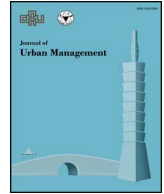




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# Assessing urban sustainability of slum settlements in Bangladesh: Evidence from Chittagong city

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## ABSTRACT

This paper examines the sustainability of urban development through the livelihood conditions of slum dwellers in Bangladesh. The empirical data were collected through interview schedule and FGD from 97 respondents in two slum areas of Bangladesh. The respondents were selected purposively from the second largest city of Bangladesh namely, Chittagong. The results clearly indicate that there exist significant diversity and differences of sustainability indicators, particularly household and housing characteristics, health, drinking water, waste disposal system and security. More specifically, the finding shows that slum dwellers have been experiencing with a wide range of substandard, overcrowded and unhealthy housing conditions in one hand. On the other hand, they have scarce and insufficient health, sanitation, water and waste disposal services which are unswervingly impeding to sustainable development in urban areas. Although the majority of slum dwellers have access to electricity, they are still threatened by the insecurities of women, drug dealing, eviction and natural disaster. Therefore, the findings suggest a holistic approach to address the multi-faceted sustainability issues that affect the livelihoods of slum dwellers within the framework of context-driven development policy of the country.

## 1. Introduction

Living in a city gives people greater hope and optimism than in the countryside because of all the opportunities and amenities (CDE, 2014). At the same time, cities are considered unsustainable sources of resource consumption and waste production, greenhouse gas emission, and are a key contributor to climate change (Van der Heijden, 2017). However, shelter in a slum is affordable and appropriate for people on low and irregular incomes due to well-location in terms of urban jobs and livelihoods (Turok & Borel-Saladin, 2016). Furthermore, the slum is regarded as high-flying for a cost-effective zone for poor communities. Moreover, the slum settlements in urban settings have distinct features across the world. The expedition of urban slums in the developing world is nothing but as a result of informal, illegal and unplanned urban growth. Slum development is fuelled by a combination of rapid rural-to-urban migration, spiralling urban poverty, the inability of the urban poor to access affordable land for housing and insecure land tenure (UN-Habitat, 2003). However, rapid urbanization, lack of urban planning and housing policies have led to the creation of slums and informal settlements in urban areas. Remembering that the United Nations (2017) calls on governments to “make cities and human settlements inclusive, safe, resilient and sustainable” recognizing the impact of rapid urbanization. More recently, the United Nations adopted a New Urban Agenda, a blueprint for achieving sustainable urbanization, to help tackle this issue with the goal of upgrading slums and granting slum dwellers access to safe and affordable housing with basic services by 2030 (United Nations, 2017). Upgrading slum settlement is requisite for sustainable urban development. Therefore, there is a need for sustainable

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housing solutions for the poor in the urban global south. Unfortunately, affordable housing is out of reach for millions of low-income families, as a consequence of their limited incomes, and because of national and local housing policies that fail to reach the urban poor (UN-Habitat 2012; Smets & Lindert 2016; Ahmed, 2016). Meanwhile, the global community has gradually been started working on upgrading slums and informal settlements.

Bangladesh is the 7th largest populous country in the world with a population of more than 158 million people inhabiting a small area of 147,570 km<sup>2</sup>. The population of Bangladesh is equal to 2.19% of total world population with a density of 1101 people per km<sup>2</sup> (BBS, 2011). Albeit, the country has a noticeable achievement in poverty reduction, there still exists a substantial portion (24.3%) of people live in below poverty line, where urban poverty is recorded at 18.9% (BBS, 2017). After the independence of Bangladesh, the urban areas have experienced massive population growth due to urban opportunities and rural calamities resulting rapid growth of urban squatter settlements across the country. While still predominantly rural with about 34% of its population living in urban areas, Bangladesh is urbanising rapidly and is expected to have more than 50% urban population by 2050 (United Nations, 2014). About 55% of urban population lives in urban slums: there are intra- and intercity variations in population size, density, the percent of the urban population living in slums, and sanitation conditions (Angeles et al., 2009; UN-Habitat, 2016).

Chittagong is the second largest city in Bangladesh which is located on the outskirts of Bay of Bengal. It is a low-lying city with the country's principal seaport. The city is the steadily expanding and densely populated city in Bangladesh. It is the hub of country's economic and industrial activities. Furthermore, the city has undergone a firmly growth in its slum settlements as a consequence of escalating economic actions and rural-urban migration. Chittagong has experienced a rapid reduction in urban poverty in recent years, which is estimated at 13.7% in 2016 (BBS, 2017). Residents in slums and squatter settlements, where around one-fourth of the city's population lives, are worst affected in terms of quality and access to services and facilities (Ashraf, 1995; Burton, 1999; BBS, 2015). Additionally, citizens face different types of regional environmental burdens, notably air pollution, noise pollution, traffic congestion and surface water pollution (Rahman, Haughton & Jonas, 2010). However, cities are struggling to accommodate their rising populations and address the multidimensional challenges like infrastructure and urban sprawl developments (Soyinka, Siu, Lawanson & Olufemi, 2016).

The paper justifies how and why examining the sustainability of slum squatters have become imperative in order to achieve sustainable urban development. The study is a distinctive as it finds and assesses key sustainability indicators in the context of developing countries based on the Chittagong city in Bangladesh. As the city is highly vulnerable to natural and human-induced hazards, hence the upgrading slum initiatives are mandatory that needs to be linked with sustainability indicators. Finally, this paper provides the sustainability gap to work on slum improvement and upgrading for policy makers and implementers, and opens up avenues for academics for further investigation in this field. Moreover, other than fragmented studies on Dhaka city, no comprehensive study on sustainability of urban slum in Chittagong city has been carried out.

## 2. Conceptualizing urban sustainability and slum settlement

The United Nations (2014) report shows that developing regions have been witnessing a faster rate of urbanization than that experienced by the developed regions. About half of the world's population is residing in urban areas. Most of them are taking place in burgeoning squatter settlements as many countries are unable to accommodate this surge in decent living conditions (Turok, Budlender & Visagie, 2017). In most of developing Asia, urbanization has been accompanied by slums and shelter deprivation, informality, worsening of the living conditions, and increasing risks due to climate change and exclusionary urban forms (Mathur, 2013; Ahmed, 2016). The UN-Habitat (2015a) report shows that the trend of urban population residing in slum around the world is changing round the year. The document also shows that the absolute number of slum dwellers continues to increase in developing countries. In case of developing countries, approximately 30% (881 million) of urban inhabitants lived in slum settlements in 2014 whereas it was 689 million (46.2%) in 1990 (UN-Habitat, 2015b). Therefore, the sustainable development concept appears to have been one of the driving forces of world history in the period around the end of the 20th century. By the late 1960s and early 1970s the melting pot of different ideas about progress, sustainability, growth and development which had developed over many years started pointing in a new direction, that of sustainable development (Pisani, 2006). Ferguson, Smets, and Mason (2014) viewed as the alternative to traditional patterns of development that can avoid problems such as exhaustion of natural resources, ecosystem destruction, pollution, overpopulation, growing inequality, and the degradation of human living conditions. However, the Brundtland Commission (1987) made the sustainable development clear as sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs. Kahn (1995) addresses that the paradigm of sustainable development described in Agenda 21 rests on three conceptual pillars: economic sustainability, social sustainability and environmental sustainability. Pugh (1996) evaluates sustainability in practice, assessing Agenda 21 and subsequent developments. In terms of practical planning guidance, Agenda 21 proposes a number of concrete measures to achieve sustainability in the socio-economic realm. These include access to land, security of land tenure, tenants' rights, liberalized credit policies, and low-cost building material programs to sustainable urban living for the homeless and for the urban poor (Hall & Pfeiffer, 2000).

The last two decades have witnessed considerable growth in the literature on sustainability and cities as sustainable urban development has often been used interchangeably with urban sustainability and sustainable city (UNDESA, 2013; Soyinka, et al. 2016). Sustainability has also become an important concept in relation to environmental integrity. There exist multi-faceted nature of the sustainability debate in towns and cities where large concentrations of people and activities have created a myriad of complex social and economic challenges with often severe environmental consequences (Keivani, 2010). In its application to cities, sustainability adopts the metaphor of metabolism; a city can be defined as becoming more sustainable if it is reducing its resource inputs (land, energy, water, and materials) and waste outputs (air, liquid, and solid waste) while simultaneously improving its liveability

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