



Deciphering the Development of Smart and Sustainable Tourism Cities in Southeast Asia: A Call for Research

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A recognized desire is noticeable within ASEAN nations to develop more sustainable approaches to urban development and tourism. One solution has been to promote the expansion of both smart cities and smart tourism practices. Recently, these smart approaches have been implemented across a variety of different cities and locales. The purpose of this paper is to discuss the potential for further research in developing relationships between 'smart cities' and 'smart tourism' practices in Southeast Asia. Rather than present a review of the entire region, three potential case studies located in Myanmar, Lao PDR, and Thailand are discussed. These include Yangon as a case of smart approaches in a primary city, Vientiane as a case of smart approaches in a smaller city, and Phuket as a case of smart approaches in an area which suffers from overtourism. The authors maintain that this type of case study research within ASEAN states can provide critical insights and local solutions to the advancement of smart and sustainable tourism destinations.

Keywords: ASEAN; Case Studies; Smart Cities; Smart Tourism; Sustainable Development Goals



INTRODUCTION

As one of 17 interconnected and integrated Sustainable Development Goals (SDGs) (United Nations, 2015), SDG 11 emphasizes the need to make cities and human settlements inclusive, safe, resilient, and sustainable. This goal provides a clear vision of the need to improve cities through a range of objectives, including enhanced transport, housing and planning, and also creating a more sustainable urban environment – whether in terms of the physical, social, or cultural environments. However, many cities also face challenges caused by both domestic and international tourism, increasingly being overstretched by the significant impact of growing tourism infrastructures and touristic influences in general. This is especially the case within selected states belonging to the Association of Southeast Asian Nations (ASEAN), such as Thailand, Myanmar, and Laos, which provide the geographical focus of the present study.

In the ten member states of ASEAN, around 133.1 million tourists arrived in 2019, representing an increase of 7% from 2018. The 23rd Meeting of ASEAN Tourism Ministers in Bandar Seri Begawan (Brunei Darussalam) emphasized the importance of sustainable and inclusive forms of tourism in the region.

Accordingly, the strategic importance of safety and security, the prioritization of the protection and management of heritage sites, and the increased responsiveness to environmental protection and climate change were reiterated (ASEAN, 2020). This integrated and sustainable approach was grounded in the ASEAN Tourism Strategic Plan 2011-2015 (ASEAN, 2015), which emphasized the importance of moving towards “an economic growth scenario that is more ‘inclusive’, ‘green’ and ‘knowledge-based’”. The smart city-state of Singapore has already realized the ramifications of a sustainable agenda, pledging that by 2030 around 80% of its buildings will attain Green Mark Certification, and energy consumption will decrease by 35% (Helmy, 2019).

‘Smart sustainable cities’ offer a potential strategic solution to attaining urban sustainability by utilizing information and communication technologies (ICT) (see Bibri & Krogstie, 2019). Against this background, the present paper offers three potential case studies that could be used to interrogate the complex intersection of smart cities, sustainability, and smart tourism. Rather than providing answers, this paper suggests a starting point for further analysis to inform and critique ways in which smart approaches to sustainability and sustainable tourism have the potential (or not) to deal fully with the impacts of tourism and tourism-related development.

‘SMART CITIES’: A QUESTION OF DEFINITION

The term ‘smart city’ sees increased usage, though with little consensus on how this is defined both practically and ideologically (Hollands, 2008). Despite this ambiguity, a general understanding exists that ICT intersects with the urban environment with the aim of improving urban planning, management, and overall efficiency (González-Reverté, 2019). This is gained through the use of ICT to augment a range of ‘smart’ components, including technology, energy, transport, education, environmental monitoring, and government (Lacinák & Ristvej, 2017). Nonetheless, many elements of the sustainable city remain elusive, including, for example, the need to develop sustainable solutions to deal with the impacts of urban density and its associated environmental, ecological, and social challenges (Albino, Berardi, & Dangelico, 2015; Anttiroiko, Valkama, & Bailey, 2014).

Irrespective of the lack of possible synergies between what makes a smart and a sustainable city, ICT has significant capacity for supporting the transition to more sustainable cities through the management of urban systems. One key dilemma on this pathway concerns the management of public infrastructure and the response to the needs of citizens, while at the same time working towards reducing consumption, especially key utilities. These utilities include not only energy and water, but also amenities such as public spaces and attractions. Here the challenge is to modify “consumption to actual need . . . to promote more sustainable behaviors” (Harrison et al., 2010, p. 14). Bibri and Krogstie (2017) suggest that the development of socio-technical systems may provide some answers to this dilemma, not just in the field of transport, environment, and energy, but also healthcare, education, and planning.

There is clear potential for alignment between the conceptual significance of ‘smart cities’ on one hand and the objectives shared within SDG 11 on the other, especially through the reduction of consumption. This could have clear ramifications for a range of social, cultural, economic, environmental, and ecologically-oriented

benefits for cities. Accordingly, there is potential for a more holistic approach to sustainable tourism development to be achieved through reconceptualizing and integrating these opportunities through the lens of smart tourism. The possibilities of this kind of tourism are endless; for instance, smart airports, smart hotels, and smart transportation systems could be created (Khan, Woo, Nam, & Chathoth, 2017, p. 4). Nevertheless, the current COVID-19 epidemic and the emergence of the 'new normal' could influence ways in which smart tourism develops and is duly characterized. It is anticipated that smart tourism priorities will focus on the health concerns of urban environments, communities, and the tourists themselves, such as utilizing technologies so as to ensure that tourists feel safe in environments that are traditionally perceived to be crowded, and also to protect resident communities from the health threat posed by tourists and other city visitors. This may involve the widespread use of thermal imagery sensors, with the intention of developing policy and planning guidelines so that safe city infrastructures are fully established (Allam & Jones, 2020).

TOURISM DESTINATIONS: SUSTAINABLE AND SMART

Utilizing ICT can support cities to coordinate their activities and services to become accessible and pleasurable for both residents and guests alike (Buhalis & Amaranggana, 2014). In turn, the aligned concept of smart tourism has arguably been developed to improve tourist behavior and consumption by improving, for instance, travel and traffic flows. As González-Reverté (2019) notes, in Barcelona, a general realization can be noticed that the populace is being overrun by tourists through an over-concentrated tourism agenda. Therefore, strategies are being devised to deal with the need to manage tourist flows, streamline parking sites, and dispersing tourists away from congested areas. González-Reverté (2019) further suggests that:

The introduction of technology as a solution for urban problems offers smart tourism destinations a different route towards urban sustainability. The mass presence of ICTs in the smart cities that are connected to different urban areas mutually providing and exchanging information enables cities to become more sustainable and improve the quality of life for their citizens. (p. 7)

Despite the allure of ICT as the mediator between tourism behavior and the reduction of consumption, it is also important to recognize its role in touristic overconsumption as a catalyst of overtourism (Ivars-Baidal, García Hernández, & Mendoza de Miguel, 2019). Coca-Stafaniak (2019) noted that those cities experiencing significant overtourism concerns also have a reputation for advancing smart tourism, particularly such European cities as Amsterdam, Barcelona, Berlin, Prague, Rome, and Venice. Therefore, the implication is that smart tourism's emphasis on marketing, tourism innovation, and related forms of urban tourism development have a role to play in stimulating heavy consumption patterns and behavioral concerns associated with overtourism. Indeed, overtourism and overconsumption would seem to have a profound impact on urban environments and societies. This is recently implied by the mobility control orders due to COVID-19, with Harvey (2020) arguing:

To the degree that contemporary consumerism was becoming excessive it was verging on what Marx described as “overconsumption and insane consumption, signifying, by its turn to the monstrous and the bizarre, the downfall” of the whole system. The recklessness of this overconsumption has played a major role in environmental degradation. The cancellation of airline flights and radical curbing of transportation and movement has had positive consequence with respect to greenhouse gas emissions. Air quality in Wuhan is much improved, as it also is in many US cities. Ecotourist sites will have a time to recover from trampling feet. The swans have returned to the canals of Venice. To the degree that the taste for reckless and senseless overconsumerism is curbed, there could be some long-term benefits.

Despite these concerns, it is unlikely that such places will remain empty ad infinitum. Instead, Haarstad (2016, p. 9) notes of a range of passive smart approaches to promote sustainable solutions in a city, and where consumption can be controlled and monitored by the authorities rather than proactive individuals. These passive solutions are also applicable to areas that are highly concentrated with tourists and include a diverse range of utilities including electrical buses, smart street lighting, and smart waste collection. Meanwhile, Femenia-Serra and Neuhofer (2018) focus on the relationship between the consumption of these utilities and tourism. For example, they highlight that the provision of free Wi-Fi zones in particular tourist areas of Palma de Mallorca has enabled the Destination Marketing Organisation to collect usage data and thus look into ways to control tourist flows.

García-Hernández, Ivars-Baidal, and Mendoza de Miguel (2019) indicate ways in which technological interaction can help mediate the intersection between tourist behaviors and sustainable practices. This approach is exemplified by the ‘Enjoy & Respect’ campaign in Amsterdam in 2018, which targeted those aged between 18 to 34 from the Netherlands and the UK, sending them informative messages on the Dos and Don’ts in the city and the associated ramifications (i.e., fines), as well as sending them messages letting them know when they enter congested areas of the city. Also, Singapore has heavily invested in an efficient public sector transport system, which not only helps to ease road congestion but also to reduce atmospheric pollution. There has been considerable interest in technology adoption for customer experience enhancement, through ensuring that public transport systems are more accessible, convenient, sustainable, and affordable. Singapore’s Land Transport Authority has partnered with such leading companies as Citymapper, Google, Hugo, and Quantum Innovations to establish enhanced trip planners (Knupfer, Pokotilo, & Woetz, 2018).

These passive approaches have been augmented by more active participation involving tourists themselves. The internet, social media, and social networking sites have encouraged individuals to be actively involved in co-creating values for the services and products that they consume. Although there has been a demand for sustainable experiences, opportunities to participate in more responsible and sustainable forms of tourism have become available through electronic forms of communications, where the individuals can seemingly

become co-creators of sustainable tourism experiences and co-managers of tourism resources in the sustainable management of tourism assets and re-

sources at the destination (p. 3). . . behave as guests and respect their hosts; and try to ensure a mutually beneficial experience for themselves and for the local communities (Shen, Sotiriadis, & Zhou, 2020, p. 11).

SMART SUSTAINABLE TOURISM CITIES IN THE ASEAN REGION: CHALLENGES AND OPPORTUNITIES

A range of primary cities in the ASEAN region, such as Bangkok, Ho Chi Minh City, Jakarta, Kuala Lumpur, Manila, Singapore, and Yangon have experienced accelerated growth and urbanization. Around half of the population of the ASEAN region resides in urban areas, a number that, by 2025, is anticipated to grow to around 70 million people, which is why these cities are required to address increasing urbanization through the provision of effective and sustainable urban infrastructures (ASEAN Secretariat, 2018). Accordingly, cities in Southeast Asia can still potentially develop in a smart manner and also advance in a sustainable way, though the key question concerns the extent to which they can do this while at the same time attract international visitors. The drive to become smart cities is not restricted to primary cities. Smaller cities containing a population of less than one million, such as Bandar Seri Begawan, Luang Prabang, Phuket, Siem Reap, and Vientiane have also been identified as candidates for 'smart cities' within the ASEAN Smart Cities Network (ASCN), perceived as cities that will grow rapidly and have significant green areas for smart, sustainable forms of development to advance (McKinsey Global Institute, 2018).

This network, in which ASEAN states help promote and cultivate the wider use of technology, was established in 2018. Since then, 26 pilot cities (including non-capital cities) in member states of ASEAN have been identified for smart and sustainable development:

- Bandar Seri Begawan (Brunei);
- Battambang, Phnom Penh, and Siem Reap (Cambodia);
- Banyuwangi, Jakarta, and Makassar (Indonesia);
- Luang Prabang and Vientiane (Laos);
- Johor Bahru, Kota Kinabalu, Kuala Lumpur, and Kuching (Malaysia);
- Mandalay, Nay Pyi Taw, and Yangon (Myanmar);
- Cebu City, Davao City, and Manila (Philippines);
- Singapore;
- Bangkok, Chonburi, and Phuket (Thailand);
- and Da Nang, Hanoi, and Ho Chi Minh City (Vietnam).

These cities have been included in the ASCN network partly on the basis that each country selects several cities that can work toward smart city development, as well as pursue technological progress and innovative approaches encouraging quality of life in the city (Tortermvasana, 2018). The objective of ASCN is to

- a. Promote cooperation on smart city development among ASEAN cities;
- b. Develop commercially viable projects together with private-sector solution

providers; and c. Facilitate collaboration with ASEAN's External Partners, through funding and other avenues of support (Centre of Liveable Cities, 2018, p. 2).

At a strategic level, the smart ASEAN city intersects with the requirements of SDG 11. An emphasis is placed on striking a balance between three interdependent objectives: (1) a competitive economy; (2) a sustainable environment; and (3) a high quality of life (Centre of Liveable cities, 2018, p. 12). Indeed, as Utomo (2019) states, "with the ASEAN, ASEAN is expected to be able to answer classic urban problems in developing communities such as traffic jams, poverty, pollution, and homelessness". As suggested earlier, this strategy has the potential to facilitate more smart forms of sustainable tourism. The challenge is to provide further evidence of this complex intersection.

What follows are three potential cases studies within the ASEAN region that illustrate how the creation of smart cities can also support the development of smart tourism. In turn, these innovations have the potential to benefit residents and tourists alike through attention to sustainable systems and applications. The first example (Yangon) could become a case study of smart tourism in a primary city, whilst the second (Vientiane) concerns smart tourism in a smaller Southeast Asian city, and the third (Phuket City) focuses on smart tourism as an approach to overtourism. In all three cases, the complex intersection of smart cities, SDG 11, and smart tourism provides opportunities for further research in order to achieve more sustainable tourism cities.

Large Scale Approaches - Yangon

Yangon has been earmarked by the government of Myanmar as having smart city potential, whilst also being able to offer culturally sustainable experiences to tourists, implying that preservation and representation of culture and heritage can be pursued through a smart and sustainable tourism approach. The ambition of an initial USD 1.5 bn. planned investment involves the creation of a redesigned city with designated green spaces, world class technology, an innovation hub and cultural corridor, and new residential complexes (Board, 2019). Part of this plan includes the redevelopment of the city's central area through a process of heritage preservation and repurposing of its derelict colonial heritage buildings. This is the case despite the conservation of such heritage buildings running "the risk of erasing colonial abuses and masking entrenched urban inequalities" (Roberts, 2017, p. 41). For example, the neo-classic Rangoon architecture from the latter part of the 19th century symbolizes a declaration to British superiority. The Court House, for instance, which was built in 1868, signifies the "British right to rule" (2017, p. 45). Nonetheless, a Geographic Information System (GIS)-orientated building usage map is being developed of the downtown area, particularizing site use, site characteristics, and built area coverage (Centre for Liveable Cities, 2018).

Some concern rests with how the new Yangon may succumb to the economic prowess of China and its advancement of the China-Myanmar Economic Corridor, as part of the Belt and Road Initiative. Chinese infrastructural development and investment could partly dictate the city's future direction in a way that is not fully reflective of the interests of the city. Nevertheless, the plans have been commended for being

aligned somewhat to the socio-economic conditions of the city, such as recognition of the need to retain village communities and strengthen access to the physical infrastructure (Yifan, 2019). If there are plans to deeply consider the socio-economic, political, and cultural sensitivities pertaining to the anticipated developments in Yangon, then smart and sustainable forms of tourism could indeed unfold.

Consequently, Yangon would make a useful case study of utilizing smart technology to monitor site use and develop or support touristic infrastructure. Here, a focus could be put on resource use, cultural asset management, demographic characteristics of visitors, and tourist flows. This could serve multiple purposes, including the monitoring of both the sustainability approach and the touristic potential of these sites.

Small Scale Approaches - Vientiane

Vientiane (Lao PDR) has significant capacity to be smart and sustainable. Both are important, as the city has substantial tourism potential. Indeed, it is a capital city of a country that has witnessed a 5% increase in tourism traffic in the first half of 2019, as compared with the same period in the previous year (Xinhuanet, 2019). Vientiane holds significant cultural capital, characterized by a strong colonial heritage, Buddhist history, and adherence to Laotian traditions. To be able to comfortably sustain residents and visitors alike, it is recognized that Vientiane needs to have a more effective waste management system in place. Thus, there is an identified need to technologically administer waste in such a way as to be able to deal with over 300 to 500 tons of waste daily, and thus reduce the threat of human illnesses (Bhattacharya, 2018). In addition, the Vientiane Sustainable Urban Transport Project, approved in 2015, intends to encourage a more environmentally friendly transport system (Government of the Lao People's Democratic Republic, 2018).

However, the endeavor for Vientiane is to become smart and at the same time also sustainable, especially to avoid pursuing a development path that is more ad hoc in nature and form, as is the case of particular cities in Cambodia. In Phnom Penh, for instance, a rather unrestricted approach to tourism development has taken place, which has led to such concerns as waste dumping and deficient building code requirements (Thomas, 2019). Vientiane would therefore provide a useful case study of the development of a smart, sustainable infrastructure that benefits both residents and tourists alike in a developing tourist locale within the ASEAN region.

A Reaction to 'Overtourism' - Phuket

Thailand has a long-standing reputation and image as a popular tourist destination in Southeast Asia. Here, intensified tourism demand has led to significant socio-cultural and economic impacts. One major tourist center, the city of Phuket, has been targeted by the Thai government to be a pioneering smart city. The objective is to establish a "multipronged smart city action plan", which attends to the environment, economy, governance, education, healthcare, and safety (McKinsey Global Institute, 2018). Another aspect of the plan is to promote both tourism development and digital-related investment (Tortermvasana, 2016). Accordingly, one objective is to monitor overtourism and ensure that the destination can grow smartly and sustainably, serving as

a role model for other cities in Southeast Asia (McKinsey Global Institute, 2018). The smart tourism initiative consisted of an initial assessment of the types of tourists and tourism movements within the city, which has been enabled by free WiFi hotspots and CCTV cameras. Developments include tracking to improve safety for both tourists and residents through an elaborate surveillance system (The ASEAN Post, 2018).

Therefore, Phuket would provide a useful case study on the development of smart technology to monitor and challenge the impact of overtourism. This data could be used to inform the development of more sustainable tourist practices in Phuket and across the ASEAN region as a whole.

CONCLUSION

The current paper highlights the potential of utilizing existing projects within the ASEAN region, such as those discussed above, to provide single-case examples of approaches to developing smart, sustainable tourist solutions. These solutions can be used to augment and understand the significant impact of overtourism. Additionally, they may also provide a range of potential solutions and pitfalls to better understand the development of systems that can support more responsible and sustainable tourism solutions. By locating these three case studies in the ASEAN context, the potential for ASEAN states to provide solutions within their own socio-political environments was unraveled through evidencing their journeys in contributing to SDG 11. One step on this journey can be the integration of smart cities and a smart and sustainable tourist infrastructure.

Nonetheless, there are imminent challenges ahead, such as the obvious challenges posed by privacy intrusions (including face recognition technologies, etc.), or of technology companies forming partnerships with city-level public sector agencies to profit from projects. However, at the same time, it has also been inferred that smart city developments face consternation for not always being able to secure adequate financial support, and for limitations in capacity development (see Smart Cities World, 2019). The former concern is exacerbated by the current economic hardships that ASEAN cities face in light of the economic costs of COVID-19 lockdowns, including rapidly reduced forms of tourism consumption (and production). The latter concern relates to the need for specific skillsets in the region, calling for critical assessment of the degree to which personnel in the service sector industries – in this case the tourism industry – are educationally trained and equipped to be smart and sustainable in a synergetic manner. Another potential challenge concerns the immediate post COVID-19 era, where ASEAN countries and cities may believe that they have no other choice but to aggressively retarget domestic and international tourists. Hence, economic sustainability rather than other crucial forms of sustainability may well become the ultimate priority. Nevertheless, now is an opportune time for ASEAN cities to develop repositioning strategies to become both smart and sustainable by focusing on an integrated and holistic developmental framework. However, this strategy ought to center on the social, cultural, environmental, and ecological elements of the city – enabled through the application of technological innovations and transformations.



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Deciphering the Development of Smart and Sustainable Tourism Cities in Southeast Asia

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