky to the natural and human environment. Therefore, the concept of sustainable development is able to be applied in sustainable tourism. This sustainable model is necessary to preserve tourism in the future, in which a general consensus of global tourists industry is to maintain and to be less harmful to the natural and human environment. Sustainability in tourism areas depends on accepting a duty to seek harmony with other people and with nature. One concept of sustainable development is that buildings should be secured by a design (KFTRA 2008). These safety and security elements are recognized as a sustainable model. This model is necessary to preserve tourism in the future, to give comfortable and safety places for tourists(KFTRA 2008). Therefore, sustainable in community tourism does not just relate to economic, socio-culture and environment but also a building design and technology. In this perspective, tourism stakeholders must take a decision to make a role, and technology may minimize the natural, social and cultural effects of tourism in communities.

C. METHODOLOGY

In order to achieve the purpose, the variety of constructions in accommodation were investigated by observing accommodation facilities in a cultural tourism village of Ubud. Arrangements and constructions of the facilities were recorded and scrutinized through visual documentations and examinations. The buildings and their architectural elements were assessed using an evaluation scoring system. Interviews were essential to contextualize fire safety concepts in architectural elements.

D. RESULTS AND DISCUSSION

1. TOURIST ACCOMODATION IN UBUD

Ubud was introduced as a tourist destination for the first time when the leader of Ubud royal families in 1925 invited a Germany painter and musician, Walter Spies, to come and stay in Ubud. At that time, Spies stayed in one pavilion of the Ubud palace before he decided to live and build a house on the outskirts of the village (Picard 1996). It was the first homestay and would be the model of tourism development in Ubud. During the period of 1925-1970, Ubud had been well known as the

center of traditional paintings, dances, music and sculptures. Tourists came to Ubud just for a one-day trip, and then went back to their hotels in Denpasar, Sanur or Kuta. In this time, Ubud just had four hotels and ten art galleries (Picard 1996).

The increase in the number of tourists in Ubud has occurred since the beginning of the 1980s (Picard 1996). This trend has stimulated people to build tourist facilities by transforming their traditional houses or using their rice fields to construct tourist activities. Many homestays, kiosks, restaurants and art galleries were built (Figure 2 and 3). The traditional paintings and art performances that were performed for God, royal families and communities, nowadays are also performed for tourists. Besides witnessing art performances and traditional paintings in many art galleries and painting studios, tourists in Ubud also want to see cultural activities in the village and traditional Balinese houses.

Figure 2. The Traditional House Transformed for Tourist Facilities in Ubud

Figure 3. Scenery of Main Streets in Ubud

Tourism accommodations in Ubud are located not only in traditional settlement but also in agricultural fields and near rivers. As a cultural tourism destination, the center of tourism activities is in the center of the village, so that way almost 61% traditional houses are transformed for tourist facilities including accommodation facilities(Putra, Lozanovska & Fuller 2017). The transformation tends to be unaware with fire safety aspects. Some buildings use flammable materials such as woods, timbers, plywoodand bamboos because using this materials makes the buildings can express the traditional Balinese style.

Since the buildings are built as a part of transformation process in the traditional Balinese houses (Putra, Lozanovska & Fuller 2017, 2015, 2013), the distance between pavilions is getting closer in which this condition causes the fire easilypropagates from one pavilion to the others. This condition is exacerbated by the absence of fire extinguishing devices. Moreover, the location of the buildings is also far from main access in which some of them are located in narrow passage. This condition causes the difficulty for a fire brigade to reach the buildings and to fight the fire.

2. SUSTAINABILITY OF TOURISM: FIRE PROTECTION IN TOURIST ACCOMODATION IN UBUD

A fire protection in tourist accommodations is an important aspect to make tourists feel secure and comfortable. Since one of sustainable development concepts is safety in which the protection of buildings from a fire hazard gets more attention from tourists, many travel agents that want to find accommodations for their tourists use this aspect as one of their requirements. Therefore, this aspect will be getting important for accommodation facilities especially to maintain their sustainable tourism industry.

Many tourist accommodations in Ubud are located in the traditional Balinese houses, rice fields or near rivers. Some of them (45%) have a relative good access in which the width of the road is more than six meter. In this condition, the fire brigade is easy to reach the location of afire and to fight the fire. However, 55% accommodations are located on very narrow roads so there are difficulties for a fire brigade to fight the fire (Table 1).

Table 1. The width of accommodation access.

The wide of access	
meter	**%**
<3.7 m	40
3.7- 6	15
6 - 8	45

The distance of buildings to the road is also an important requirement. Most accommodations in Ubud have the distance around 15-45 meters. Based on a national requirement, this distance is not compulsory to use special design of the road to withstand load of 44 tons and a plate jack (Minister of Public Work 2000). However, some buildings in accommodation facilities are located more than 45 meters from the road so that, in this condition, the road should have a special requirement. In this requirement, a fire truck needs at least 5.91 meters wide as the position of plate jacks (Figure. 4).

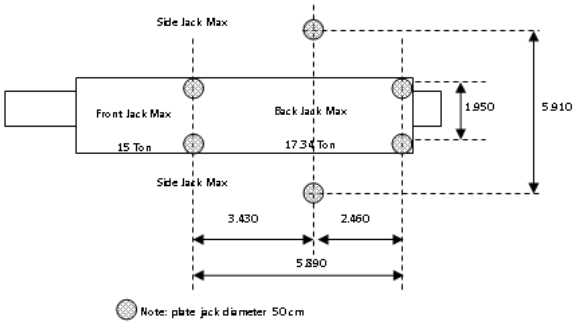

Figure 4. The Position of Plate Jacks in a Fire Truck
Source: Minister of Public Work 2000

Based on these conditions, accommodations in Ubud are not enough secure in terms of fire safety in which the condition of accessibility causes difficulty for a fire brigade to reach a fire spot and to fight the fire. In Ubud, traffic jams are very often, so this condition causes the fire safety aspect is getting poorer.

This condition is getting worse when fire extinguishing devices are not as an important part in serving tourists. Actually, these devices are very important as the first action in fire before fire brigades come and will secure the guests in the accommodation. In Ubud, most accommodations (93%) do not have fire extinguishing devices. This condition does not address the concept of sustainable development in a tourism sector in which safety and security aspectsare acknowledged as a part of sustainable development including tourism development (KFTRA 2008).Tourists will feel unsecure when they stay in Ubud. So that way it is important to provide or install fire extinguishing devices in accommodation facilities.

Openings in a building including doors and windows influence the rate of a fire spread. This rate is also influenced by the velocity of wind so that the closer the location of a fire to other buildings, the quicker the fire spreads to other buildings. In Ubud, the distance between buildings in tourist accommodations is mostly (63%) less than six meters and just 37% of them has a distance more than six meters. Usually, most buildings (100%) have big windows (more than one m^2). This size will influence the rate of a fire spread to other buildings so that the buildings should have a separation system between buildings such as walls.

Many aspects of designed related to a fire safety system are able to make a positive contribution to the sustainability on the building and will secure the occupants staying in the building. This safety of life will make tourists feel safer and more comfortable so that way they will endure and stay longer. On the other hand, the lack of fire safety facilities and designs will make tourists feel unsecure so they will worried and stay shorter. In terms of a tourism industry, the length of stay is an aspect of sustainable tourism in which the longer the tourists stay, the more sustainable the tourist accommodations do. Therefore, since, tourism accommodations in Ubudhave had little attention to a fire protection, sustainable tourism especially related to fire safety will face problems in the future.

E. CONCLUSION

Oneaspect of sustainable development is safety, including fire safety, in which the protection of buildings from a fire hazard gets more attention from tourists.However, accommodation facilities in tourism village of Ubud are not designed based on fire safety requirements, but just to accommodate the traditional Balinese architecture that usually uses flammable materials to attract tourists. The location of facilities also does not address the fire safety requirement so that tourism sustainable especially related to fire safety will face problems in the future.

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