

Editorial Introduction

Special Issue on “Sustainable Urban Design”

Guest Editors:

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Urbanization is one of the great challenges of our time and unchecked haphazard urbanization is a serious threat both to the environment and social and economic balance. In order to meet global sustainability targets, rapid urban growth must be channelled into environmentally friendly, sustainable and liveable urban environments. Thus, this special issue focuses on sustainable urban design which plays a key role in creating these urban environments.

The first paper “Review on the Development of a Sustainability Indicator System in Agenda 21 for Tourism in Mexico” aimed to diagnose the current situation of tourism in Mexico through the evaluation of four major themes: environment, socioeconomic environment, tourism and urban development. The authors introduced the progress of a sustainability indicator system and the implementation of sustainable indicators then analysed the results of the application of the sustainable development indicators which were promoted by the Ministry of Tourism (SECTUR) in eighty-four destinations in the period of 2002-2007, from the length and breadth of the country. The best-positioned tourist destinations were categorized as Medium Cities. Paradoxically, coastal tourist destinations were in the middle. The worst conditions were found in tourist destinations in nature. The results show better performance indicators for urban development, while the higher pressure is in the environmental area. ([Sui-Qui. et al., 2015](#))

Urban renewal is one important government policy which can improve the urban environment and economic growth. So, the second paper “A Study on Promotion Mechanisms and the Future of Government-led Urban Renewal Projects from the Perspective of Land Ethics” aimed to explore Taiwan's urban renewal policy development process and mechanisms of the Government-led urban renewal projects. It references Aldo Leopold's land ethic theory which can be used to explore the power relations and land health problems. The authors analysed the relationship between urban renewal rights and discussed current beliefs and disadvantages of urban renewal mechanisms. Understanding the government-led urban renewal policies is needed to improve the social, economic and ecological issues. By "regenerating" the dilapidated region, the urban area is expected to regain its energy and sustainability. ([Huang. et al., 2015](#))

Since the 21st century, energy shortages, the greenhouse effect and global warming have always been major topics of discussion and sustainable

development has thus become an important goal of urban development policies around the world. Public Bike Systems (PBS) are a category of green transport to provide a low-carbon solution in a city, thus, the third paper “User Behaviour Analysis of the Public Bike System in Taipei” aimed to summarize the factors that affect the sustainable operation of PBS based on the development of public bicycle systems in foreign countries, and to analyse PBS user behaviour in Taipei through a questionnaire survey conducted in Taipei’s metropolitan area. The authors examined the factors that influence the bike-use intentions of the bike-sharing program, and analysed user behaviour based on a survey of 557 respondents in Taipei, Taiwan. The result of this paper shows that the system cognition, environment cognition, personal perception and personal preference are four vital aspects that influence user behaviour, and the extent is varied by different travel purposes, and the location of docking stations is the most critical factor in influencing the user behaviour from each aspect. ([Pai. et al., 2015](#))

Historic preservation, adaptive reuse, and sustainable urban design that considers the full range of social, environmental, and economic factors is an essential component of sustainable urban development, ([Lewin. et al., 2013](#)) while the mapping of historic buildings which can be archived and extracted for application, is the basic work on the protection of historic buildings and adaptive reuse. Traditional mapping methods need more time and more workers, and there are measured omissions, mistakes and other issues which go against the protection of the measured objects. 3D laser scanning technology is a new technique for quickly getting three-dimensional information, hence the fourth paper, “3D Laser Scanning-Technology-based Historic Building Mapping for Historic Preservation: A Case Study of Shang Shu Di in Fujian Province, China” introduced measurement principles of 3D laser scanning technology. The authors used Shang Shu Di, a Ming Dynasty building which is an officially protected heritage site of China in the Taining County of Fujian Province, as a case study, and studied the application of mapping historic buildings based on 3D laser scanning technology. Then, a comparison of 3D laser scanning technology using a traditional method in detailed components mapping was illustrated to indicate the advantage of 3D laser scanning technology in historic building mapping. Finally, aimed at the technical problems of the huge amount of data generated in the application process and the software defects of the Cyclone software, the authors presented two specific coping strategies which are “reasonable data collection and processing” and “construction of historic building components database”. ([Zhang. et al., 2015](#))

3D city models are important in urban planning for sustainable development. Urban planners will draw maps for efficient land use and a compact city. 3D city models based on these maps are quite effective in understanding what, if this alternative plan is realized, the image of a sustainable city will be. However, enormous time and labour has to be consumed to create these 3D models, using 3D modelling software such as 3ds Max or SketchUp.

Consequently, the final paper, “Automatic Generation of 3D Building Models for Sustainable Development”, proposed a GIS and CG integrated system that automatically generates 3D building models, based on building polygons (building footprints) on a digital map, to automate the laborious steps of creating 3D building models. In either orthogonal or non-orthogonal building polygons, the authors proposed a new system for automatically generating 3D building models with general shaped roofs by straight

skeleton computation. The proposed integrated system succeeds in automatically generating alternative city plans. ([Sugihara., 2015](#))

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