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Unplanned Urbanization Effects on Agriculture in Bangladesh: A Case Study

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Abstract: Bangladesh has undergone exceptional urban expansion over the past fifty years, and this trend is expected to continue during the following fifty. However, the process of rapid urbanization has resulted in serious threats to the sustainability of communities, such as an increase in slums, a shortage of affordable habitations, insufficient amenities for local residents, various types of pollution, and so on. During the last 12 years, agricultural land has been declining on average at a rate of about 1%. The rapid loss of agricultural land in Bangladesh is primarily due to the expansion of rural housing facilities and the country's industrialized urban orientation. Providing housing for Bangladesh's growing population has been a major challenge for the country's arable land. If land is taken away for non-farm activities at the current annual rate, there won't be any cultivable land left in Bangladesh in 50 years. If the trend is not stopped soon, the country would permanently lose its food security, rendering its poor population more subject to volatile international commodity prices.

Keywords: Unplanned urbanization; Agriculture; Food security; Bangladesh.

I. INTRODUCTION

Bangladesh, as part of rising Asia, is accelerating its transition to a developing country. The mentality, lifestyle, rich cultural legacy, and tradition of the people all played a role in this quicker expansion. Despite its tiny size, Bangladesh's strategic geographic location is extremely important. A large chunk of the world's largest delta was formed over thousands of years and is continually expanding due to silt carried away by hundreds of rivers. This land of rivers has become a spectacular network of internal waterways thanks to two major seaports and hundreds of river ports spread across the country. Bangladesh's economy was entirely focused on agriculture only a few decades ago, and the country was one of the poorest in the world. Villages accounted for over 90% of the population until the late 1970's. Gradual urbanization began in the 1980s, and about 40% of the population currently lives in cities (Lipi and Hasan 2021). Urbanization is increasing in popularity. Given the aforementioned forecast, we can conclude that Bangladesh's landscape will undoubtedly change in the near future, with dwindling agricultural land area and brutal deforestation. As Siddiqui (2019) points out, 170 million people in Bangladesh reside on 14.4 million hectares of land, or 25 decimals per person, of which 15 decimals are arable. The amount of land accessible per capita is decreasing due to fast industrialization, widespread urbanization, and population growth. The nation loses more than 225 hectares of land every day, or over 82,000 hectares annually on average, according to the land ministry's website (Siddiqui 2019).

In Bangladesh, the major industry for employment is agriculture. Major macroeconomic goals, including job creation, poverty reduction, human resource development, food security, and so forth, are greatly impacted by this sector's success (Seraj 2022; Kumar & Suppiah, 2023).

The government has been working hard to grow the sector in accordance with the 7th five-year plan, National Agriculture Policy, and sustainable development goals (Ministry of Finance 2019). Agriculture has been prioritized to make Bangladesh self-sufficient in food. South Asia's urbanization has been accelerating recently due to the country's rapid economic transformation and the migration of people from rural to urban areas in search of better living conditions. Between 2010 and 2025, the UN predicted that the world's urban population would increase by more than a billion people (United Nations 2008). However, net shown area and other agricultural land have decreased as a result of the growing population (Kalamkar 2009). According to Satterthwaite et al. (2010), this is probably going to result in a decrease in the amount of land per person and an increase in the percentage of consumers who are not food producers. Food grain consumption will increase as a result, increasing pressure on people in both rural and urban regions as the gap between

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supply and demand widens. There would still be inequality, deprivation, and hunger among the disadvantaged. Bangladesh's urban population percentage in 2019 was 37.4%. Since 1970, it has risen by as much as 7.6% (Konema 2019).

In addition to its GDP contribution, agriculture is Bangladesh's main source of foreign exchange profits and employs a sizable portion of the workforce, especially the poorer ones. As such, it plays a critical role in the country's overall economic performance. It contributes significantly to GDP, around one-third of the total amount (Rahman 2017).

The country's poorer use of its necessary resources is aggravated by many political and social reasons. It poses a severe threat to the nation's ability to produce enough food grains to meet its own needs, and it is a primary factor impeding the achievement of stability in food security (General Economics Division 2020).

Bangladesh's population growth rate has yet to be regulated, and as the country becomes more urbanized, food insecurity will worsen unless effective measures are implemented promptly. The study perceives that only when the agrarian land can be saved while accepting the process of urbanization and industrialization, the environmental risks associated with the loss of arable land can be reduced to a manageable level, and the food security of the study area people can be maximized, will a valid and reliable purpose of this study be presented to its beneficiaries. It is expected that the successful completion of the study significantly holds the strong prospect of bringing some real-life benefits for the population of its study area.

II. Agricultural Sector in Bangladesh

Bangladesh is largely an agricultural country, where the agriculture industry plays a significant role in driving economic growth. Building a lucrative, sustainable, and environmentally friendly agricultural system is essential to ensuring the long-term food security of the population, and Bangladesh's food self-sufficiency has made the wide agriculture sector a top priority. The output of food has been trending upward during the past few years. The Bangladesh Bureau of Statistics (BBS) estimated in preliminary form that the production of food grains was approximately 388.14 lakh metric tons (MT) in FY 2016–17. The entire amount of food grains purchased internally during the fiscal year was 13.83 lakh MT. 58.23 lakh MT of food grains were imported overall via the public and commercial sectors (wheat: 56.90 lakh MT, rice: 1.33 lakh MT). Furthermore, Tk. 20,998 crore—or 120% of the target—was disbursed as agricultural credit up until June 2017; this sum was intended to be Tk. 17,550 crore. (Ministry of Finance 2017). Increases in agricultural input subsidies, as well as the availability and coverage of agricultural financing, were made in an effort to boost production. Initiatives have been put in place to promote the use of balanced and organic fertilizers in order to preserve soil fertility and productivity. The amended budget for FY2016–17 allotted Tk. 6,000 crore to offer subsidies on fertilizer and other agricultural inputs, taking into account the significance of higher agricultural product productivity (Ministry of Finance 2017).

III. Urbanization and its Impact on Bangladesh

Urbanization is the process of being urbanized by these processes, which professionally changed from agriculture to other and behavioral changes (Nuissl and Siedentop 2021). Urbanization is the process by which rural areas turn into urban areas. Bangladesh is among the most densely populated countries in the world, and during the past century, its population has increased dramatically; however, in recent times, the rate of growth has slowed down (Arthur and McNicoll 1978).

Over the course of the next ten years, urbanization will spread quickly throughout the nation. Nearly every other man, woman, and child is predicted to reside in an urban region by 2020 (World Bank ed., Bangladesh 2007). If this spread is not adequately controlled, the disorderly conditions and related problems—such as unemployment, pollution, and an increase in criminal activity—are likely to worsen. In Bangladesh's major city of Dhaka, the growing disparity in living standards between urban elites with money and those living in slums could spark more social and political upheaval. However, this can lead to the creation of jobs in the non-farm sector and so absorb the excess labor force produced in the agricultural sector with the right growth and employment plan.

Bangladesh's urban population has been expanding at an average annual rate of 6% since the country's population growth rate was 2.2% throughout that time. Consequently, there has been a six-fold rise in the urban population and a 70% growth in the rural population (World Bank 2007). Roughly 25% of Bangladesh's population currently resides in urban areas, according to recent UN figures. The four biggest cities in the country are Dhaka, Chittagong, Khulna, and Rajshahi, where over half of the population resides. Bangladesh's main and largest city is Dhaka, home to almost 12 million people. As per Zaman et al. (2010), it ranks as the eleventh largest city globally.

It is also frequently listed as one of the least livable cities in the world. Compared to most worldwide megacities, Dhaka is still a low-income city with a substantial number of impoverished people, despite greater income growth and a lower incidence of poverty than in the rest of Bangladesh (Ahmed 2010). The city's limited land supply, delicate ecosystem, and inadequate municipal services are all being strained by the fast urbanization that is occurring there.

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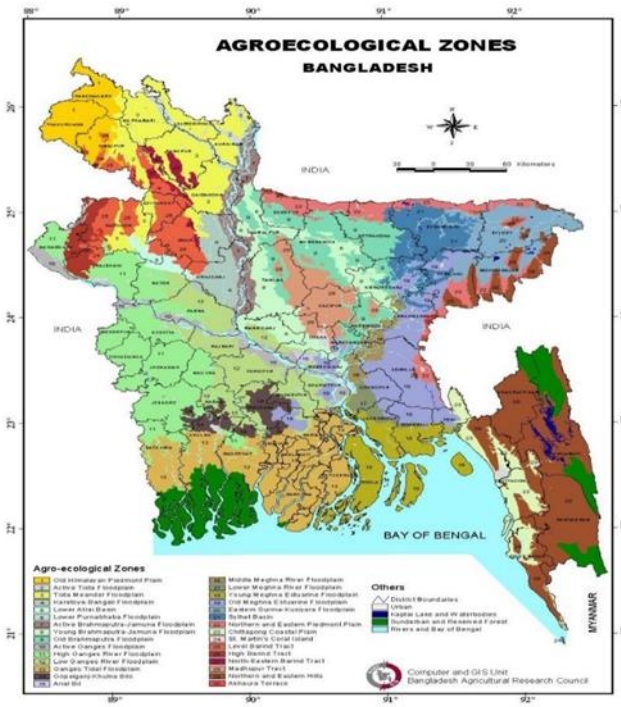
Currently estimated to have over 34,000 inhabitants per square kilometer, Dhaka is among the world's most densely populated cities (Hasan 2022).

According to published research, as urbanization increases, more agricultural land is used for non-agricultural uses, which lowers agricultural output (Malik and Ali 2015). Bangladesh's agricultural land area has been declining yearly by almost 69,000 hectares as a result of unplanned urbanization, fast industrialization, and a rise in rural communities (Khan 2020). This is putting the nation's food security in jeopardy. The amount of land available for agriculture has been steadily shrinking, according to a report on the loss of agricultural land based on a study. In Bangladesh, 13,412 hectares of arable land were destroyed between 1976 and 2000. In the succeeding period from 2000 to 2010, almost 30,000 hectares of land were destroyed in only ten years (Khan 2020).

Urbanization affects food production in two ways: by removing agricultural land from Food production is impacted by urbanization in two ways: first, as cities grow, more agricultural land is taken out of production; second, as more farmers relocate to cities, there are fewer family farms. Large swathes of agriculture are being consumed by cities alone in many parts of the world (Lipi and Hasan, 2021).



Source: www.bamis.gov.bd

IV. Decline of Agricultural Land in Bangladesh and its Consequences

Bangladesh's population is growing at an alarming rate, which is causing a decline in arable land. Just 15% of the land in rural areas was utilized for housing development and non-agricultural/off-farm operations during the last ten years of the 1980s; today, that percentage is 30% (Rezvi 2018). In 1983–1984 there were 2 crore, 2 lakh, and 38 thousand acres under cultivation; by 1996, that number had dropped to 1 crore, 74 lakh, and 49 thousand acres (Banglapedia 2021).

The average rate of decline of agricultural land over the past 12 years has been approximately 1%. As the population grows, the amount of land available per person typically decreases. According to Rahman (2017), Bangladesh's industrialized urban orientation and the growth of rural housing facilities are the main causes of the country's rapid loss of agricultural land. Bangladesh's fertile land has faced significant challenges in sheltering the country's expanding population. Agricultural land is also being displaced by the simultaneous expansion of roads, highways, brickfields, hospitals, educational institutions, and other infrastructure (Quasem 2011; Rahman & Kumar, 2018). According to Banglapedia (2021), the per-acre land availability was found to be 0.17 acres recently, which is half of the minimum acreage needed for a normal human existence.

The amount of food scarcity, the severity of malnutrition, and poverty are all eventually made worse by the reduction in per capita land availability. Over the past three decades, agriculture's output has tripled due to the introduction of modern technology, leading to significant decreases in food scarcity and poverty. However, due to rapid population expansion and quickly depleting agricultural area, a large increase in crop productivity was recorded, but this did not alleviate food scarcity, and 20–30 lakh metric tons of food are imported from outside each year (Rezvi 2018).

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The Prime Minister was instructed to cease using the agricultural land for non-agricultural uses, and the issues were actively considered at the government level. It was also mandated that for construction of roads and highways, no dirt be utilized from agricultural land, or no soil be used from agricultural areas for brick fields. The Prime Minister suggested utilizing soil from canals and rivers for two reasons: first, to make the streams more drivable, and second, to lessen the amount of land used for agriculture.

Another major factor contributing to the per capita decline in agricultural land is population increase. The division of conventional universal joint families resulted in a rise in the number of homes and a fall in the amount of land possessed by each family (Sohel et al. 2017; Kumar, 2019). From 61 lakh 39 thousand in 1960 to 1 crore 17 lakh 97 thousand in 1996, there were more and more agricultural families. During this time, the average size of agricultural land shrank from 3.54 to 1.71 acres (Banglapedia, 2021). The current amount of agricultural land is not at all beneficial to the cultivation of crops in the modern day. Therefore, population control is required to counteract the fall in landholding size and per capita availability of land. Bangladesh's population is now growing at a rate of 1.5%. People ought to be inspired to cut it to zero percent. A rough assessment puts the country's land area at 35% extremely ideal for growing agricultural crops, 40% good for medium-type agriculture, and 25% less appropriate (Banglapedia, 2021). The population is dispersing into the nearby rural and suburban areas, while urban areas throughout the world continue to rise. This puts pressure on farmers to part with their fields and croplands so that rural homes can be developed. Loss of vital habitat and green space, deteriorating water quality, increased transportation issues, and an increase in air quality are all consequences of urbanization's takeover of agricultural land.

Degradation of the soil, or a reduction in the natural fertility of the soil, is another factor that contributes to the loss of agricultural land. When this happens, even in the absence of fertilizers and other chemicals, the land's productivity decreases.

Bangladesh needs long-term planning because unchecked population growth is making it harder to provide basic services like food, healthcare, and education, which would bring social unrest and unemployment. As the demands of an expanding population cannot be met by diminishing resources, the potential needs to be investigated.

What is concerning is that the country, with the world's largest density of people, is swiftly losing arable lands due to expanding industrialization and the rapid encroachment of human dwellings on farming areas. The rapidly expanding population of the nation is currently searching for more property on which to erect houses, and businesspeople are traveling to the more isolated rural areas to establish factories.

V. SOCIO-ECONOMIC IMPACTS OF URBANIZATION

The study by Jiang et al. (2013) shows a decrease in agricultural land use intensity due to the expansion of urban dwellings. The study also suggests that industrial GDP has a negative impact on agricultural land use intensity. Bangladesh is on track to exit the UN Least Developed Countries (LDC) list and become a middle-income country by 2026. Urban regions enable faster GDP growth and aid in the transition of the economy from agricultural to non-agricultural sectors. Today, metropolitan regions generate about 75% of the GDP in Bangladesh, a proportion that is anticipated to climb in the future years. However, there was a need to raise awareness of the distributional consequences of the economy's rapid transition. There was a clear need for urban areas in Bangladesh to create a better environment for inclusive and sustainable economic growth (Kumar et al., 2024). The entire slum population in the country's urban areas was 2.2 million in 2014, or 6.33 percent of the urban population, according to the most recent slum population census. They lacked access to safe drinking water and sanitation, as well as limited health care and educational opportunities. They work primarily in the unorganized sectors. As a result, there is a case to be made for developing low-cost housing designs that include basic utility services for low-income residents. Unplanned urbanization has a negative impact on the unorganized sector, the number of slum dwellers, the isolation of the poor from decision-making, the use of child labor, the percentage of school dropouts, and so on. Higher GDP growth rates and urbanization have been shown in Bangladesh and elsewhere to reduce poverty while increasing inequality (Ahmed, 2022).

Exploration of the Facts

To explore the impact of unplanned urbanization on the socio-economic conditions in Bangladesh, a qualitative research initiative was taken. Necessary secondary data collected through the review of literature, including documents from the Bangladesh Bureau of Statistics (BBS) and the Bangladesh Economic Review (BER). A focused group discussion (FGD) was arranged to learn about and find out the reality of the impacts of urbanization on agricultural land in Bangladesh. The focused group was formed by eight members, such as one landowner, one academician, one statistician, one agricultural specialist, one farmer, and two Assistant Commissioners (Land) in the Kushtia district of Bangladesh. Its duration was 90 minutes. This research focuses on some environmental issues as well as the variables that appear to be the most prevalent in the research area.

Kushtia is a district under the administrative division of Khulna, situated in the western zone of Bangladesh. Kushtia emerged as a separate district during the partition of India. Prior to that, it was a part of Nadia district in the Bengal Province of the undivided British India. Kushtia has been a fertile land from its British association to the present day,

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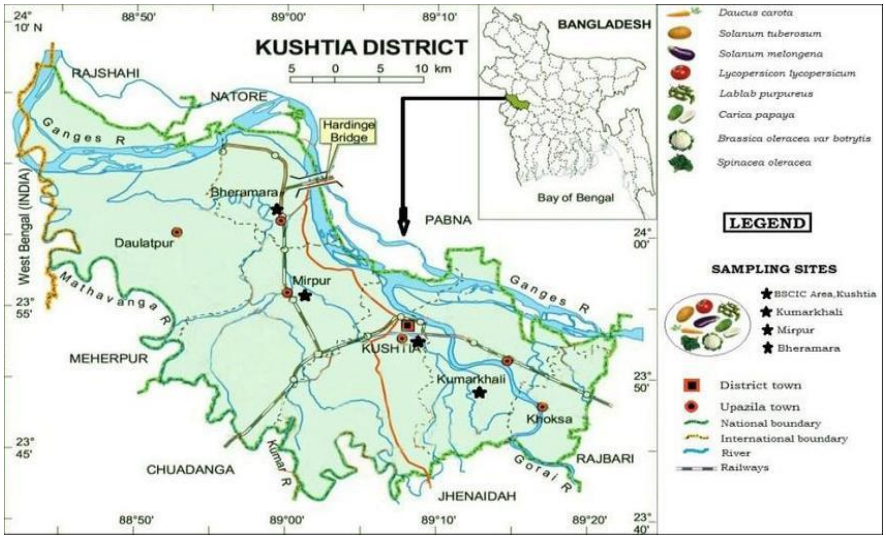
metaphorically. Kushtia district has a total land area of 1608.80 square kilometers. It is bounded by the neighboring districts, namely: Rajshahi, Natore, and Pabna to the north; Chuadanga and Jhenaidah to the south; Rajbari to the east; and Meherpur District of Bangladesh and the state of West Bengal of India to the west. The Ganges, Garai-Madhumati, Mathabhanga, Kaliganga, and Kumar are the main rivers flowing through the district. The average high temperature is 37.8 degrees Celsius, while the average low temperature is 9.2 degrees Celsius. The annual average rainfall is around 1,467 millimeters (Rakib 2012).

Kushtia is an important economic district in Bangladesh. This district is famous for its cultural heritage as well as its industrial wave. The district is home to several important industries, including the cable and tobacco industries. However, cultivable land in this district is shrinking as a result of the development of educational institutions, religious restrictions, increased roads and highways, house and building development, new industries, business enterprise development, etc. It also has the long-term effect of increasing pollution and decreasing food security.



Source: LGED, Kushtia District

The investigation's findings lead to the conclusion that most individuals look for actual villages or locations where they may spend a few days alone, peacefully, and apart from the bustle of the metropolis. However, it is getting harder for them to decide who is the king of dream villages or peaceful places. This kind of situation is somewhat typical in the majority of developed nations. This is an unavoidable scenario that Bangladesh will soon experience as well. To leave a healthy and enjoyable environment for the next generation, we must, however, begin the transition by being more humane, compliant, logical, foresighted, organized, planned, environmentally friendly, and pollution-free in our urbanization, industrialization, deforestation, and development of amusement parks, resorts, and rest areas.

Dilemma and Future Problems

Bangladesh's economy is predicted to increase by 7.3 percent in the 2019 fiscal year, placing it among the world's five fastest-growing economies, according to a recent World Bank analysis. However, as per the most recent report by HSBC Global Research, Bangladesh's economy is expected to grow from $300 billion to $700 billion by 2030. It is also expected to make the biggest shift in the global gross domestic product rankings, moving up from 39th to 26th place. According to HSBC's long-term development model estimates, Bangladesh is expected to have the highest real GDP growth rate among the 75 nations covered in the analysis, with an annual growth rate of 7.1 percent through 2030 (Ovi 2019).

Official statistics from the Soil Resources Development Institute (SRDI) state that 9.5 million hectares of crop agriculture land were covered in Bangladesh in 2010. However, the Department of Agricultural Extension (DAE) reported in the Krishi (agricultural) Diary (2011) that the amount of crop land was around 9.098 million hectares, although the Bangladesh Bureau of Statistics estimated 8.52 million hectares in 2010–11. According to UNDP data, the pace at which agricultural land is being converted to non-agricultural uses is roughly 1% a year.

Some data show that all the aforesaid apprehensions are coming to reality very soon. According to a recent study, Bangladesh is leading the world in the loss of arable land as a result of fast industrialization and urbanization (Siddiqui 2019). On the other hand, cropland is declining by 1% annually, per data from the Planning Commission and a research paper from the Ministry of Food's Food Planning and Monitoring Unit (FPMU), the government agency in charge of keeping an eye on Bangladesh's food security situation. In recent years, per capita agricultural land has gone down to only 0.05 hectares in 2009. According to academics, it was 0.17 hectares in 1961. Per capita cropland is 0.13 hectares in

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India, a neighboring country, compared to 11 hectares in wealthy nations. It is projected by analysts that cropland in Bangladesh will drop below six decimals by 2050 if the current trend persists.

V. CONCLUSION

In fifty years, Bangladesh won't have any arable land left if land is taken away for non-farm uses at the current annual rate. If the current trend is not reversed, the nation's impoverished population will become more vulnerable to swings in global commodity prices, which will result in a permanent loss of food security. A number of policies have been put in place by the government to buck this trend, including making it illegal to use fertile land for purposes other than agriculture. Undoubtedly, this is a laudable move.

A high-level commission recommended that rather than taking up more fertile ground, the manufacturing and educational facilities that have already been constructed should now go vertical (Khan 2019). Bangladesh's agriculture is facing enormous challenges due to the shrinking size of farms, the increase in landlessness, and the ongoing degradation of farmland. These factors are also making poverty worse and imprisoning a large number of extremely poor people in a never-ending cycle. In a nation where nearly 80% of the ultra-poor reside in rural areas, the average farm size has shrunk to less than 0.6 hectares, and the percentage of landless people is 58. Concerns regarding the startling rate at which farmland is being depleted have gone unanswered, and calls to guarantee the best possible use of arable land and to put fallow areas under cultivation have remained purely rhetorical. Policymakers have long ignored a long-standing recommendation to slightly alter crop patterns in order to diversify agriculture. It is concerning that arable land is declining. In order to provide an accurate estimate and enable the appropriate actions to be taken to preserve this land, the relevant authorities ought to conduct routine surveys of arable land. Although it is a huge task, it should be completed on a regular basis with the necessary care.

Bangladesh, a small country of only 148,000 square kilometers with a population of about 170 million, is becoming more densely populated; its population is growing at a rate of 1.02 percent per year; its GDP is growing at a rate of 7% per year; it is rapidly urbanizing and becoming more heavily industrialized; there is a growing trend of building large housing complexes; people are building personal duplex gardens or farm houses; rivers, canals, lakes, and natural wetlands are being encroached upon; the country is rapidly becoming an upper middle-income nation; per-capita income and purchasing power are rising; all of these indicators point to Bangladesh becoming a city state with a small land area and a large population. And all of this is being made possible by the 100 million people who are currently employed; the remittance inflow of over 10 million Bangladeshi human resources who are residing abroad; and the more than 5 million garment workers who are putting in their inhumane labor to support the competitiveness, acceptability, and most importantly, survival of our garment sector—the nation's largest source of foreign exchange earnings.

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