The Impact of tourism activities on the infrastructure of Canggu village settlements reviewed from the perspective of 4a principle

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Abstract. The development of tourism in Bali is rapidly growing, as evidenced by the expansion of tourism activities into settlement areas. This situation has occurred in Canggu Village, one of the villages in the Badung Regency. Although the main tourist destinations are located in coastal areas, many supporting activities have encroached upon the surrounding settlement areas. There are many positive impacts that benefit the community, such as increased local economy, but there are also negative impacts arising from the rapid growth of tourism. The approach used in this research is an overall exploratory qualitative approach with methods such as literature review, secondary data collection, field observations, and interviews. This study focuses on the negative impacts related to settlement infrastructure, especially three fundamental aspects: road networks, drainage, and waste management. Based on field observations, these negative impacts occur because the development of tourism activities within settlement areas is not accompanied by preparedness to accommodate the increased activities associated with high-mobility tourism.

1 Introduction

Tourism is a strategic program that has been increasingly promoted in Indonesia, both at the national and local levels. To this day, Indonesian tourist destinations have been attracting a growing number of foreign tourists. This is evident in the numerous new tourist destinations in Indonesia that are opened and dominated by foreign tourists. One of the locations that always attracts both domestic and foreign tourists is Bali, with a variety of tourism themes ranging from natural, cultural, to modern-themed tourism (Ginaya, 2019). The development of tourism activities is gradually expanding to areas around the destinations, especially settlement areas that then become tourist areas, one of which is Canggu Village, Bali. Canggu Village is one of the six villages/sub-districts located in Badung Regency, where it has developed into a tourist area today. Despite being the smallest in terms of area among the villages in North Kuta District, Canggu Village has experienced rapid tourism development with a total of 324 accommodations, including hotels and lodgings.

The massive growth of tourism has led to an increase in the number of new activities in the area of Canggu Village, which was previously a settlement area. These tourism activities significantly contribute to the local economy, resulting in the emergence of tourism-supporting amenities such as cafes and restaurants, an increase in the number of accommodations, and other supporting facilities. However, the density of these tourism activities also brings about negative impacts, especially on the physical environment of housing and some social comfort issues.

The negative impact on the physical environment has rendered the housing and settlement conditions non-conducive. This is due to its direct influence on the available settlement infrastructure. Infrastructure significantly affected includes accessibility, such as road networks experiencing congestion, drainage systems due to limited capacity, and accumulating waste. Additionally, there are social environmental comfort issues resulting from late-night café services within the settlement area.

With this phenomenon in mind, this research aims to identify the impacts of tourism development in the settlement areas of Canggu Village. Therefore, it will reveal how the proper and relevant implementation of the 4A principles in tourism development can be, especially in the context of the residential areas in Canggu Village. Then, the findings will serve as a guide to mitigate the negative impacts that have occurred. Moreover, the results of this study will also serve as a reference for other regions in developing tourism in their respective areas.

2 Theoretical study

In a spatial context, humans as social beings are a determining factor in the formation of spatial patterns or networks in an area over time (Rapoport, 1977). Social changes result in alterations to the environmental
conditions of settlements, including the existing infrastructure (Rapoport, 1979, as cited in Mulyati, 1999). Therefore, an increase in the population and social activities in a settlement area will impact the capacity of the available infrastructure in that area to meet the needs of the local environment.

According to Republic of Indonesia Law Number 1 of 2011, the definition of settlement is:

“Settlement is a part of a residential environment that consists of more than one housing unit with infrastructure, public utilities, and facilities, and it serves as a support for various functions in urban or rural areas.” (2011: Article 1)

In the same law, it is also explained the definition of infrastructure, which is:

“Infrastructure is the basic physical facilities of the residential environment that meet specific standards for adequate, healthy, safe, and comfortable living.” (2011: Article 1).

In discussing the conditions of Canggu Village settlement, it is also necessary to consider the discussion of tourism, which is rapidly expanding in the area. Therefore, some literature related to tourism will be included in this literature review.

Inskeep, as cited in Noverianto (2018), defines a tourist area as a development area equipped with comprehensive services and facilities, aimed at enhancing experiences and relaxation. Meanwhile, a tourist area, according to Regulation of the Minister of Agrarian and Spatial Planning/Head of the National Land Agency Number 1 of 2018, is an area with the main function of tourism or the potential for tourism development, whether natural, artificial, or cultural. From these two definitions, it can be concluded that a tourist area is an area with the primary function of tourism or the potential for tourism development, equipped with facilities and services to meet the needs and goals of tourists. In the development of tourist areas, Cooper et al. (1995) put forth concepts that a tourist destination should possess, including:

1. Attraction
   Tourist attractions are a crucial aspect of a tourist destination because they are what pique the interest of tourists to visit a place. Tourist attractions can take the form of natural tourist attractions, cultural tourist attractions, or man-made tourist attractions.

2. Amenity
   Amenities are the facilities and infrastructure needed by tourists to engage in tourism activities. On one hand, facilities required for tourism activities include hotels/accommodations, restaurants/eateries, and so on. Infrastructure, on the other hand, can include clean water supply networks, electricity networks, airports, ports, terminals, and so forth.

3. Ancilliary
   Ancilliaries are services or infrastructure typically provided by local authorities or tourism destination managers. Additional services can include marketing, policies, and others.

4. Accessibility
   Accessibility is the ease of a tourist destination's location being reached by tourists. The level of accessibility can encompass distance, time, cost, and effort required to reach the tourist destination.

3 Research method

The approach used in this research is an overall exploratory qualitative approach with methods such as literature review, secondary data collection, field observations, and interviews. On one hand, According to Moleong (2005), qualitative research aims to understand the phenomena experienced by the research subjects. On the other hand, according to Carmel, as cited in Howitt (2010), exploratory qualitative research aims to delve deeper into information or knowledge that has not been extensively researched before.

In this research, the author will conduct a literature review of theories from previous research, including theories regarding the impacts of tourism activities and theories related to settlement infrastructure. According to Hasibuan, Zainal A. (2007), a literature review is a method to establish the research foundation by referencing previous theories, research materials, and earlier findings. To assess the impact of tourism activities on settlement infrastructure in Canggu Village, in addition to a literature review, the use of data collection methods, such as secondary data and field observations, as well as several interviews, is required.

Subsequently, secondary data collection is carried out by gathering data on tourism activities in Canggu Village and data on settlement infrastructure in the area. This data is obtained from the relevant local authorities, including the Department of Housing and Settlement Areas of Badung Regency, the Department of Tourism, and the Canggu Village Sub-District Office.

Furthermore, field observations are conducted by surveying the location, particularly in the settlement areas of Canggu Village, North Kuta District, Badung Regency, Bali. The observation focuses on settlement infrastructure, including road networks, rainwater drainage systems, and waste management.

Last, several interviews with key informants are also needed in this research to enhance the validity of the analysis, which is complemented by secondary data and field observations. The selection of informants is conducted using purposive sampling method, and they include local government officials, village authorities, and local residents.

The research on the Impact of Tourism Activities on Settlement Infrastructure in Canggu Village will primarily focus on three fundamental components of settlement infrastructure: road networks, rainwater drainage systems, and waste management. These three fundamental components are considered the most impacted by the development of tourism in Canggu Village, while other infrastructure components are deemed to be less affected.

4 Overview

Canggu is one of the villages located in the North Kuta Sub-District, Badung Regency, Bali Province. Canggu
Village covers an area of 5.23 square kilometers with a population of approximately 6,829 people and a population density of about 1,305.74 people per square kilometer. Canggu Village shares its borders with four other villages: to the north with Tumbak Bayuh Village, to the west with Pererenan Village, to the east bordered by Dalung Village and Tibubeneng Village. Meanwhile, its southern part directly faces the Indonesian Ocean.

Canggu Village has become a popular tourist destination, attracting both local and international tourists. Besides its beautiful black sand beaches, the beaches in Canggu also feature stunning and sizable waves. This uniqueness makes it a favorite spot for tourists who enjoy the sport of surfing, and allow them to indulge in the village's tourism offerings.

With the development of tourism, the facilities and infrastructure in Canggu Village have also improved. According to data from the Central Bureau of Statistics (BPS), there are currently several important facilities and infrastructure to support settlement and tourism activities in Canggu Village, such as accommodation facilities including hotels and lodgings; post offices and shipping/expedition service companies; 4G/LTE network BTS towers; ground public transportation facilities; banking and cooperative facilities; as well as commercial facilities including markets, supermarkets/minimarkets, and restaurants, as seen in Table 1.

### Table 1. Facilities and infrastructure in Canggu Village.

<table>
<thead>
<tr>
<th>Type of Facilities and Infrastructure</th>
<th>Qty</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation Hotels and Lodgings</td>
<td>324</td>
<td>Lodgings, star hotel, and non-star hotel.</td>
</tr>
<tr>
<td>Transportation - Road</td>
<td></td>
<td>Asphalt and Concrete Surfaces Road</td>
</tr>
<tr>
<td>- Public transportation</td>
<td></td>
<td>Exist, without a fixed public transportation route</td>
</tr>
<tr>
<td>Post office and shipping/expedition service companies</td>
<td>Exist and operate.</td>
<td></td>
</tr>
<tr>
<td>Telecommunication - BTS Tower</td>
<td>2</td>
<td>Very strong signal with 4G/LTE signal type</td>
</tr>
<tr>
<td>- Service operator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banking - Government Bank</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>- Rural Kredit Bank</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cooperative - Village Cooperative</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>- Savings and Loan Cooperative</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>- Other cooperatives</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

In addition to the aforementioned facilities and infrastructure, Canggu Village also has facilities/efforts for natural disaster preparedness, such as: natural disaster early warning systems, special tsunami early warning systems, and safety equipment.

## 5 Result and discussion

### 5.1 The development of tourism

Before 1980s, Canggu Village was like any other village, primarily serving as a settlement area for its residents (Wahyundaria and Sunarta, 2020). The available facilities and infrastructure were also intended to meet a variety of needs and activities within the settlement area. The development of tourism in Canggu Village began with the hosting of an international surfing event in 1990, organized by Canggu Village in collaboration with the Canggu Surf Community. Since then, Canggu has gained widespread recognition, and its tourism has grown rapidly.

The main tourist attractions in Canggu are its beautiful beaches and the crashing waves that attract many tourists who come for surfing, sunset viewing, swimming, fishing, or relaxation. Canggu boasts nine beaches that serve as its tourist magnets, including Canggu Beach, Echo Beach, Batu Bolong Beach, Kayu Putih Beach, Pererenan Beach, Berawa Beach, Seseh Beach, Mengening Beach, and Nelayan Beach. Apart from its beaches, Canggu also offers natural attractions such as vast stretches of rice fields. It's not uncommon for tourists to refer to Canggu as the 'Ubud of Kuta.' Additionally, Canggu has seen the development of artificial tourist destinations such as the Yoga Art Village, built with the purpose of providing health and fitness services to its visitors (Prabawati, 2021).

### 5.2 Impacts of tourism development on settlement infrastructure based on the application of the 4a principles

The increase in tourism activities in Canggu Village has had a significant impact on the transformation of existing facilities and infrastructure. With high demand, investors and local residents are racing to build various facilities to support tourism. Many local residents have seized this opportunity to improve their livelihoods, one of which is by constructing, selling, or renting their land for tourists’ accommodations. Currently, there are approximately 324 hotels and other lodgings established in Canggu Village.

As tourism continues to flourish, the local economy naturally experiences growth. Many local residents take advantage of this opportunity to increase their income, either by constructing or renting out their properties as accommodations or by starting their own businesses. However, alongside the positive economic impacts, tourism activities also have negative effects on Canggu Village, particularly on its settlement infrastructure. This is because the settlement infrastructure in Canggu Village was originally intended to facilitate settlement...
activities. Therefore, when Canggu Village evolved into a tourism area, the existing settlement infrastructure became inadequate to support tourism activities. The rapid growth of tourism was not matched by the development of settlement infrastructure. Here are some of the impacts that have occurred due to the rapid development of tourism on the settlement areas as viewed through the 4A principles.

5.2.1 Attraction

The development of tourism activities in Canggu Village has had a significant impact on the tourist attractions in the village, resulting in an increased availability of tourist attractions as destinations. These tourist attractions have expanded, ranging from natural attractions such as the numerous beach options to man-made attractions. The most prominent addition among man-made tourist attractions is the proliferation of beach clubs, which are widely scattered along the coastline of Canggu Village. Based on field findings, these beach clubs are entertainment venues that provide food, beverages, music, and/or dance, and their locations are right along the beach. As a result, visitors can enjoy the beach club facilities while savoring the beauty of the beach. Currently, many domestic and international tourists come to Canggu specifically to enjoy these beach clubs.

Furthermore, the presence of these beach clubs has increased the number of tourists visiting natural attractions like the beaches, whether for the purpose of enjoying the natural beauty or engaging in activities such as surfing. In addition to the beach and beach clubs, Canggu Village also boasts a new art village known as the yoga village. With the growing number of tourist attractions in Canggu Village, there is undoubtedly a positive impact on the economic growth of the village, benefiting both the local residents and the village and regional governments.

5.2.2 Amenity

The emergence of new tourist destinations in Canggu Village coincides with an increase in the number of supporting tourism facilities. For example, there has been an addition of numerous cafes and restaurants in nearly every tourist location, along with a significant increase in accommodations, totaling up to 324 hotels and lodgings in Canggu Village. This development has primarily had a positive impact on the economic sector. The increase in the number of accommodations will lead to higher regional revenue, Gross Regional Domestic Product (PDRB), and income for the local community.

Several negative impacts have also emerged in the social and physical conditions of the surrounding area. Negative effects on social activities occur when tourism activities continue late into the night while being situated within residential areas. Moreover, there are also negative impacts resulting from the provision of cafes, hotels, and accommodations in residential areas.

These supporting facilities are mainly organized by local residents, which leads to the need for private companies to establish access to these facilities. Based on observations, this provision tends to be inadequate in terms of access networks to places like villas. This is because accommodations/villas are located in the middle of residential areas. Some accommodations/villas also utilize green open spaces, resulting in a reduction of green open space area.

Additionally, amenities affected include additional facilities for comfort such as pedestrian ways, drainage networks, and cleanliness-related comfort. In Canggu Village, the drainage network has been negatively impacted. The current drainage system is unable to accommodate the wastewater from the various activities. The waste management system also does not adequately handle waste from various sources. This is because the available facility services are primarily utilized for activities within the settlement area.

Based on field observations, the condition of drainage in Canggu Village is still inadequate in some areas. Some drainage systems have dimensions that are inappropriate or too small, leading to occasional waterlogging on the roads during heavy rainfall. Furthermore, according to local residents, during the rainy season, some drains in the settlement areas become clogged due to trash coming from other villages that enter the drainage system, potentially causing floods.

Moreover, from interviews with local residents, there have been complaints about unpleasant odors emanating from the drainage system, which is often a result of cafes or restaurants disposing of kitchen waste directly into the drains.

In addition, there are also negative impacts related to cleanliness due to irregular waste accumulation. Based on field surveys and interviews with several residents, with the increasing popularity of tourism in Canggu Village, the volume of waste generated has also increased, leading to occasional waste pileups. This is because of the rising number of visitors, especially tourists staying in accommodations within the settlement areas, which results in a higher volume of waste. However, more recently, information from the village authorities and residents indicates that the village is currently utilizing three private waste collection services to expedite waste removal and minimize excessive waste accumulation.

5.2.3 Ancilliary

Additional services, as a principle of tourism development, are quite important for tourists when choosing their destination. These services can be provided by either the government or the private sector, depending on what is offered. For instance, marketing services by tourism destination providers and the attitude or policies set by local authorities. One example is the increasing number of travel agencies as tourism service providers that facilitate tourists in accessing tourism in Canggu.
In Bali, additional services to attract and support tourism activities are quite diverse. This can be observed from the growing number of travel agencies. In 2019, the number of travel agencies in Bali increased by approximately 11.7% compared to 2015, totaling 457 travel agencies, as can be seen in the table 2. below.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Travel Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>409</td>
</tr>
<tr>
<td>2016</td>
<td>413</td>
</tr>
<tr>
<td>2017</td>
<td>446</td>
</tr>
<tr>
<td>2018</td>
<td>446</td>
</tr>
<tr>
<td>2019</td>
<td>457</td>
</tr>
</tbody>
</table>

5.2.4 Accessibility

In terms of tourism development, accessibility is a crucial factor that supports and eases tourism activities. The primary aspects of reaching a destination include distance, followed by cost, time, and the effort required to reach the destination.

The emerging tourist areas in Canggu are strategically positioned and easily accessible, alongside other well-established major destinations in Bali. This condition increasingly attracts tourists to explore the new tourism destination in Canggu, resulting in a relatively dense tourism environment.

However, in practical field conditions, accessibility availability does not always match the supporting services for tourism activities in some aspects. An example of this is the current road network availability. The road network, especially in Canggu, does not effectively support the local tourism activities. As a result, the roads often experience congestion with both private and public transportation used for tourism purposes. Observations indicate that traffic congestion frequently occurs on routes to natural tourist destinations and tourism facilities like restaurants and accommodations.

Based on field observations, traffic congestion often occurs on the roads in Canggu. This is due to the narrow dimensions of the roads, which are inadequate to accommodate the high volume of vehicles. The roads that were originally intended for local residents have taken on additional functions as roads intended for tourism activities. Additionally, some neighborhood roads in Canggu are in poor condition or lack proper surfacing. Most of these roads, either in disrepair or without proper surfacing, lead to accommodations or villas. Many of these neighborhood roads are privately owned, which means the local government does not have the authority to make road improvements. Moreover, as these neighborhood roads are privately owned, the owners have constructed the roads that do not meet technical standards or, in some cases, without any surfacing. Several examples of these inadequate neighborhood road situations in Canggu can be seen in the images below.

Fig. 1. Neighborhood roads with inadequate quality.

5.3 Discussion of findings

The impact of tourism development in Canggu Village is not only observed and felt by the local residents. Many relevant parties need to contribute to address this rapid tourism development. In this observation, interviews were conducted with various stakeholders, both directly involved and from the local government. The negative impact was further emphasized by the assessments from the local government agencies regarding the suitability of the settlement.

The economic demands factor has led many local residents to choose to build, rent, or even sell their vacant land for use as tourist accommodations and commercial facilities. In addition, lands used for tourism purposes by private entities are not integrated with government facilities, leading to their availability being based on self-reliance and individual capacities. Instead of providing many positive impacts, this chaotic development results in an increase in negative effects. Not only the deteriorating physical infrastructure conditions but also negative social impacts have occurred, for instance, increased noise and population density. As a result, the condition of Canggu Village becomes less conducive for settlement purposes and, at the same time, for supporting tourism activities.

Based on field interviews, due to the increase in tourism activities, the quality of some neighborhood roads at certain points has become inadequate, both in terms of road quality and road dimensions, which can no longer accommodate the volume of vehicles. Several stretches of neighborhood roads are still in a damaged state or have not been paved. The damaged neighborhood roads are a result of many vehicles passing through them that are not in accordance with the intended road type, for example, neighborhood roads designed for inter-neighborhood connections being used for connections between villages or districts. Meanwhile, most of the unpaved roads are new neighborhood roads opened by residents on their private land.

Not only is the road network facing issues, but based on interviews and observations, the drainage system is...
also considered inadequate in terms of its current capacity. Apart from the small size of the drainage system for accommodating increased waste, the condition of the channels is affected by the accumulation of waste deposits.

![Image of inadequate drainage]

Fig. 2. Inadequate drainage leads to puddles and blockages.

The wastewater network in the residential area of Canggu Village is connected to the drainage system. Initially, this did not cause any issues. However, as tourism continued to develop and the population increased, along with the rise in food-related businesses such as restaurants and cafes, the amount of wastewater generated also increased. This led to an inadequacy in the capacity of the wastewater disposal system. Some buildings, such as restaurants, cafes, bars, and eateries, directly disposed of their kitchen waste into the wastewater channel, which is the drainage system. This resulted in an unpleasant odor emanating from the drainage system, especially during the dry season. This condition has become a source of complaints from the local residents, particularly those living in the vicinity of this area.

Waste management in Canggu Village poses a rather challenging issue. This is mainly due to the increasing population, comprising both permanent residents as well as tourists, and resulting in a significantly larger volume of waste generation. Some residents have begun to learn the practice of waste separation. The community has collaborated with three waste collection operators, namely village officer, BUMDes (Village-Owned Enterprises), and private entities. However, due to the substantial amount of waste produced, there are still occasional delays in waste collection. Another challenge in waste management in Canggu is the absence of a 3R (Reduce, Reuse, Recycle) waste processing facility in the village. The establishment of such a facility is challenging to implement because although there is an available land, a significant portion of the resident objects to having a waste disposal site in their vicinity. They are concerned that such a facility might harm the environmental image of their area, especially as it is a tourist destination.

The environmental assessment by the Department of Housing and Settlement Areas of Badung Regency also confirms that the current condition of Canggu Village has seen a decrease in suitability. This is indicated by the issuance of a determination through the Decree issued by the Regent of Badung Number 40/0421/HK/2021 regarding the Designation of Slum and Blighted Areas in Badung Regency. These slum conditions fall into the mild category, with a larger physical impact related to infrastructure that supports housing and settlement activities. The total affected area is 64.37 hectares, the largest area experiencing a decline in quality. Several areas facing decline include:

1. The quality of the local road surfaces deteriorated by 53.16%.
2. Insufficient drainage provision for waste disposal by 52.77%.

<table>
<thead>
<tr>
<th>Table 3. Changes in residential area conditions due to tourism development.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before Tourism Development</td>
</tr>
<tr>
<td>----------------------------</td>
</tr>
<tr>
<td><strong>Attraction</strong></td>
</tr>
</tbody>
</table>
| Tourist attractions were limited to natural attractions such as beaches. | The addition of attractions, besides natural attractions, also includes man-made attractions such as beach clubs and art villages. | • Increased number of tourists  
• Boosting economic activities to increase the income of residents, the village, and the local government. |
| **Amenity**                 |                          |       |
| The number of accommodations and restaurants is still limited. | The increase in the number of accommodations and restaurants. | • Economic activities increase.  
• Decrease in the area of green open space (rice fields). |
| The drainage network only serves residential activities. | The drainage network should serve both residential and tourism activities (accommodations and restaurants). | The drainage network capacity becomes inadequate. |
| The generation of waste is only from residential activities. | Waste generation and volume increase from tourism activities. | Accumulation of garbage at temporary disposal sites |
| **Ancillary**               |                          |       |
| Limited number of travel agencies | Increase in the number of travel agencies | Facilitate tourists in reaching tourism in Canggu. |
| **Accessibility**           |                          |       |
| The road network is used for residential activities. | The road network is used for both residential and tourism activities. | The volume of vehicles exceeds the road's capacity, leading to traffic congestion. |
| The neighborhood roads are only around the residential area. | Many new neighborhood roads are privately built by villa owners without adhering to applicable technical standards. | Roads become damaged quickly or are not yet paved |

The wastewater network in the residential area of Canggu Village is connected to the drainage system.
3. The overall condition of waste infrastructure and facilities (100%) is inadequate and does not meet technical requirements. From these conditions, a brief summary can be illustrated in Table 3 below regarding the development of tourism activities in Canggu Village.

6 Conclusion and recommendations

6.1 Conclusion

The development of tourism in Canggu Village has various impacts on the settlement area, both positive and negative. From the perspective of the 4A principles of tourism, the positive impacts are seen in terms of attractions, amenities, and ancillary tourism services. With the development of tourism, these aspects also experience improvement, and lead to economic benefits for Canggu Village. However, alongside the positive impacts, the tourism development in Canggu Village has also brought negative impacts on the accessibility and some amenities. Most of the interviewees pointed out that the rapid local tourism development was not accompanied by adequate government management. Accessibility and some amenities in Canggu Village were initially intended for settlement activities, so the expansion of tourism activities into settlement areas created negative effects, especially on physical infrastructure and social conditions, where the environment became less safe.

6.2 Recommendations

From the discussion and the above-mentioned points, here are some recommendations that the author can provide:

1. The government can provide guidance to accommodation owners to ensure that their construction follows existing planning and technical regulations.
2. Provide guidance to accommodation owners to voluntarily offer privately built community roads to the local government, allowing the government to allocate a budget for road improvements.
3. The government should conduct a study on traffic engineering to alleviate congestion on main routes leading to tourist destinations.
4. It is essential to increase the regular maintenance of drainage channels in areas prone to flooding and waterlogging.
5. Regarding waste management, the government can educate the public and accommodation providers to better manage waste through the 3R program (reduce, reuse, and recycle) and waste sorting before disposal at waste collection points.

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