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Learning from best practices in sustainable urbanization

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ABSTRACT

Attempts for implementing sustainable urbanization have been reported and documented around the world. These efforts have led to a vast number of exemplary sustainable urbanization practices, classified as best practices. Best practices contain valuable information in the form of experiences, and learning from them represents an opportunity to replicate successful practices in other cities. This study collected and analyzed 185 best practices in sustainable urbanization from around the world. The main areas of action, the key methods adopted and the outcomes achieved by these practices were identified. Key elements in successful sustainable urbanization strategies were found by conducting a series of association analyses between the areas of action, methods and outcomes. Findings highlight the importance of community participation, capacity building, education, partnerships and job creation in achieving urban sustainability.

1. Introduction

Urbanization is defined as the physical growth of urban areas due to the concentration of people and economic activity. It represents the most important social transformation in the history of civilization (UN-Habitat, 2004b). Urbanization has proven to be pivotal for economic growth and the wealth of nations. Bringing with it enormous benefits such as employment, education, innovation, welfare, social structures, and institutions. Today more than half the world's population lives in urban areas. It has been projected that by 2050 this figure will reach to 70% at which point 6.3 billion people will be living in cities (UNDESA, 2015). Yet rapid urbanization growth is coming at a price: environmental degradation, climate change, poverty and inequity among others. These appear to be common problems across the world due to the poor quality of urban development. It is considered that unless sustainable development principles are adopted in urbanization practices the projected urbanization growth will further compromise the sustainability of cities.

Consequently sustainable urbanization has emerged as a dynamic process that considers the various environmental, social, economic and governance factors (Mori & Yamashita, 2015; Shen, Ochoa, Shah, & Zhang, 2011; Yigitcanlar, Dur, & Dizdaroglu, 2015). According to the European Commission (2006), sustainable urbanization is defined as the challenge to solve both the problems experienced within cities and the problems caused by cities, recognizing that cities themselves may provide many potential solutions. The concept is often characterized by issues such as the proper use of resources to guarantee generational equity, protection of the natural environment, minimal use of non-renewable resources, economic vitality and diversity, community self-reliance, individual well-being, and satisfaction of basic human needs (Choguill, 1996:; Hardoy, Miltin, &Satterhwaite, 1992). Therefore sustainable urbanization is not a simple process. It requires the consideration of all aspects of sustainability within the context of the opportunities and challenges posed by the massive scale of global urbanization. Socio-cultural factors are particularly important in defining the context that shapes the sustainable urbanization agenda of cities (Dempsey, Bramley, Sinead, & Brown, 2011).

It is argued that to move towards sustainable urbanization it is important to learn from experiences and to develop new ideas and approaches to address a wide range of concerns (Shen, Ochoa, Zhang, & Yi, 2013). Much can be learned from successful models of sustainable urbanization around the world. Previous studies confirm that learning from 'experiences in best practices' help to mirror good results, accelerate innovation and improve financial sustainability (Shen et al., 2011; UNDESA, 2010). Best practices experiences are understood as the knowledge gained from the formulation and application of strategies

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and can be used when implementing sustainable development principles in urban contexts. This knowledge gained includes the process of selection of areas of intervention, methods, technologies and monitoring indicators (Shen et al., 2013). Therefore best practices are considered outstanding contributions that improve living environments. They are successful initiatives that demonstrate a tangible impact on enhancing quality of life. Best practices are derived from effective partnerships between the public, private and civic sectors of society. They are socially, culturally, economically and environmentally sustainable (UN-Habitat, 2004a). The criteria for best practices in sustainable urbanization is well established and agreed upon by international organizations including the UN-Habitat and the World Bank (Kreimer, 1997; UN-Habitat, 2004a). According to this criteria a best practice in sustainable urbanization should:

- Demonstrate a positive and tangible impact on improving the living environment of people particularly the poor and disadvantaged
- Be based on a partnership between at least two of the major actors (e.g., central government, local authority, the private sector, and non-governmental organizations)
- Result in lasting changes that lead to effective legislation, regulatory frameworks, social policies, institutional frameworks, or transparent and accountable management systems
- Inspire action and change, including change in public policy
- Promote gender equality and social inclusion
- And innovate within the local context

Best practices in sustainable urbanization have been studied in the past for different purposes. Some studies have analyzed best practices to discuss new frameworks of policy learning and policy transfer and the claims of general applicability of successful policies (Bulkeley, 2006; Varney & Van Vliet, 2005). Other studies have focused on analyzing their monitoring systems and indicators (Shen et al., 2011), or using them for developing principles for urban design (Punter, 2007). However, it is appreciated that these studies used only a few number of best practices for their analyses. In this study it is proposed that a collective analysis of a large sample of best practices in sustainable urbanization can help to identify trends, success factors and hidden patterns in the formulation and application of the strategies that determined their success. It is expected that such knowledge will help to select and adapt proven strategies to novel contexts and foster more innovative approaches to sustainable urban development.

2. Research methodology

In line with the aim of this study, a large sample of best practices in sustainable urbanization is studied, and the following objectives are defined: (1) to identify the main areas of action, methods adopted and outcomes achieved (2) to identify associations between areas of action, methods and outcomes.

To secure the sample of best practices in sustainable urbanization, a comprehensive literature review was conducted. The main sources of the best practices used in this study were as follows:

- Exiting databases, such as Best practices database in improving the living environment (UN-Habitat, 2016), Sustainable Cities™: Best Practice Database (DAC, 2016), ICLEI- Local Governments for Sustainability (ICLEI, 2016), Sustainable Cities International (2016), New York City Global Partners (NYC Government, 2016), and C40 Cities climate change group (C40 Cities, 2016)
- Regional reports, such as the ones published by the European Commission (2010)
- National government reports, such as the ones published by the Ministry of Environmental Protection (MEP) in China (MEP, 2008), the Chinese Academy of Sciences (2010) and the Government of Australia (2005).
- City level reports, such as those from Santa Monica (2016), Malmö (2010), City of Vancouver (2016), and City of Seattle (2010).

This study followed a purposeful sampling. More specifically it used a criterion sampling. While there were numerous reports in the sources presented above, only those practices meeting the best practice criteria defined by UN-Habitat (2004a) were collected. Thus 368 best practice cases were identified as a result. Furthermore the collected best practices were filtered to retain only those practices that included a narrative of the definition of sustainable urbanization aims, objectives, strategies, implementation methods, the use of resources, and the results achieved. In other words the practices retained included core pieces of information necessary for identifying the means of their success in the form of actions, methods and outcomes. These core areas had to connect to the antecedents, include self-reflective methods, and focus on the consequences of implementation to provide a valid input-output model (Subiyakto & Ahlan, 2014; Van de Ven & Huber, 1990). Finally, 185 best practices were selected as effective sample cases for analysis. The practices were also representative of different geographical regions; 19% from Latin America, 22% from the Asia Pacific, 18% from Africa, 21% from North America and 20% from Europe. By using a purposeful sampling, this study does not have the intention of theory building but to demonstrate an alternative way of learning from best practices. The intention is that learning from the collective study of 185 best practices allows us to make generalizations that can be useful extensions of the current understanding of sustainable urbanization practices.

The selected sample was analyzed by using the extraction technique from the qualitative content analysis method. The extraction technique consists in the extraction of relevant experiences from case studies using a category system (Kohlbacher, 2006; Mayring, 2000). The extraction technique was used for mining and structuring experiences according to the research objective 1 of this study. Experiences were stored in a database for data analysis. Percentage frequency distribution was used as a quantitative approach for highlighting the relevance of experiences in the context of the sample best practices. Finally, the association rule mining method was applied for identifying associations between areas of action, methods and outcomes as stated in objective 2. Association rule mining is a subfield of data mining and it is useful for identifying relationships hidden in large data sets. Such relationships are normally represented in the form of association rules or sets of frequent items (Li, Shen, & Topor, 2001). The application of the method is explained in section 4. Fig. 1 systematically presents the research methodology applied in this study.

3. Identification of areas of action, methods, and outcomes

Areas of action addressed, methods adopted and outcomes achieved by best practices are core pieces of information necessary for identifying the means of their success. By using the content analysis method a list of 34 areas of action, 96 methods and 65 outcomes were originally identified. The lists were rigorously examined by 10 experts in sustainable urbanization, 4 academics, 3 professionals working for NGOs and 3 professionals working for consulting firms. Finally the lists were reduced to 30 areas of action, 76 methods and 58 outcomes respectively by merging the categories with high similarity to assure proper accounting for autonomy and overlaps. The following sections present the areas of action, methods and outcomes identified.

3.1. Areas of action

Sustainable urbanization is well established as a multi-dimensional process which covers environmental, economic, and social dimensions. More recent studies argue that a sustainable urbanization process should also consider the governance, physical and technological dimensions (Cash et al., 2003; Satterthwaite, 1997; Shen et al., 2011, 2013). According to the best practices sample examined in this study,