# Access to basic services during the transition from MDGs to SDGs: more rhetoric than reality in a Bangladesh slum

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## Abstract

**Purpose** – This paper aims to assess the progress in the provision of basic services in urban slums in Bangladesh during the transition period of millennium development goals (MDGs) to sustainable development goals (SDGs).

**Design/methodology/approach** – The study used a mixed method of research. The empirical part of the research was conducted in three Blocks of Rupsha slum in Khulna city. Randomly selected 120 households were interviewed through a structured questionnaire; three focus group discussion sessions (FGDs) were also conducted. Progress in the slum residents' access to basic services during the transition from MDGs to SDGs is tacked based on primary data. The User Satisfaction Index (USI) and Network Analysis tools in ArcGIS are used to identify the gaps in service provision.

**Findings** – Findings show that a very significant proportion of families (56.67%) encounter an acute level of difficulties to gain smooth access to water services. About 89% of respondents have only access to a common or shared toilet facility where one common toilet is used by 20–25 persons. About 31% of families are unable to send their children to primary school even after four years of the adoption of SDGs. Achievements in most indicators of basic services in the slum are in general lower than the national level. Moreover, there exists spatial variability within the same slum. After four years of the transition from MDGs to SDGs, most of the services are poorly satisfying the residents of the Rupsha slum, and water service provision is in worse condition. The findings of this study have unveiled that while achievement in target areas is appreciable at the macro level, at the micro-level; however, good achievement in the provision of few basic services in the low-income settlement is more rhetoric than reality. Therefore, a lot more work needs to be done during the SDG phase to give the slum residents a decent quality of life as they have missed the MDGs' train.



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**Originality/value** – Study single-out works need to be done during the SDGs phase to give the slum residents a decent quality of life as they have missed the MDGs' train.

**Keywords** MDGs, SDGs, Service facility, Service gap analysis, Suitability analysis

**Paper type** Research paper



## 1. Introduction

Despite the economic recovery, low unemployment and low inflation during 1990, the increasing trend of inequality and high incidence of poverty, urged for a new war on poverty (Auerbach and Belous, 1998). Accordingly, at the beginning of the new millennia, humanity has witnessed a global initiative – the millennium development goals (MDGs) to address the challenges posed by the increasing trend of poverty. MDGs targeted to achieve universal primary education, eradicate poverty and ensure access to safe drinking water for the maximum proportion of the people within 2015 (United Nations, 2015). The MDGs being history's most inclusive anti-poverty movement, promised to improve the lives of slum dwellers by upgrading and redeveloping the slums. The initial assessment shows that MDGs have been so far successful in several targeted areas; globally the number of people living in extreme poverty has decreased to 836 million in 2015, from 1.9 billion in 1990 (United Nations, 2015). The net enrollment rate for primary schools in developing countries has increased from 83% in 2000 to 91% in 2015. Although at the global level, MDGs have contributed substantially to successfully address issues related to poverty, the success does vary across nations. Most progress has taken place in the East Asian nations; the least progress has been observed in sub-Saharan counties. The countries in Latin America, the Caribbean and South Asia have done excellently in a few indicators while done moderately in many other indicators (Leo and Barmeier, 2010).

Bangladesh with a population of 160 million within an area of 147 sq km (density 1000 person/sq km) and having per capita income of only 1800 US$ has registered remarkable progress in several targets of MDGs including reducing poverty, ensuring food security, enhancing (primary) school enrolment, lowering the infant and under-five mortality rate and maternal mortality ratio, improving immunization coverage and reducing the incidence of communicable diseases (GoB, 2015). For example, people living below the national poverty line decreased to 24.8% in 2015 from 48.9 in 2000. Net enrolment in primary education has increased to 97.7% in 2015 from 85.5 in 2000. Similarly, the Under-five mortality rate per 1,000 live births has declined to 46 in 2015 from 84 in 2000 (GoB, 2015). While achievements as a whole look impressive, there exists huge variation across levels and scales. In general, achievements in urban areas are better than in rural areas. Similarly, progress is higher in large cities than in smaller cities. Moreover, the attainments of a few targets of MDGs have been associated with several challenges including the existence of poverty pockets, drop out of children from schools, lack of access to drinking water in cities' slums.

In 2015, the UN reported that despite the apparent success of MDG targets at the end of MDGs, 800 million people would be living in severe poverty and suffering from malnutrition along with 880 million people who would be living in slum or slum conditions areas in the developing world cities. To move the ongoing global initiative further, the Sustainable Development Goals (SDGs) were initiated in 2016. The SDGs are set in 2016 to achieve 17 goals in 169 target areas which would overcome the failures of MDGs and achieve global sustainability in social, economic and environment within 2030 (UN Habitat, 2018). The SDGs aimed to ensure clean water, safe sanitation, quality education, sustainable housing, etc., within the year 2030 for all including slum residents. Therefore, the SDGs are considered a breakthrough in the development trajectory of many countries including

Bangladesh that has been experiencing a very high rate of urbanization over the past two decades or so.

Living in a city gives people more hope and optimism for better employment and working conditions, education, recreation and health facilities, and opportunities for leading a better lifestyle than in the countryside characterized by remoteness, isolation and exposure to disasters (Hassan *et al.*, 2000; Saroar and Routray, 2013; Centre for Development and Enterprise, 2014). As a result, cities experience a huge influx of people from contiguous areas within a short period which leads to unplanned urbanization in most of the developing counties including Bangladesh. Unplanned urbanization, lack of urban planning and housing policies, poor distribution of utility services have resulted in the creations of informal settlements and urban slums in the cities of Bangladesh (Uddin, 2018; Filho *et al.*, 2019). In the slums of Bangladesh, dwellers have been leading a very miserable life due to the lack of proper and sufficient service facilities (Rahman *et al.*, 2010). Several studies have highlighted the poor socio-economic condition, inadequate access to service provision of slum dwellers in major metropolitan cities such as Dhaka (Latif *et al.*, 2016; ICDDRB, 2016; Ahmed, 2016; Alamgir *et al.*, 2009), Chittagong (Hossain, 2013; Uddin, 2018; Suykens, 2017), Rajshahi (Alam *et al.*, 2013; Jahan *et al.*, 2015; Farhana and Mannan, 2018) and Khulna (Tanni *et al.*, 2014; Roy *et al.*, 2020; Tarique and Ali, 2019; Rana, 2009). The common limitations of the studies are:

- they heavily draw on climate literature and thus look at slum residents' coping and adaptation to climate change-related (extreme) events;
- focused on access to WASH facilities;
- poverty, livelihood and informal economy.

Only notable exceptions are Alam and Mondal (2018), Roy *et al.* (2020) and Rana (2009) who have assessed the sanitation service quality in the Railway Slum of Khulna city. Roy *et al.* (2020) highlighted the problems associated with the water supply and sanitation system in the Bastuhara slum. Rana (2009) illustrated the poor condition of sanitation and water supply system in the Rupsha slum and its impacts on human health and the environment during the year 2009. This study builds on the previous studies, yet differs in scope and focus. This study works at the interface of MDGs, SDGs and the quality of life of slum residents. It aims to foster debate on the strategies to address the intra-slum spatial variability in some of the quality of life indicators at the local/micro level.

None of the studies so far reviewed have assessed the MDGs outcome at the local level focusing on slum residents in Khulna city (a brief illustration of Khulna city is provided in the study area section). This study points out the gaps in the literature and tries to fill the knowledge gaps in three ways. First, it has assessed the slum residents' access to basic services (as proxy indicators of quality of life) at the final stage of the MDGs; second, it has assessed the slum residents' progress in gaining access to basic services in the early years of SDGs. The objective here is to track the changes in quality of life (reflected through their satisfaction as well) during the transition from MDGs to SDGs. Third, to examine the factors that make difference in the quality of life indicators of slum residents during the transition from MDGs to SDGs. Finally, it comes up with a set of policy suggestions to promote inclusive and sustainable development of the slum residents in Khulna city in Bangladesh through the provision of improved services.

## 2. Materials and methods

### *2.1 Study area*

Khulna is one of the four major cities in Bangladesh that has more than one million population. Locating on the Bank of Bhairab-Rupsha River, Khulna City (officially known as

Khulna City Corporation- KCC) has been developed as the main center of trade, commerce, industry, administration, health and education in the southwest region for half a century. Khulna city is well connected with the capital city Dhaka and other regional cities with a multimodal transport system (rail, road, water and air transport). As this city offers all kinds of urban amenities and services and has a well-developed transportation network, the city experiences a huge influx of people from nearby cities and regions (Haque *et al.*, 2020). Broadly, two types of in-migration are observed. First, people who arrive at the city to avail of urban services and amenities are relatively better off and start living in areas where most urban services are available. Second, people who arrive at Khulna city after the exposure to natural hazards such as cyclonic storms and coastal flooding find their ways to informal settlements such as slums and squatters located in the most marginalized pocket of the city (Haque *et al.*, 2019; Fattah *et al.*, 2020).

About 1.5 million people live in Khulna city within an estimated area of 45.65 sq km (Morshed *et al.*, 2020). About 0.2 million (200 thousand) people live in 520 slums scattered across the city. About 80% of the residents of the slums live in two dozen large slums. Rupsha slum, one of the largest and oldest slums in Khulna city is selected as the study site (Figure 1). This slum has been developed about half a century ago on the west-bank of the Rupsha River located in Ward no. 22 of Khulna City Corporation. Geographically, it is located at 22°48'22"N latitude and 89°34'48"E longitude. Currently, it covers an estimated area of 6.13 acres where about 3,700 families (having a total population of 15,876) live (KCC, 2019). This slum is well-known for housing the climate migrants that originate from the entire south-west coastal tract. The slum is only 2 km away from the main city center where all kinds of trading and commercial activities take place. Moreover, the fish processing factories and the water vessel landing station for the

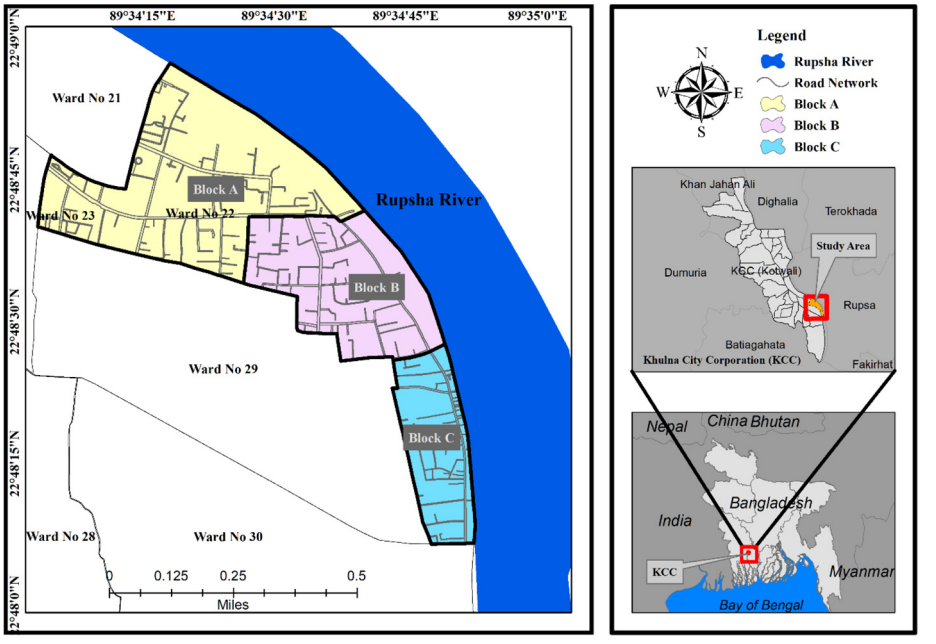



**Figure 1.**
Study Area (Ward 22)

**Source:** Drawn by first author

offloading of fishes, timber, salt, building materials are located just 50 meters away from the slum. The slum residents are engaged in diverse portfolios of income; most notable occupations are rickshaw puller (three-wheeler), wage labor in the water vessel landing station, fish processing plants, petty trade, hawker, vending in the city center and construction workers. The slum is divided into three blocks such as Block A, B and C. The Block C is linear-shaped extending along the embankment cum main road on the Rupsha riverbank. All kinds of employment opportunities such as the fish market, depots, processing factories and the water vessel landing station for offloading of fishes, timber, salt, building materials are located just 10 meters away from Block C. It is highly accessible from other parts of the city and highly visible. Block B is centrally located and enjoys moderate accessibility and connectivity with the city centers. Block A is on the inner side and extends to the rear side of the Rupsha slum; it is bordered by the wasteland of the Railway department and enjoy less accessibility.

The engineering, conservancy and health department of the Khulna city corporation provide various supports through donor-assisted programs/projects to enhance the quality of life of the slum residents in line with the targets of MDGs and SDGs. Supports include construction and maintenance of access roads, slum's internal walkways, water supply infrastructures (street hydrants), immunization and primary health-care and WASH-related supports. Due to the discontinuity of project and budget, as the city authority could not provide uninterpreted services, a good number of local NGOs and civil society organizations collaborate to offset those supports to the slum residents. Although every project has its own monitoring and evaluation system academic research in the interface of MDGs, SDGs and quality of life of slum residents are very scanty if not rare.

*2.2 Methodology*

This study heavily draws on a mixed method of research; it has used both qualitative and quantitative research protocols. Apart from these, literature concerning MDGs and SDGs in varied contexts are reviewed to have a solid basis for positing findings of this research from a comparative perspective. Finally, office records from relevant departments of Khulna City Corporation, and NGOs/private foundations involved with the improvements of the quality of life of the slum residents of Rupsha slum in Khulna city are also consulted. Initially during January-February 2019 reconnaissance survey was done in each of the three Blocks of the Rupsha slum to familiarize themselves with the study area. Later more in-depth information about the various services' provisions such as water supply, health, sanitation, education and financial services are obtained through close consultation with the relevant personnel from KCC and NGOs.

To examine how the slum residents, appraise the various supports that are provided in line with the goals set out in the MDGs and SDGs, a short questionnaire survey is done among 120 respondents selected randomly. However, while selecting the respondents for the short survey high emphasis was given to capture the views of women and other underprivileged groups such as the elderly, persons with disabilities. In the short survey, along with socio-demographic information of respondent's family other information concerning progress in slum residents' access to clean water, primary health service/care, primary education facilities and financial services during the period 2012 and 2018 were collected. The year 2012 is considered as the final phase of MDGs and 2018 is considered as the early stage of SDGs; therefore, for this study, the period between 2012 and 2018 is considered as the transition from MDGs to SDGs.

There are around 3,700 households in Rupsha slum (KCC, 2019). To determine the sample size the following formula and procedure were used. A 95% confidence level and a 10% error margin were set to determine the number of sample households to be surveyed:

$$\text{Sample size, } n = \frac{N}{1+Ne^2} = 3700/\left(1+ 3700\times 0.1^2\right) = 97 \approx 120$$

where N= total number of households, e= margin of error. A total of 120 samples, 40 from each of the three Block (Block A, B, and C), were drawn for the household-level questionnaire survey.

Three focus group discussion sessions were conducted to substantiate and triangulate the finding of the household level questionnaire survey. One focus group discussion session's participant was only female; for another session participants were only male and the participants of the last session were underprivileged slum residents such as the elderly, widows and persons with some form of disabilities. The key informant interview personnel were drawn from KCC's conservancy department's staff, NGOs working in the Rupsha slum, and members of local media and civil society organizations. Finally, quantitative (household questionnaire survey) data were analyzed in SPSS 21 and qualitative data were grouped to form some pattern for analysis. Moreover, the illustrative figure (maps) and tables are used to aid the result and discussion section.

As part of the data analysis, the User Satisfaction Index (USI) is prepared to determine the slum residents' satisfaction level with the services they receive to enhance their access to clean water, safe sanitation, primary health care, education (primary level) and recreation. User satisfaction is the state of pleasure in which the perceived benefits fulfill the expectation (Yanova, 2015). The user's satisfaction with any services depends on the quality and management system of the service (Kim, 2005). This study has used the User Satisfaction Index as a proxy measure of the condition of quality of life of slum residents against the relevant goals/indicators of MDGs and SDGs. For a good illustration of the use of USI in varied contexts including in MDGs/SDGs readers are suggested to review Oliver (1980), Anderson and Claes (2000), (Grigoroudis and Siskos, 2004), Evermann and Tate (2016) and Chen *et al.* (2020). For this study, USI is prepared (and expressed in percent form) adapting the methodology developed by (Grigoroudis and Siskos, 2004). Adapted formula:

$$U.S.I. = \sum_{q}^{i} Ri \tag{1}$$

where R = Response i, $q$ = No. of response.

To aid the USI, this study has used the Network Analysis tool in ArcGIS. The Network Analysis tool finds the shortest distance between two points or places (Luke, 2009) and identifies the service coverage areas of service facilities (Rekha *et al.*, 2017). For identifying the change in service facilities, service coverage and service gaps Network Analysis Tool of ArcGIS are widely used (Hevey, 2018) in transportation service planning (Elsheikh *et al.*, 2016; Arora and Pandey, 2011; Kharel *et al.*, 2019), health services mapping, (Thannoun *et al.*, 2014; Hevey, 2018), ecosystem service assessment (Cooper and Lourdes, 2010) and urban service facility assessment (Lawal and Anyiam, 2019; Rekha *et al.*, 2017; Modinpuroju *et al.*, 2016). This tool was used in this study to examine whether any new service/facilities such as primary school, water supply provision/network, primary health-care centers, recreation site has been added/expanded in the study area during the period 2012–2018. Therefore, the network analysis tool in ArcGIS has illustrated the changes in service coverage of six services during the transition from MDGs to SDGs (2012–2018).

## 3. Result and discussion

### *3.1 Progress in basic service provision in Rupsha slum: general overview*

From the focus group discussion (FGD) sessions, it is revealed that a great majority of slum dwellers arrived at the Rupsha slum from the greater Khulna (Khulna, Bagerhat and Satkhira district) region especially after each episode of the major cyclonic storm. In migration is a continuous process here. The minimum length of stay is one year and the maximum is 50 years. Although most of the slum dwellers have been living for generations, the immigration of new migrants is still occurring at a faster rate. In the Rupsha slum, a wide array of building types is identified where low-income people live. The most common types of dwelling units include very old dilapidated building, tin-shed (CI sheet) with brick walls (no decorative coating), tin-shed (CI sheet) with wood walls, tin-shed (CI sheet) with bamboo-thatch wall. Dwelling units are arranged in a row type arrangement. In between two rows of dwelling units, there is a common corridor/walkway almost open to the sky. Usually each side of the row several dwelling units are arranged. The common bathroom, toilet and cooking place is provided at the end (or in some cases in the middle) of each row. Other common facilities include a hand tube well/water point, facilities for sun-drying of clothes, sometimes a waste bin.

From the household level survey and FGD sessions, it is revealed that almost all dwelling units in all three blocks of the Rupsha slum have electricity connection. The tenant residents of the slum could not confirm whether the connections are legal or illegal. The monthly rent of dwelling units in slum includes a charge for electricity; the electricity charge varies depending on how many light- bulb, fan, tv, or even fridge is used. Normally a tenant family pays 3000–4000 BDT (Bangladesh Currency; 1 US$= 85 BDT in 2020) as monthly house rent for a typical unit (150–200 sq. ft.). Rent structure varies depending on location (Block A, B and C) as well.

There is no piped gas connection for cooking. The residents usually use discarded wood as cooking fuel. The floor of most dwelling units is made of the cement-concrete mix; some cases earthen made. The main circulation ways inside the slum are cement-concrete made; the branching circulations in the backside/further inside of the slum are however made of earthen material or sometimes made of rubbish collected from demolished buildings. Therefore, during the entire wet season (May–September) the slum residents have to walk on the muddy floor inside their slum. The study reveals that almost all families surveyed encounter frequent (4–8 times in May-September) short duration (4–12 hours) waterlogging/drainage congestion during the entire rainy season; even they experience running water on the floor of/inside their dwelling units.

### *3.2 Access to clean water*

From the field survey, it is found that the residents of Rupsha slum use tube-well water for drinking; for other domestic uses they use pond and river water. In some cases, especially in Block C, some respondents mentioned the piped water supply system. A total of 23 tube-wells were found in Rupsa Slum during the field survey. There is only one tube-well for 22 families. From FGDs, it appears that everybody has access to water. However, from the questionnaire survey, it is found that a very insignificant number of families (16.67%) have easy access to clean water (Figure 2). This group includes families who collect water from sources located in the premises of their dwelling units. About one-fourth of the families (26.67%) mentioned that they encounter a moderate level of difficulties such as long queuing/waiting time and insufficient quantity of supply to collect water. A very significant number of families (56.67%) encounter an acute level of difficulties such as frequent malfunctioning, poor quality of water, walking long distances in addition to long waiting

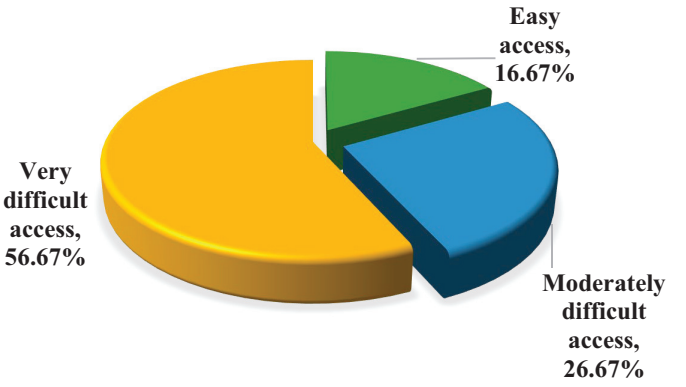



**Figure 2.**
Slum residents' access to water provision

times and insufficient supply. For bathing, many male members of the slum use water of ponds and rivers. As the task of collection of water traditionally rests with the female, they encounter hardship mostly during the rainy season due to waterlogging problems.

Figure 2 indicates that slum residents encounter some forms of difficulties to gain smooth access to water provision even four years after the transition from MDG to SDGs. During the field survey, respondents were asked to testify if there has been any improvement in the provision of clean water in their locality (block) during the past 10 years (2012–2018: transition to SDG). Only a very insignificant number of respondents, for instance, 7.5% in Block A, 10% in Block B, 5% in Block C mentioned that the water supply conditions have been significantly improved (Figure 3). Due to the increase in population, the need for water has been increased as well. Therefore, 32.5% of respondents in Block A, 27.5% in Block B, and 35% in Block C mentioned that ultimately there has been no improvement in the provision of water in the past 10 years. Even a large majority of the respondents, for instance, 42.5% in Block A, 47.50% in Block B and 40% in Block C reported that the water provisioning system has been deteriorated in the past 10 years (Figure 3). Some respondents have mentioned that the water supply condition has been improved moderately due to the installation of some new tube-wells and improvement of the road conditions. But still, the percentage is very poor. This indicates that the improvement of water supply provision in the Rupsha slum during the transition from MDGs to SDGs is far less than adequate.

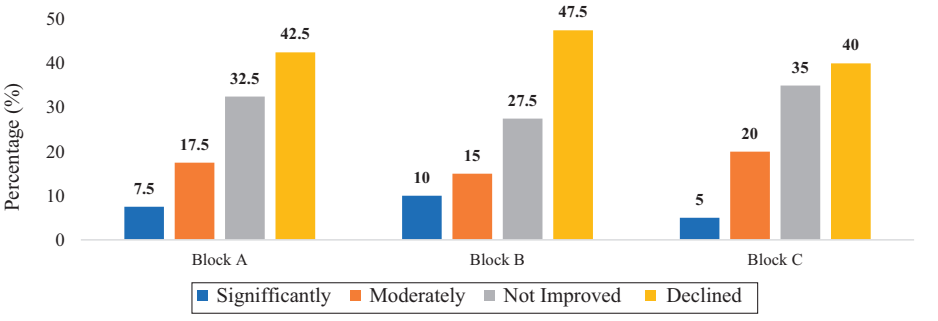
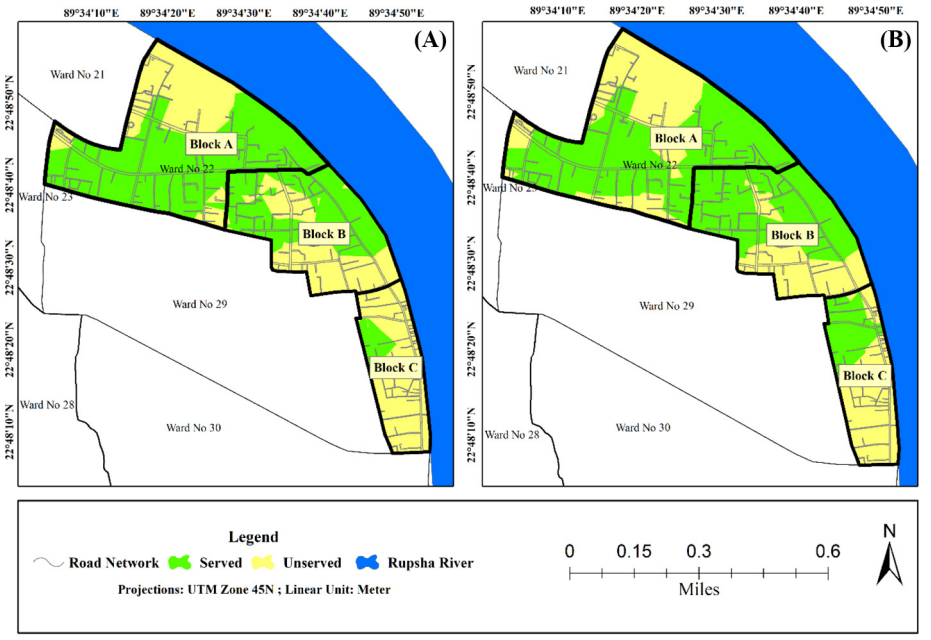



**Figure 3.**
Respondents observation about the improvement of water supply condition in the past 10 years

The service gap of these water supply facilities has been identified through the "Network Analysis Tool" in ArcGIS for the years 2012 and 2018. Service gap analysis is presented in Table 2 and Figure 4. Table 2 shows that there is a slight improvement in water supply condition only in Block C and for Block A and B it is negative. The percentage of unserved area, i.e. areas where population encounter considerable difficulties in gaining access to clean water is decreased at block C by only 2.9% and increased at Block A and B by 1.40 and 2.47%, respectively. Increase of unserved areas in block A and B are associated with the filling of water bodies for housing construction and conversion for build-up areas having other uses. In the Rupsha slum as a whole, about 41.81% of the area offers its residents with fairly good access to water provision on a sustained basis. Still, more than 50% of areas in each block remained unserved, Among the three Blocks, Block C is comparatively in better shape; in about half (49.87) of the areas, residents enjoy fairly good access to clean water provision. But in Block B and C, only 37.27 and 39.38% areas, the residents enjoy fairly good access to clean water. Although the areas occupied by waterbody at Block B is reduced, the percentage of the served area remained the same due to the improvement of road condition during the study period. At least half of the residents in Rupsha slum encounter difficulties in gaining access to clean water even after four years of the adoption of SDGs. As a most essential service, the condition of water supply facilities should be improved and the massive land use transformation should be controlled at the study area; otherwise, the situation will aggravate even more in the coming decades with the fast pace of urbanization (Table 1).




**Source:** Drawn by first author

**Figure 4.**
Clean water provisioning map for the year 2012 (A) and 2018 (B)

*3.3 Access to safe sanitation and WASH services*

The conditions of the household sanitation system and the resident's WASH behavior are analyzed in the Rupsha slum. To sensitize the poor slum dwellers about the benefits of good hygiene practice and to enhance their access to safe sanitation different NGOs including BRAC, ASHA, DSK and Nobolok Parishad have their WASH-related program in the Rupsha slum.

From the field survey data analysis, it is found that only 11% of families have a toilet within their house or they use private toilets. About 89% of respondents have access to a common or shared toilet facility. One common toilet is used by 20–25 persons; often male and female toilets are not separate. Queuing time for common/shared toilet use normally range from 5 to 10 min; in the morning it is even more which bothers the slum residents. Among the common/shared toilet users 35% of families have toilets within 1–3 meters from their dwelling units, 23% of families have within 4–6-meter distance and 31% have to walk more than 7 meters to defecate (Figure 5). Therefore, about one-third (31%) of families encounter difficulties to gain easy access to toilet facilities. Especially at night female users feel insecure to use toilets at night. Moreover, from FGDs, it has been surfaced out that due to excessive use, lack of routine cleaning and maintenance and faulty ventilation system most common/shared toilets became unusable; sometimes bad odor attracts flies which spread diseases through food and water contamination.

The survey result shows that only 25% of respondents wash their hands with soap, 60% washes hands with only water [without soap] and 15% do not wash their hands after using the toilet/washroom (Figure 6). The result further shows that only 6% of respondents wash hands with soap before eating and 25% after defecation. The use of only water is more common to wash hands before eating and after defecation. From the FGDs, it is found that many people use poor income as an excuse for not using soap for washing hands. Although some participants claimed – lack of knowledge is the cause of washing hands without soap, but the overall analysis has revealed that the level of hygiene awareness among slum dwellers is significantly high, although the practice is poor. Hence, the focus should be on encouraging the practice of hygiene rather than awareness.

As mentioned earlier, in the Rupsha slum, several NGOs have provided toilets during the study period. However, as the slum population is increasing faster compared to the pace of provisioning of new toilets, there remain service gaps. The survey result shows that 27% of respondents in Block A, 40% in Block B and 52% in Block C said that the sanitation and hygiene situation has improved. But 45% of respondents of Block A, 32% of Block B and 19% of Block C feel that the condition of sanitation service facilities remained the same during the transition period from MDGs to SDGs. Even 24% of respondents of Block A, 16% of Block B and 6% of Block C reported that the conditions of the sanitation system especially toilets have deteriorated in the past 10 years. Overall, the sanitation system is relatively better in Block C as compare to Block A and B (Figure 7). Why this discrepancy in

**Table 1.** Service area comparison for water supply

| | 2012 | | | 2018 | | |
|---|---|---|---|---|---|---|
| Block | Served area (%) | Unserved area (%) | Total (%) | Served area (%) | Unserved area (%) | Total (%) |
| Block A | 40.87 | 59.13 | 100 | 39.48 | 60.52 | 100 |
| Block B | 39.74 | 60.26 | 100 | 37.27 | 62.73 | 100 |
| Block C | 46.97 | 53.03 | 100 | 49.87 | 50.13 | 100 |

**Source:** Author's calculation, 2019

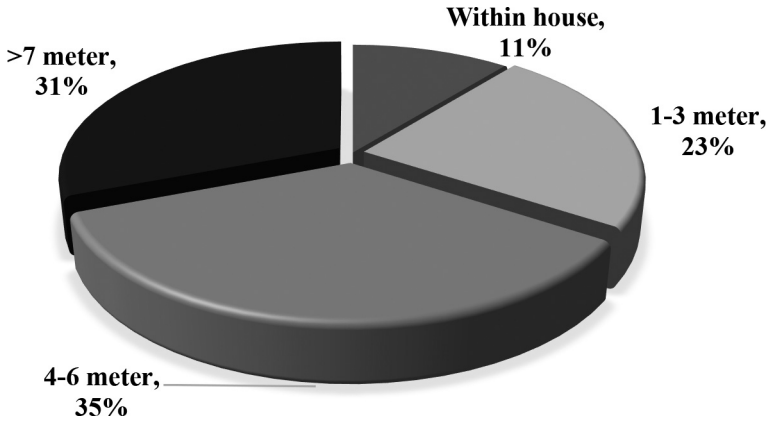



**Figure 5.**
Distance information between house and toilet

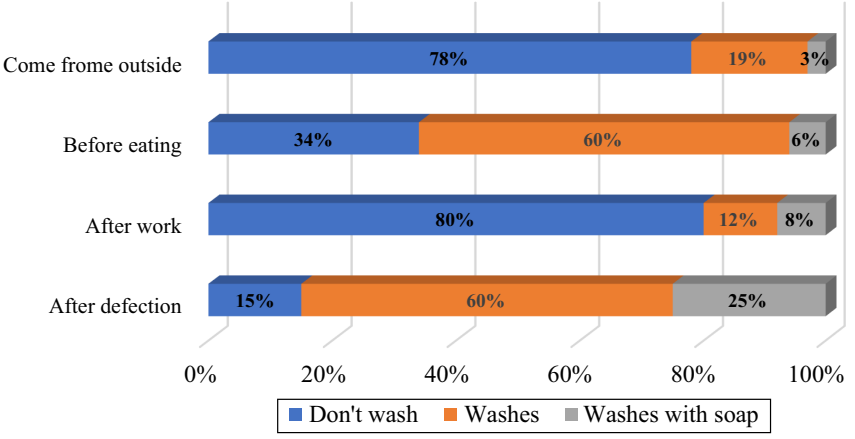



**Figure 6.**
Handwashing behavior of the respondents in the study area

service provision in the same slum? From the FGDs, it is surfaced out that government and NGO workers often pay more attention to work in areas having maximum accessibility and visibility of works; often they neglect areas having low visibility, accessibility and located in isolation/inner side of the slum. Therefore, Block C is located in a strategically important location that offers better sanitation facilities to its residents as compared to Block B and Block A which are located in the middle or backside of the Rupsha slum. Probably this is why dwellers of Block A and Block B have to encounter more difficulties in gaining access to safe sanitation and hygiene even after 4 years of adoption of SDGs. While doing FGDs, participants from Block A accused that the sanitation condition of that part was getting worse day by day due to less intervention and negligence of working NGOs and government agencies.

*3.4 Access to primary education*

Education is recognized as the fundamental right of every citizen by both the constitution of Bangladesh and the United Nations (UN). This right is not properly exercised by the

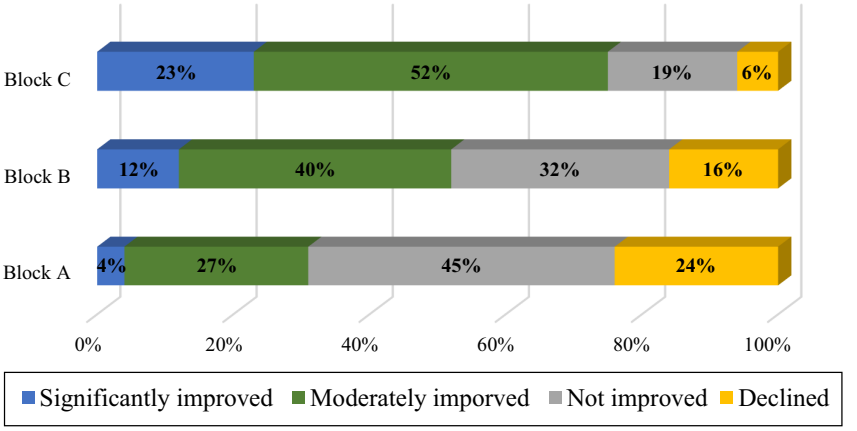



**Figure 7.**
Respondents' observation about the improvement of the sanitation system in the past 10 years

children residing in the Rupsha slum in Khulna city. Survey findings show that 33% of respondents are illiterate, 28% have primary level education and 20% went to secondary school. The respondents are generally the parents; among the respondents, 69% send their primary school-going aged (5 to 11 years old) to school but 31% are unable to send their children for education. However, only 43% of respondents send their high school going aged (12 to 18 years old) children to school and 57% could not send. The FGDs reveal that low enrolment rates are associated with numerous factors including lack of awareness about the transformational benefits of having a child educated, poverty trap and difficulty in attending schools. Many children are unable to attend school in the early years because they had to contribute to the income of their families. Again, many children could not attend or continue to attend due to the lack of facilities in the school such as pleasant classrooms, libraries, drinking water, toilet facilities and playgrounds. Therefore, the provisioning of these support services to attract and retain students is equally important (Figure 8).

The populations of urban areas increase, but the service facilities are not. Although located within Khulna city, the slum and squatter residents' have limited access to most of the urban services. Though the literacy rate has been increased in Bangladesh during the past 10 years how the education/literacy rate of slum residents' children has changed remains as elusive as ever. Study findings show that in general various facilities of the existing schools in the Rupsha slum or nearby areas have not improved much. Figure 9

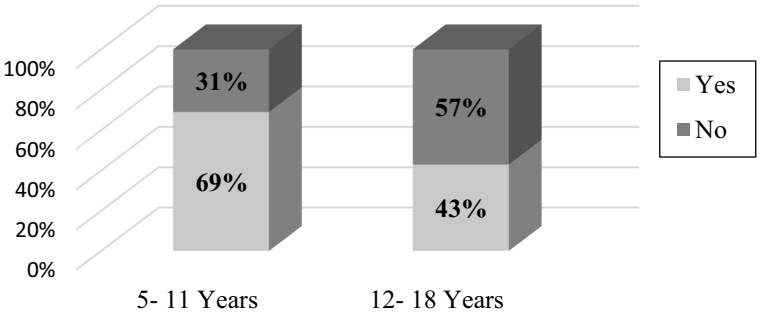



**Figure 8.**
School enrollment of children aged between 5 and 18 years in the study slum

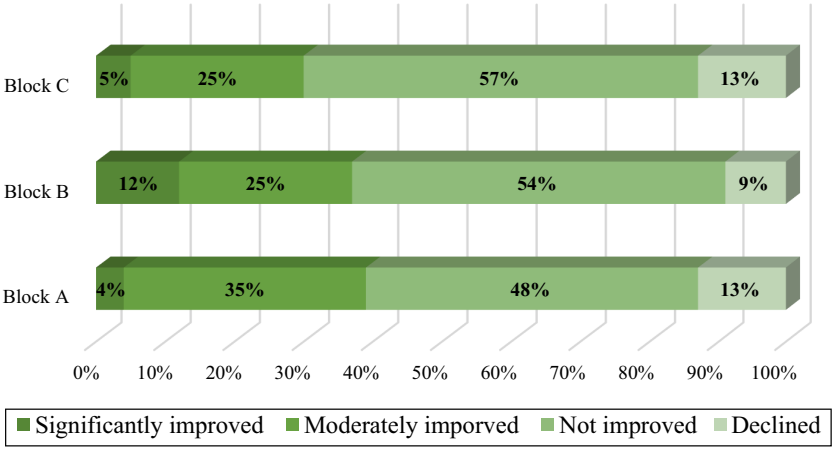



**Figure 9.**
Respondents observation about the improvement of the educational service facilities in the past 10 years

shows that most of the respondents (58% in Block A, 54% in Block B, 57% in Block C) reported that no improvement of educational services/facilities have taken place in the Rupsha slum during the past 10 years. Whereas 13% of the respondents in Block C and Block A said that the conditions of educational service facilities have even deteriorated. Only a few percentages of respondents mentioned significant improvement of education service facilities in the past 10 years.

The service gap of the schooling facilities has been identified through the "Network Analysis Tool" in ArcGIS for the years 2012 and 2018. Service gap analysis is presented in Table 2 and Figure 10. Table 2 indicates that the served area has increased considerably in all three Blocks. The highest increase in the served area is observed in block B. Although no new primary school was established between 2012 and 2018, the increase in the primary school's served area is due to the construction and development of access roads to the school from the other parts of the study area during the study period.

The percentage of unserved areas, i.e. areas where children encounter considerable difficulties in gaining easy access to primary school has decreased considerably in all three Blocks. The highest decrease in the unserved area of primary school is observed 51.30% in Block B, followed by 31.12% in Block C and 8.59% in Block A. Therefore, the served area of primary school has increased in all the three Block in varying proportion. The highest increase of primary school's served area in Block B is associated with the establishment of a new primary school. On the other hand, the increase of primary school's served area in Block A and C are associated with the construction and development of new roads and good maintenance of existing roads. Due to new road construction with the increase of

| | 2012 | | | 2018 | | |
|---|---|---|---|---|---|---|
| Block | Served area (%) | Unserved area (%) | Total (%) | Served area (%) | Unserved area (%) | Total (%) |
| Block A | 32.37 | 67.63 | 100 | 40.96 | 59.04 | 100 |
| Block B | 12.55 | 87.45 | 100 | 70.85 | 29.15 | 100 |
| Block C | 0.00 | 100 | 100 | 31.17 | 68.82 | 100 |

**Source:** Author's calculation, 2019

**Table 2.**
Service area comparison for primary school

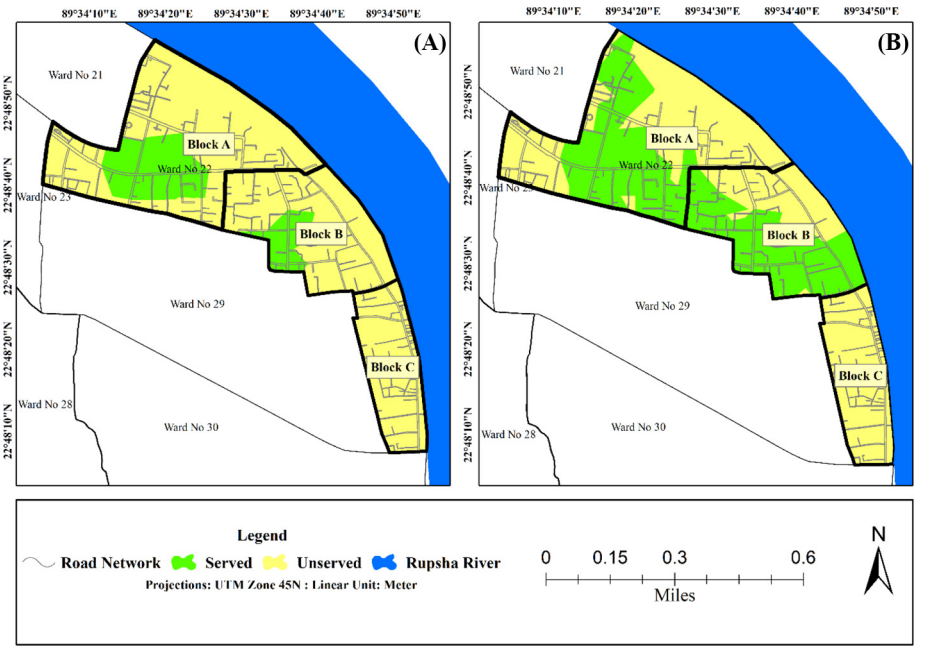



**Figure 10.**
Primary school service area map in the years 2012 (A) and 2018 (B)

**Source:** Drawn by first author

accessibility the served area of primary school increases. Still, more than 50% of areas in A and C block have remained unserved. Among the three Blocks, Block B is comparatively in better shape; about 72% of the area's children enjoy fairly good access to primary school. But in Block A and C, only 41 and 31% of the area's children enjoy family good access to primary school. At least 25% of the area's children in Rupsha slum encounter difficulties in gaining access to primary school even after four years of the adoption of SDGs.

*3.5 Services users satisfaction index analysis*

Though Rupsha slum is situated in the KCC area, the service facilities are not provided adequately. This study has examined the perceptions of slum people whether people are satisfied or not with the various services and facilities such as access to clean water (water supply), financial services (financial institutions), recreation (park and open space), primary health care (community clinic) and primary education (primary school). The analysis shows that the respondent's perceptions vary in different Blocks within the study slum.

Table 3 illustrates that the respondents of all blocks are less satisfied with the water supply services and sanitation service facilities. The USI values of water supply are found 31.67% in Block C followed by 30.63% in Block A and 27.50% in Block B. For sanitation, the highest USI value of 44.60% is observed in Block C, followed by 39.44% in Block B and 32.54% in Block A. Analysis shows that in Block A, the USI values are less than 50% for water supply (30.63%), sanitation (32.54%), park and open space (37.50%) and community clinic (42.50%). Similarly, in Block B, the USI values are less than 50% for water supply (27.50%), sanitation (39.44%), community clinic (42.50%) and education services (47.50%). Table 1 shows that respondents are more satisfied with the financial service institutions

than other services in all blocks. This is because there are many financial institutions including NGOs microcredit programs in the study area.

The analysis further shows that relatively higher USI values are observed in block C and lower in block A. The location of Block A is the main reason for relatively poor USI values than the other blocks. As it is on the inward side, the people do not get access to the facilities within walking distance. Still, after four years of the transition from MDGs to SDGs, most of the services are poorly satisfying the residents of the Rupsha slum, and water service provision is in worse condition. People in the study area are not satisfied enough with the primary education service facilities as well in the study area. Though in SDGs, the policymakers set two goals among 17 goals (Goal No 4 and 6) for quality education and clean water and safe sanitation for all within 2030 around the world. The findings of this study unveiled that while achievement in target areas is appreciable at the macrolevel, at the microlevel; however, good achievement in few areas of quality of life is more rhetoric than reality; which is the case in Khulna's slum in Bangladesh.

## 4. Conclusion

Bangladesh has achieved commendable progress in many indicators of MDGs, and it had a good start with the SDGs. While national-level achievements are encouraging, yet there remain questions whether the achievements in MDGs are inclusive and socially just. This question has merit given the fact of widening of disparity among urban and rural areas, large cities and smaller ones, formal and informal settlements, etc. This study taking Khulna city's slum as a case tries to assess the progress in a few indicators of quality of life; many of these indicators are derived from the indicators/targets of MDGs and SDGs. Taking two-time frames, e.g. 2012 as the final stage of MDGs and 2018 as the early stage of SDGs, this study tries to understand the progress during the transition from MDGs to SDGs.

Apart from assessing the slum residents' progress in the quality of life indicators derived from the MDGs/SDGs, this study has used a user satisfaction index to analyze the satisfaction level in those qualities of life indicators. The Spatiotemporal changes in those indicators during the transition from MDGs to SDGs are analyzed by using the network analysis tool in ArcGIS for the year 2012 (final stage of MDGs) and 2018 (early stage of SDGs). Service gap analysis has been performed to identify if there was any gap in service provision.

Findings show that a very significant proportion of families (56.67%) encounter an acute level of difficulties such as frequent malfunctioning, poor quality of water, walking long distances in addition to long waiting time and insufficient supply to gain easy access to water provision. This indicates that the improvement of water supply provision in the Rupsha slum during the transition from MDGs to SDGs is far less than adequate. The analysis of the conditions of the household sanitation system and the resident's WASH

| Services and facilities | USI (%) Block A | Block B | Block C |
|---|---|---|---|
| Water supply | 30.63 | 27.50 | 31.67 |
| Financial services institutions | 63.75 | 66.67 | 84.17 |
| Park and other open spaces | 37.50 | 51.67 | 48.33 |
| Community clinic | 42.50 | 42.50 | 50.00 |
| Primary school | 50.00 | 47.50 | 55.00 |
| Sanitation facilities | 32.54 | 39.44 | 44.60 |

**Source:** Author's calculation, 2019

**Table 3.** Services users' satisfaction index for the study slum

behavior shows that about one-third (31%) of families encounter difficulties to gain easy access to toilet facilities. About 89% of respondents have only access to a common or shared toilet facility where one common toilet is used by 20–25 persons; often male and female toilets are not separate. This poses a significant challenge for female users, especially at night. Only 25% of respondents wash their hands with soap and 60% washes hands with only water [without soap].

As mentioned earlier, 69% of families in the study slum send their primary school-going aged (5 to 11 years old) children to school and 31% are unable to send their children due to poverty. At least 25% of families' children could not attend or continue to attend school due to lack of drinking water facilities, toilet facilities and playgrounds in the school even after four years of the adoption of SDGs. However, the slum respondents are more satisfied with the financial service institutions than other services in the study slum. This is because there are many financial institutions including NGOs microcredit programs in the study area.

The finding shows that achievements in most indicators in the slum are in general lower than the national level findings. Moreover, there exists spatial variability within the same slum. For instance, among the three Blocks in the study slum, Block having good accessibility, good visibility and strategically located performs better than the others.

In fact, apart from the spatial variability of poverty other physical and institutional factors determine the progress toward the attainment of both MDGs and SDGs. As the slum residents are economically weak, less organized (originates from diverse places), having less connection with the local polity and institutions they in general have failed to make much progress in many qualities of life indicators. Even the respondents' rated USI value of 45–50 against most of the selected criteria implies a huge gap between the quality of life aspiration of slum residents and their current state.

Finally, it could be said that after four years of the transition from MDGs to SDGs, most of the services are poorly satisfying the residents of the Rupsha slum and water service provision are in the worst conditions. The findings of this study unveiled that while achievement in target areas is appreciable at the macro level, at the micro-level, however, good achievement in few areas of quality of life is more rhetoric than reality; which is the case in Khulna's slum in Bangladesh. Therefore, a lot more work needs to be done during the SDG phase to give the slum residents a decent quality of life as the slum residents missed the MDGs train. To overcome this situation, there is a need for a coordinated and targeted program for the low-income settlement (slums) involving multiple actors such as the government agencies, local government, civil society organizations and the NGOs who must collaborate with the slum-based community organizations (like CDCs) to bolster the ongoing move of SDGs.

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