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Urban development policies for the provision of utility infrastructure: a case study of Dhaka, Bangladesh

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ABSTRACT

This research aims to analyse three urban development policies relevant to the utility infrastructure provision in Dhaka, Bangladesh for improving the environment. Available relevant literature, site survey data, and stakeholder's opinion derived from semi-structured interviews were utilised for qualitative analysis. The results reveal that providing the utility infrastructure in the existing urbanised areas is possible by service upgrading and incremental development. Nevertheless, though implementation is politically and financially challenging, this research suggests that the new urban policy with the utility infrastructure provision prior to development is more effective.

1. Background and rationale of the research

Much urbanisation is happening haphazardly in the developing country cities where there is no utility service. The resulting environmental pollution is severe and the problems are localised, immediate, and health threatening (McGranahan et al., 2001). Due to lack of utility service in the housing areas, cities may become deeply mired in pollution, and thus disease and social ills emanate from underserved areas (UN-Habitat, 2008). Utility services include a range of urban facilities and utilities such as water supply, drainage, sewerage, garbage disposal, street lighting, electricity, gas, markets, bus and truck terminals, rickshaw and tempo stands, and more. For a detailed understanding, this article analyses the urban development policies related to particularly, for the provision of stormwater and wastewater drainage. Provision or extension of utility service can reduce the environmental effects and conserve the physical environment of the cities, but doing so requires effective policies that reflect plans of actions designed to achieve improved environment. However, there is little research available for the context development that recognises and evaluates beneficial policies for the utility infrastructure provision in cities in developing countries. This research seeks to answer the following research question: at what stage of urban development the utility infrastructure provision is beneficial to improve the physical environment of a city?

This research aims to analyse three urban development policies relevant to the utility infrastructure provision in Dhaka, as a representative of a city in developing country. This also discusses the existing situation of utility services and the consequential environmental effects in the city. Dhaka, the capital city of Bangladesh, is a highly developing and high-density South-Asian megacity. Lack of utility services is one of the common sources of environmental problems in the urbanised areas of the city, as wide areas are unserved. Although there are quite severe environmental problems in Dhaka, the environmental consequences originated due to lack of utility services cannot be avoided.

This research discusses the effectiveness of the urban development policies for an improved urban environment: upgrading service in already developed areas, incremental development of infrastructure parallel to settlement development, and infrastructure provision prior to development under a new urban policy. These policies are mainly associated with the utility infrastructure provision at different stages of development of urban settlements in Dhaka. Upgrading is one of the simplest and most effective forms of housing, and the primary means for which government and international agencies fund for the utility infrastructure provision (Hardoy et al., 2001). The basic components of upgrading are the provision of basic services, rationalisation of the layout and alignment of structures of the existing sprawl, and unplanned development (and providing security of tenure of informal housing dwellers). The utility infrastructure provision can be incrementally or phase by phase in the existing urbanised areas. New urban development is an urban planning policy to decentralise the urban settlement. The new urban areas are developed purposefully when the main city becomes congested, unmanageable and polluted (in the form of 'satellite town', 'polycentric city'- decentralisation of urban areas at the regional level or sub centres). This policy allows for the promotion of self-contained new urban areas beyond the existing

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urbanised areas.

There is a lack of consensus in the available relevant literature about the most effective policies relating urban growth process and the utility infrastructure provision. Several researchers claim that upgrading service is more economical than eviction and new development (Burns and Grebler, 1976; Johnson, 1987; UN-Habitat, 2009). Because this policy retains the existing economic and social structures of the residents (Martin, 1983), and reduces the unit cost of service provision through the concentration of housing (Hardoy et al., 2001). Focusing on sanitation, Ferguson (1996) claims that incremental development can play an important role if the government is to gain control of the urban environment. He also highlights high costs, high subsidies, and inappropriate land-use and building standards that result from low formal sector production and unguided land invasions. Other research claims that it is expensive to provide infrastructure to the denser city centres compared to the developments on the periphery (Jenks, 2000). The new urban policy can create opportunities to provide the utility infrastructure prior to development in a new urban. The utility infrastructure installation is more cost-effective before building than retrofitting (Ferguson, 1996; Nishu et al., 2006; UN-Habitat, 2008). Moreover, providing the utility infrastructure in planned developments is easier compared to unplanned (haphazard) settlements (Hardoy et al., 2001).

This research assesses three urban development policies on the utility infrastructure provision aiming at reducing the localised, immediate, and health-threatening environmental effects created due to lack of utility services in Dhaka. The knowledge achieved through this research is generalisable to other cities in Bangladesh as well as other fast-growing cities in the developing countries having similar political, economic, social, and cultural backgrounds.

2. Methodology

The research follows a qualitative case study approach. Qualitative research can be regarded as a distinct mode of scientific endeavour that yields a coherent and detailed understanding of the world. Yin (2003) pointed out the suitability of case study research, whereas (a) the research problem is a contemporary phenomenon in its real-life context, and (b) the boundary between phenomenon and context is not clearly evident. Qualitative case study research strategy has been used for three purposes: exploration, description, and explanation (Yin, 2003). This research is exploratory as relatively little research has been done in the policy analysis relevant to the utility infrastructure provision in the context of cities in developing countries. This is descriptive due to corroborate and illustrate more detailed and precise accounts to describe the phenomena, as well as explanatory to provide an understanding of possible causal processes. This research adopted a qualitative approach due to accommodate stakeholders' opinions to analyse the urban growth policies for utility infrastructure provision in Dhaka, considering whether it is possible to implement in Dhaka and whether the policies will improve the physical and natural environments.

This research adopted multiple methods to determine the stage of urban growth that is beneficial for the utility infrastructure provision in the case study city of Dhaka. Available relevant literature, site survey data from four study areas, stakeholder's opinion derived from semi-structured interviews were utilised for qualitative analysis. This research selected two residential areas (*Kallanpur* and *Banasree*) and two slum areas (*Bhashantek* and *Ayatullah Bastee*) in Dhaka considering the attributes: spatial location, period of establishment, construction materials, type of land occupation, and type of neighbourhood. This used a 'semi-structured site visit schedule', note taking, and photographic evidence as tools for site data collection. This research utilised 'semi-structured interview schedule' for interviewing 50 stakeholders related to utility services, housing and urban planning in Dhaka from three groups: (a) policy makers and decision makers (representatives of national, sectoral, special and local government agencies, and statutory consultants), (b) professionals from academic and research organisations and NGOs, and (c) representatives from the community in the study areas. The prospects of the urban development policies relating the utility infrastructure provision are described mainly through qualitative narratives rather than any monetary or quantitative accounts due to accommodate the opinions, views, and experiences of the participants in detail.

3. The institutional and legal framework for the utility infrastructure provision in Dhaka

The institutional and legal framework for the utility infrastructure provision in Dhaka clarifies whether the policies possible for the city. This section discusses the institutional and legal frameworks relating to sewerage and stormwater drainage in the city. This research considers the area as Dhaka that is under the jurisdiction of *Rajdhani Unnayan Kartipakkha* (RAJUK) (Capital Development Authority). This is RAJUK area or Dhaka Metropolitan Area (DMDP, 1995–2015) that covers 1528 square kilometres. This area consists of Dhaka South City Corporation (DSCC), Dhaka North City Corporation (DNCC), *Gazipur* City Corporation (GCC), *Narayangonj* City Corporation (NCC), and one *Pourashava* (local municipal government), namely Savar. This area also encompasses some rural areas.

The responsibilities for the utility infrastructure provision, operation, and maintenance in different territories of Dhaka are vested in different public organisations. There is an overlapping of some responsibilities (Fig. 1). Non-governmental organisations (NGOs) and community-based organisations (CBOs) have very limited interventions for drainage in Dhaka.

The Dhaka Water Supply and Sewerage Authority (DWASA) is a service-oriented autonomous commercial organisation in the public sector, entrusted with the responsibility of providing the sewerage disposal (wastewater), and stormwater drainage services (as well as water supply) within its jurisdictional areas of Dhaka. The DWASA covers more than 360 square kilometres that is within the DNCC, DSCC, and NCC area (Khan, 2012). This area covers only 23.56 percent of the RAJUK jurisdiction area, which is the most built-up area in the city (Islam, 2005).

The Department of Public Health and Engineering (DPHE) is responsible for the sanitation all over the country apart from the city corporations. Both the DPHE and *Pourashava* are responsible for the provision, technical assistance, operation, and maintenance of the sanitation services, infrastructure development within *Pourashava* area of the RAJUK area. As the DPHE is a national level organisation with limited capacity, its activities for sanitation in the RAJUK areas are very limited.

The clause in the Building Construction Rules (BCR) (GoB, 2006)

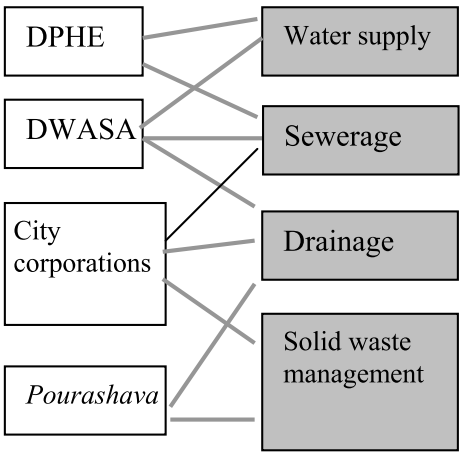

Fig. 1. Organisations for the utility infrastructure provision in Dhaka.