

# APPLICATION OF DIGITAL DESIGN OF TOURISM CENTRE OF SENDURO IN BROMO - TENGGER - SEMERU NATIONAL PARK, INDONESIA

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## ABSTRACT

Instagram able places is a new trend before the Covid-19 pandemic. The theory of Instagram able places has not yet developed in the Architectural field. Several business-related studies have proposed the use of social media, especially Instagram, to attract tourists to attractions. However, Instagram's design approach is only used by creating new building structures that alienate local ecology and dim cultural values. The Senduro Tourism Centre is used as an example of using Instagram for sustainable design at the tourism gate of Bromo Tengger Semeru National Park. The design of the Senduro Tourism Centre is carried out in such a way as to be able to move the economy of the tourism sector of Lumajang Regency in the pandemic era while maintaining the preservation of its natural and cultural assets to be sustainable. The Hindu-Sacred-Profane (Tri-Mandala) zoning, and a sustainable design approach, are also used to ensure the sustainable tourism activities of Senduro. As a result, using digital design tools, we are able to process and present elements of the natural and cultural landscape in an attractive perspective through the design of the Senduro Tourism Centre scheme. In the future, Instagram's design approach can be used more sustainably in tourist attractions in Indonesia.

**Keywords:** digital design; instagram approach; sustainable; tengger; tourism centre

## INTRODUCTION

With great tourists' destinations and cultural heritage, Indonesia failed to increase the number of international tourists in 2015. The target of 10 million foreign visitors in 2015 in Indonesia was achieved, but it was considerably lower than the neighbouring countries such as Singapore (15 million) or Malaysia (27 million). So, what are the barriers to Indonesia's tourism sector development? In 2016, Indonesia's tourism sector accounted for 4 per cent of the total Gross Domestic Product (GDP). By 2019, the Indonesian government wants to achieve eight percent of GDP, requiring 20 million tourists. To achieve this target, the government is improving online marketing campaigns abroad. There are ten "New Bali" destinations that President Jokowi develops, such as Lake Toba in North Sumatra, Tanjung Kelayang in Bangka Belitung, Tanjung Lesung in Banten, Thousand Islands regency in Jakarta, Borobudur in Central Java, the areas of Bromo, Tengger and Semeru in East Java, Mandalika in West Nusa Tenggara, Labuan Bajo in East Nusa Tenggara, Wakatobi in Southeast Sulawesi, Morotai in North Maluku and Tana Toraja in South Sulawesi as presented by The Jakarta Post (2017).

Bromo, Tengger and Semeru are found as exciting destination in East Java and located connected from Bali, Indonesia. However, the Covid-19 has created the New-Normal-tourism concept, which is related to Sustainable Tourism. Kusuma and Tanuwidjaja (2014) studied The Sacred-Profane Hindu Zoning (Tri-Mandala) application in Bali Tenganan Houses. Tri Mandala concept was generally applied to Balinese houses in Tenganan Village because of their Old Hindhu Bali religion. Many changes are found in the Bali Tenganan House zoning due to tourism needs. The new Tri Mandala concept divides the house into Main Section for religious activities, including praying areas and older people quarters, Middle Section for daily activities including trading and women quarters, Nista Section for kitchen, toilet, and house service activities (Kusuma & Tanuwidjaja, 2014). The Tri-Mandala concept also can be adapted in the Tourism Centre of Senduro.

Related to Heritage Conservation, Henderson (2012) highlights the successful rehabilitation of Singapore Shophouses in Chinatown. Singapore was prepared as a trading post by Stamford, while in 1828, Lt Jackson's town plan was prepared to allocate areas for commerce and administration based on ethnicities. The Chinatown was later developed rapidly based on shophouse styles of architecture. The shophouses were used for business on the ground floor and residential on the upper storeys. The Urban Redevelopment Area decided to safeguard the urban fabric and ambience in 1989 with adaptive reuse and protection of architectural integrity. The Historic District of Chinatown is later regarded as a thriving tourism destination collaboratively managed by Singapore Tourism Board and Chinese Business Association (Henderson, 2012). Therefore, the conservation of Mandara Giri Temple in Senduro also must be considered in the design.

On economic development, Shipley and Snyder (2013) argues that heritage conservation districts development can also bring a positive impact on community economic development. Integrated district management with heritage value preservation can create positive economic, social and physical development. The Heritage Conservation District (HCD) is effective in considering the location, historical and planning condition to map out fundamental business needs and chances. For this reason, the local government, residents, and entrepreneurs should monitor the impact of HCD policies (Shipley & Snyder, 2013). The case study supports the development of Tourism Centre of Senduro as anchor points for touristic activities in the area.

Social Media has taken the leading role in increasing marketing tools for tourism places and architectural design in the current digital media era. Several research pieces expose that gen Z and gen Alpha visit many touristic places because of the popularity of the places on Instagram. Zulli (2018) described the relationship between Instagram and visual appearance as closely related to income generation for some local economy. The phenomenological of visual appearance affects the worldview as well as the economic activities. Instagram facilitates users to access further information on products and services from the links and tags (Zulli, 2018). Therefore, Instagram can increase related economic activities.

Concerning branding for tourism, Fatanti and Suyadnya (2015) argue that Instagram has created the branding for Tourism Destination. Instagram was found popular to increase the tourists' visits to Bali Island and Malang Region, mainly due to residents IG activities

promotion. Instagram can facilitate tourist activities with the geo-tagging facility and Instagram photo effects. Meanwhile, users' experience is described with User-generated content (UGC) in Instagram posts. Moreover, it can be concluded that Instagram can be utilised further for promoting new tourism destinations (Fatanti & Suyadnya, 2015).

The Instagram-driven design can be developed further to create more sustainable tourism places while conserving the local touristic features. We tried this approach to design a Tourism Centre in Senduro, Lumajang. Senduro is located in Lumajang Regency with many touristic places with natural potential and cultural values, located at the foot of Mount Bromo and Mount Semeru. However, with the touristic activities in 2016 – 2019, many tourists exploit the condition and reduce the area's pristineness. Our design intention is to increase the sustainability of tourism activities while promoting more high-class tourism activities. Indonesian Minister of Tourism and Creative Economic in 2016 has prescribed that sustainable tourist activities should educate tourists with the ecology, social, culture and economy of the area. This sustainable tourism strategy can be reached by applying conservation, education, and community empowerment principles (Jitunews.com, 2016).

Farazis (2019) studies the application of digital approaches for cultural heritage, involving the people. Cultural heritage analysis can be explained by simplifying the detailed archaeological research with digital media. Digital media can help to visualise cultural heritage in many physical interferences. Digital reconstructions showed successful utilisation of assets' databases in iGuide Knossos and Ariadne's Journey in Athens, Greece, for every stakeholder (Farazis, 2019). The study is too complicated to replicate in the Senduro context, but we consider this method for future research.

United States Access Board (2010) and United States Access Board (2018) has recommended creating accessible tourism facilities. The accessibility of tourism facilities is believed will improve the inclusiveness and eventually the marketability of tourism destinations in Indonesia. Several accessibility issues are also presented by Ikaputra and Sholihah (2001) in Yogyakarta touristic places and public transportation facilities. Therefore, we are applying universal design standard as described on it.

## METHODS

We conducted the ecological, cultural analysis on location with data collection before designing the Tourism Centre of Senduro in 2017. Meanwhile, further Instagram research of the Senduro area is conducted to understand further Gen Z and Gen Alpha perception of the places. Data variables were collected includes site data conducted to ecological values, next for analysed as site analysis then mass transformation. Google mapping is employed to understand the sites' potential and promote Instagram-attractive views of the Tourism Centres while preserving several areas such as Mount Semeru, Puncak B-29 (B-29 Summit) and Pura Mandara Giri. The Tourism Centre of Senduro also plays as an ecological interpretation centre for waterfalls, rivers, plantations, lakes, and Tengger tribe traditional villages that are located in Senduro.

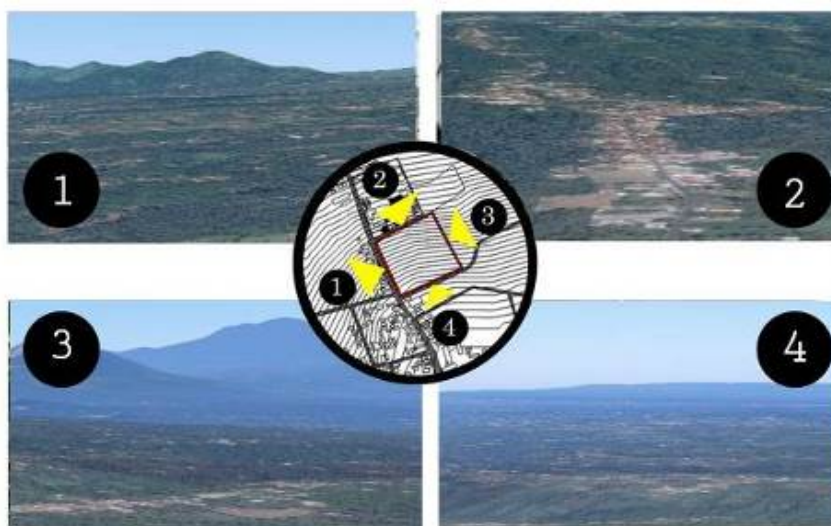
## RESULT AND DISCUSSION

### Site Analysis and Mass Transformation

Determination of the location of the site, must be related to the overall design process, which has the aim of developing the contemporary tourism sector, which has natural and cultural nuances. Variables of choosing the site are natural landscape and cultural landscape of tourism destination area. We found that the site is located adjacent to connecting road network to Semeru Mountain and surrounding ecological areas in the analysis (figure 1 and 2). Therefore, we proposed a design to conserve views to surrounding Mount Semeru and strengthen the Vista of Mandara Giri Temple gate as the Religious Centre of the Senduro through ecological and cultural analysis (figure 3 and 4).

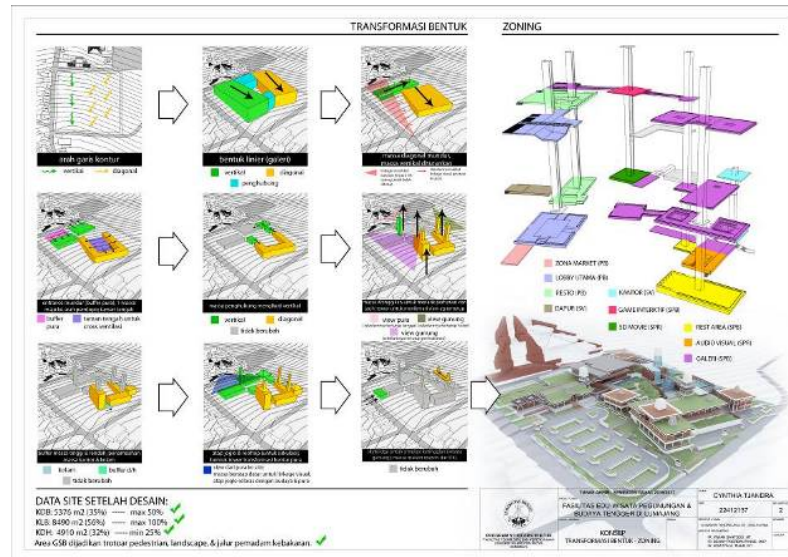


**Figure 1.** Potential Views of the Tourism Centre of Senduro sites, (1) Existing souvenir kiosk, (2) Mandara Giri Temple Gate, (3) Forests, (4) Traditional residential village  
(Source: Tjandra and Tanuwidjaja, 2017).



**Figure 2.** Potential Views of the Tourism Centre of Senduro sites, (1) Mount Semeru, (2) Pura Mandara Giri (Mandara Giri Temple) & connecting road to B-29 Summit, (3) Forests, (4) Traditional residential village  
(Source: Tjandra and Tanuwidjaja, 2017)





**Figure 3.** Initial Site Analysis and Mass Transformation for ecological and cultural analysis  
(Source: Tjandra, 2017)



**Figure 4.** Main Gate of Tourism Centre of Senduro strengthening the Mandara Giri Temple Entrance's Vista  
(Source: Tjandra and Tanuwidjaja, 2017)

## Planning and Designing

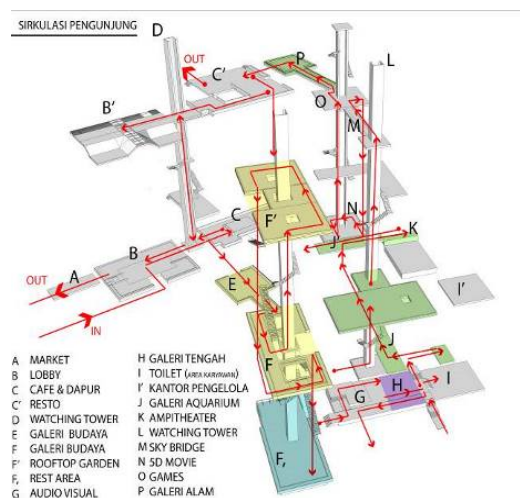
The Tourism Centre of Senduro is designed to preserve the Mandara Giri Temple's visual linkage and surrounding forest environ. A pedestrian pathway is prepared to connect the Temple, residential areas. Besides that, the Tourism Centre's circulation is prepared to provide a sneak preview to tourists on the surrounding touristic attractions. The block design is prepared by analysing the contour and surrounding views with consideration of Tri-Mandala (Three levels of Sacred – Profane Zoning derived from Old Hindhu Zoning) (figure 5 and 6). Kusuma and Tanuwidjaja (2014) have researched the possibility of the application of Tri-Mandala. Mandara Giri Temple's view is used as the Instagram-interesting central plaza for touristic shows in the area. A restaurant and a rooftop café are collocated in the plaza to serve tourists' food and beverage needs. Additional viewing towers are prepared to see the surrounding areas and create more Instagram able views. The zoning of the Tourism Centre of Senduro is divided into Public zone and Special zone (figure 7). The Public zone consists of a lobby, restaurant, café, souvenirs market, and rest area (figure 8). A Special zone is a gallery providing education and information for visitors.



**Figure 5. Site Plan**  
(Source: Tjandra, 2017)



**Figure 6. Bird eye-view of Tourism Centre of Senduro**  
(Source: Tjandra and Tanuwidjaja, 2017)



**Figure 7. Circulation System of Tourism Centre of Senduro**  
Legend: A. Market; B. Lobby; C. Café and Kitchen; C'. Restaurant; D. Viewing Tower; E. and F. Cultural Gallery; F'. Rooftop Garden and Rest Area; G. Audio Visual Gallery; H. Central Gallery; I. Management Office and Toilet; J. Waterscape Gallery; K. Amphi-theatre; L. Viewing Tower; M. Sky Bridge; N. Movie Theatre; O. Games Arena; P. Natural Gallery.  
(Source: Tjandra and Tanuwidjaja, 2017)

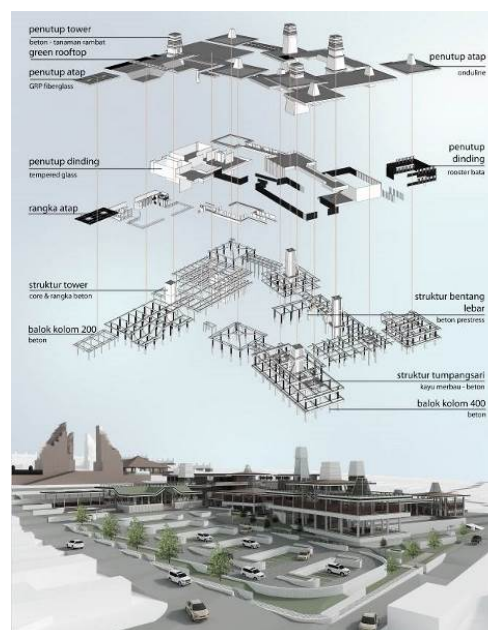


**Figure 8.** The rest area can provide comfortable breaks during the galleries' visit  
(Source: Author analysis, 2021)

### Spatial Design of the Tourism Centre of Senduro

The spatial quality and character of the Tourism Centre of Senduro also are adopted from Mandara Giri Temple and Tengger Village. Vernacular materials such as bricks, wood and concrete are used, while the Joglo (traditional Javanese structure system with new structural approach) is also implemented (figure 9, 10, and 11). The sustainable materials are selected to ensure the ecological of the site (figure 12 and 13).

This gallery, as a part of Special Zone, divided into two areas, namely the Natural gallery (figure 14 and 15), which provides information on the ecological potential in Senduro and the Cultural gallery (figure 12), which provides information on the culture of the Tengger tribe (local Hindhu tribe) and the Tengger wisdom of ecological living. Also, the touch of design on the character of the outdoor space on the pedestrian is impressive as a liaison between the residential area around the site and the temple (figure 16 and 17).



**Figure 9.** Several Viewing Towers and other building structural system  
(Source: Tjandra and Tanuwidjaja, 2017)





**Figure 10.** East Elevation showing several Viewing Towers  
(Source: Tjandra and Tanuwidjaja, 2017)



**Figure 11.** South Elevation showing several Viewing Towers  
(Source: Tjandra and Tanuwidjaja, 2017)



**Figure 12.** A gallery with a contemporary atmosphere with exposed bricks, wood and concrete materials, blending into the landscape  
(Source: Author analysis, 2021)



**Figure 13.** The Javanese vernacular concept applied in the Central Garden.  
(Source: Author analysis, 2021)





**Figure 14.** Natural gallery with a underwater river-view exposing the aquarium and water wall.  
(Source: Author analysis, 2021)



**Figure 15.** The climax sequence of the Natural gallery, providing playing waterfall garden.  
(Source: Author analysis, 2021)



**Figure 16.** The outdoor space character on the pedestrian that connects surrounding residential area with the temple.  
(Source: Author analysis, 2021)



**Figure 17.** The buffering park between the temple and the lobby of Tourism Centre  
as the central Instagrammable space.  
(Source: Author analysis, 2021)

## Discussion

### *Instagram as A Design Approach of the Tourism Centre of Senduro*

Learning from the historical record of pandemics, such as Ebola or MERS, the tourism industry must adapt to current situations and conditions. The tourism recovery can start with inviting and serving domestic tourists before inviting foreign tourists as recommended by Sharma et al. (2021). For the COVID-19 crisis, tourism activities can be opened with limited tourist capacity with multi-stakeholder's support. Other success points for tourism recovery are technological innovations and involvement of ownership of the local community. Further recommendation for resilience tourism is developing community welfare development, climate change response, and community involvement. Koščak and O'Rourke (2021) also recommend ethical and responsible tourism, which focus on local tourism sustainability so it can adapt, develop and maintain safety.

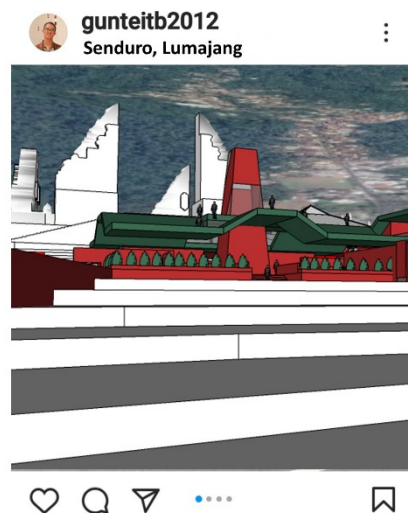
The Tourism Centre of Senduro needs to answer the quest for more sustainable tourism in the pandemic era. We agree that during the Covid-19, additional safety measures must be applied, such as providing toilets, washing basins, hand sanitisers, mandatory masks using and social distancing, and limiting tourists' numbers. The Ministry of Tourism and Creative Economic has released the guidelines for safer and sustainable touristic activities, divided into three main categories: adaptation, innovation, and collaboration. In the adaptation category, every tourist destination should apply CHSE, namely Cleanliness, Health, Safety, and Environment Sustainability as prescribed in Sekretariat Kabinet Republik Indonesia (2020). Recent traveller survey found that the travellers mostly relate sustainable and responsible travel as "putting the locals first" as recommended by the Jakarta Post (2020). The innovation and collaboration to cope with the pandemic mainly focus on shifting business models, from traditional to digital, and market target, from foreign to domestic tourist, as written in 2020-2024 Ministry of Tourism and Creative Economy Strategic Plan or Rencana Strategis 2020-2024 KEMENPAREKRAF/BAPAREKRAF (2020).

In terms of environmental sustainability, the Tourism Centre of Senduro has met the characteristics of vernacular architecture that support the design's sustainability. It maximizes the use of local material that minimizes the building's material transportation to the site. The Tourism Centre of Senduro has nurtured the cultural values as described in the previous section. The Tourism Centre also has a natural gallery to highlight the ecological potential of its surrounding. Therefore, by ensuring the maintained practice of cleanliness, health and safety procedure, the Tourism Centre of Senduro is ready to adapt to the pandemic situation.

As innovation and collaborative strategies, travel companies and tour operators need to involve the local communities. The private companies can expose tourists to more meaningful experience, such as interaction with local `cultures, attending a local festival, and enhancing routes and ecological tours as recommended by the Jakarta Post (2020). Besides that, The Tourist Centre of Senduro architectural design has preserved the axis to Mandara Giri Temple and visual linkage to the site's surroundings. The strategy is achieved by providing many viewing towers; and providing space for traditional shows in amphitheatre. The Tourism Centre of Senduro also has a Cultural gallery, an Audio-Visual

Gallery, and a Movie theatre to show the local culture. The Tourism Centre could promote sustainability in local wisdom practices.

The digital system can be implemented in The Tourism Centre of Senduro, with digital promotion, where the media is paperless and accessible to people with gadgets, especially for gen Z and Alpha. The tourism centre's design has many Instagram able spaces and can be used as an effective marketing tool on digital platforms (figure 18 and 19). The digital mapping tools or apps can be used to calculate and show the route from the domestic tourist location to the Tourism Centre, to show how long they have to travel and what views they can get on the way to the Tourism Centre. This data can affect the tourist's decision, especially domestic tourists, as the sustainability issue tends to become more prominent on tourism choices, as a long-term impact of tourism policies. As the policies to deal with the pandemic are implemented, traveller behaviour can be affected too, always having a safety protocol implemented and using digital platforms to have contactless tourism, as everything is being booked and paid online.



**Figure 18.** Instagram sample-1 of Bromo-Tengger-Semeru Mountain National Park as design approach of Senduro Tourism Centre.  
(Source: Author analysis, 2021)



**Figure 19.** Instagram sample-2 of Bromo-Tengger-Semeru Mountain National Park as design approach of Senduro Tourism Centre.  
(Source: Author analysis, 2021)

## CONCLUSION

The Tourism Centre of Senduro has been designed to be more sustainable considering the local ecological and cultural values while using a digital approach with Instagram and Google maps. The continuity of Senduro tourism activities can be ensured by sustainable design as a design approach after the implementation of the sacred-profane Hindu zoning (Tri-Mandala). This answers the problem with the development of the tourism sector as a driving force for the economy in the current era of Gen-Z and Gen-Alpha, but on the other hand it is also vulnerable to exploitation of its natural and cultural assets, especially since the pandemic era, especially the Senduro Tourism Area, Lumajang Regency. Further, the digital design approach can be developed in the pandemic Covid-19 because of limited movement and the possibility of digital tourism. Instagram is a powerful tool for product marketing can also be used for promoting physical or digital tourism.

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