Dhaka City Food System Profile

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December 2024

Contents

List of figures

List of tables

Acronyms

BDP	Bangladesh Delta Plan
BFSA	Bangladesh Food Safety Authority
BSF	Black soldier flies
CGIAR	formerly the Consultative Group for International Agricultural Research)
CIP	International Potato Center
CWG	City Working Group
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DFS	Dhaka Food Systems
DLS	Department of Livestock Services
DMA	Dhaka Metropolitan Area
DNCC	Dhaka North City Corporation
DoF	Department of Fisheries
DSCC	Dhaka South City Corporation
FAO	Food and Agriculture Organization of the United Nations
FLW	Food loss and waste
FPMC	Food Planning and Monitoring Committee
FPMU	Food Planning and Monitoring Unit
FPWG	Food Policy Working Group
GAIN	Global Alliance for Improved Nutrition
GAP	Good Agricultural Practices
GCC	Gazipur City Corporation
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
LGD	Local Government Division
M&E	Monitoring and Evaluation
MMC	Market Management Committee
MoLGRD&C	Ministry of Local Government, Rural Development, and Cooperatives
MUFPP	Milan Urban Food Policy Pact
NAP	National Agriculture Policy
NAP PoA	National Agriculture Policy Action Plan of Action
NC	National Committee

NCC	Narayanganj City Corporation
NGO	Non-governmental organisation
NNP	National Nutrition Policy
SDGs	Sustainable Development Goals
TT	Thematic Teams
UN	United Nations
UNFSS	United Nations Food Systems Summit
WFP	World Food Programme
ZEO	Zonal Executive Officer

Acknowledgments

The study on the "Food System Profile of Dhaka" has been carried out for RUAF under the project "Resilient Cities Through Sustainable Urban and Peri-urban Agrifood Systems" of the CGIAR Resilient Cities Initiative.

I would like to extend my heartfelt gratitude to RUAF for selecting me and providing financial support for this study to prepare the food system profile of Dhaka.

This profile would not have been possible without the invaluable assistance of my colleague, Jess Halliday, Chief Executive of RUAF CIC, whose guidance was instrumental in its preparation.

I also want to thank Marion Heren for sharing essential documents related to Dhaka's food systems, which greatly contributed to the profile's development.

My appreciation goes to my former manager, Mr. Jainal Abedin, for his valuable insights on Dhaka's food systems, which enriched this work.

I acknowledge all the officials from city corporations and various government and non-government organizations for their thoughtful contributions regarding the food system in Dhaka.

Lastly, I want to express my special thanks to my family for their patience and understanding throughout this journey.

1. Introduction

1.1. Resilient Cities Initiative

Food systems encompass a wide array of actors and their interconnected value-adding activities related to the production, aggregation, processing, distribution, consumption, and disposal of food products sourced from agriculture, forestry, or fisheries (FAO, 2018). These systems are also influenced by the broader economic, social, and natural environments in which they operate. A sustainable food system is one that ensures food security and nutrition for all while preserving the economic, social, and environmental foundations needed to sustain food security and nutrition for future generations (FAO, 2018). The UN Sustainable Development Goals (SDGs) emphasize the need for significant transformations in agriculture and food systems to eradicate hunger, achieve food security, and enhance nutrition by 2030.

The countries and cities in CGIAR target regions are grappling with challenges posed by rapid urbanization and are seeking technically robust, equitable, and scalable solutions within the agrifood sector. Major challenges for agrifood initiatives in urban and peri-urban areas include unhealthy diets and restricted access to nutritious food for the urban poor, food safety and waste reduction, pollution, environmental degradation, the impacts of climate change, and a lack of visibility and support within the urban policy, governance, and investment frameworks.

The CGIAR Resilient Cities Initiative operates in Bangladesh, Ethiopia, Ghana, Kenya, Peru, and the Philippines, focusing on providing research support to enhance the dynamic, predominantly informal urban and peri-urban agrifood sector. Its goals include improving sustainability, equity, and opportunities for growth, as well as mitigating risks to human and environmental health. RUAF collaborates on Work Package 5 (WP5) of the Initiative, titled 'Strengthening the Evidence Base and Research & Innovation Capacities for Urban Agrifood System Governance and Growth', alongside scientists from the International Potato Center (CIP). This work package conducts integrated analyses of urban food systems in the target countries, develops enhanced research and monitoring tools, and supports young scientist-entrepreneurs in pursuing innovations that benefit the urban poor. WP5 promotes strong, collaborative relationships with various urban stakeholders for agenda setting, research design, implementation, analysis, and application.

CIP has requested RUAF to prepare a food systems profile of Dhaka based on secondary and existing information under WP5 of the Resilient Cities Initiative, which will be used to inform possible future project work by CGIAR. The present report has been prepared through exploring information from secondary sources as well as primary data from key stakeholders.

1.2. General introduction to Dhaka

Dhaka, the capital and largest city of Bangladesh, is situated in the central part of the country (Figure 1), on a fertile plain between the Padma and Meghna rivers. Dhaka is bordered by the districts of Gazipur and Tangail to the north, Munshiganj and Rajbari to the south, Narayanganj to the east, and Manikganj to the west. Dhaka city consists of two city corporations - Dhaka North City Corporation and Dhaka South City Corporation (Figure 2). Dhaka city is the focus of this food system profile. By contrast, the wider Dhaka Metropolitan Area (DMA) is made up of Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Gazipur City Corporation (GCC) and Narayanganj City Corporation (NCC), and is the are within which the Dhaka Food Systems (DFS) project of the Food and Agriculture Organization (FAO) was implemented from 2019 to 2023 to improve the food system.

Dhaka city is characterized by rapid urbanization. As one of the fastest-growing megacities in the world, Dhaka faces significant challenges in managing its food system, which is essential for the health and well-being of its inhabitants. The food system in Dhaka encompasses a complex network of production, distribution, and consumption processes that are largely influenced by the city's informal sector.

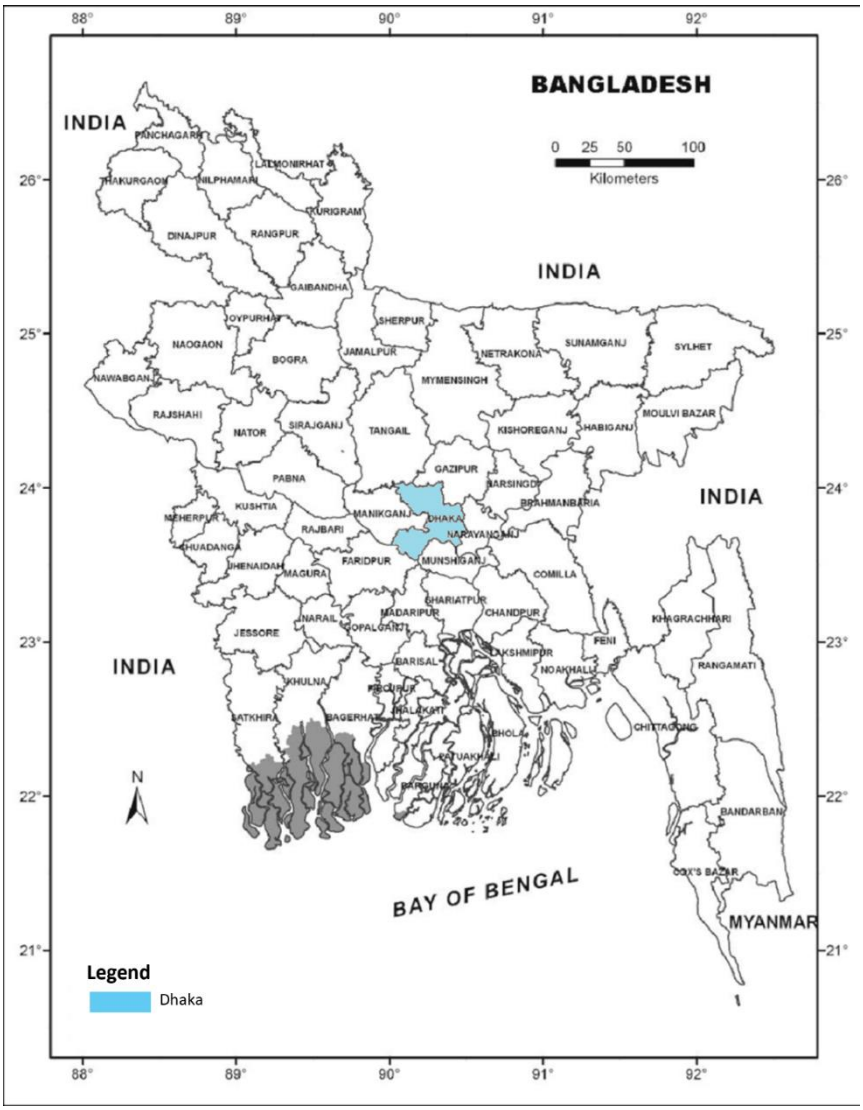

Figure 1: Location of Dhaka
Source: Modified from Dey et al., 2008

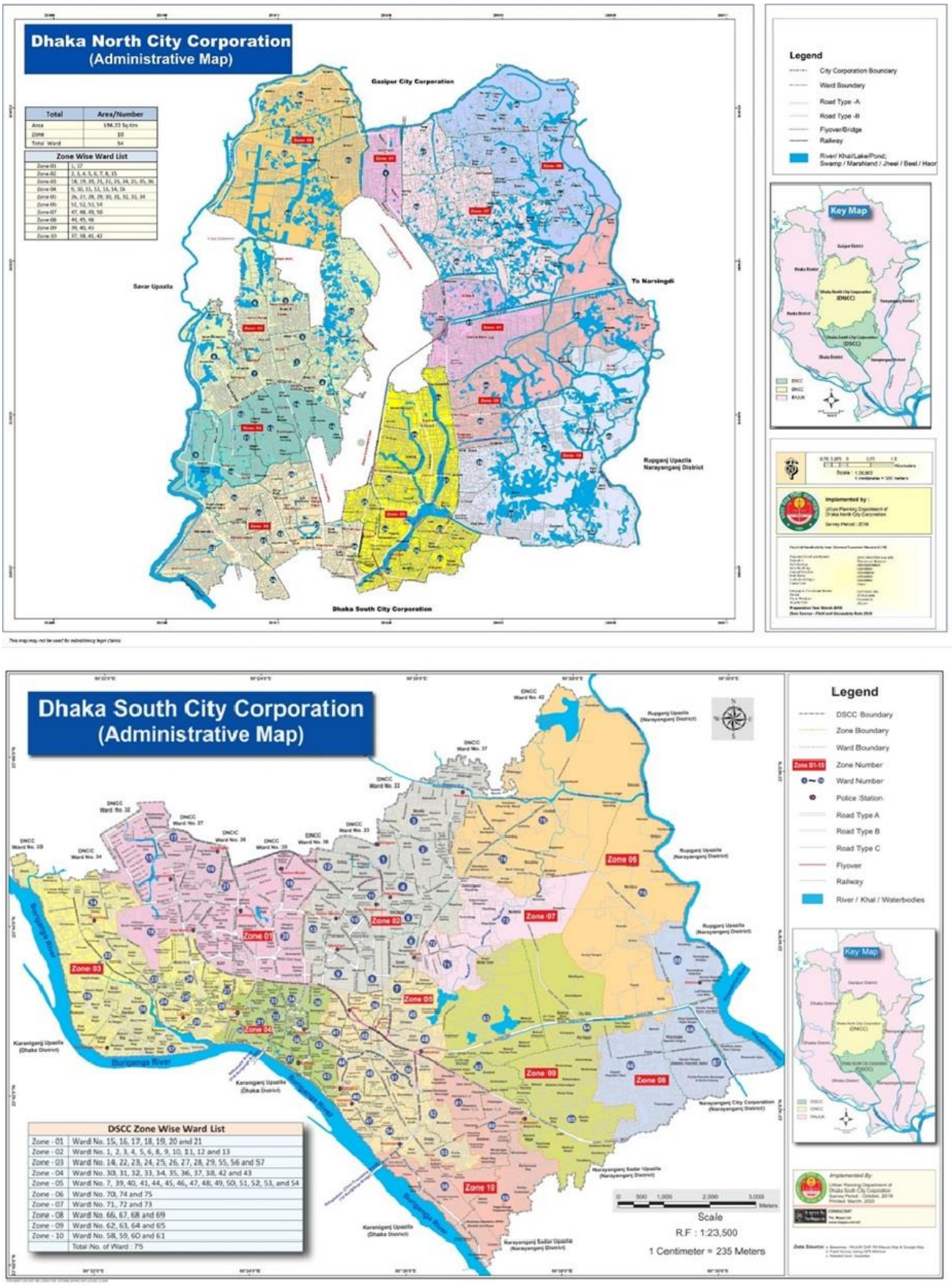

Figure 2: Maps of Dhaka North City Corporation and Dhaka South City Corporation
Source: DNCC and DSCC websites

1.3. Structure of the report

This food system profile aims to provide an overview of Dhaka's agrifood landscape, highlighting the key actors, trends, and challenges that shape food access, nutrition, and sustainability. By examining the dynamics of urban and peri-urban agriculture, market structures, and food policies, the profile seeks to illuminate the opportunities for enhancing food security and resilience in the face of ongoing environmental and socio-economic pressures.

Dhaka's food system is intertwined with human and natural systems, and various external drivers and trends within these systems shape its behaviour and development. Each actor in the food system is impacted in various ways by these drivers, resulting in different reactions. These drivers include population, income, wealth, consumption preferences, technology, markets, environmental factors and politics (FAO, 2023).

Understanding the intricacies of Dhaka's food system is crucial for policymakers, researchers, and stakeholders aiming to foster sustainable development and improve the quality of life for city residents. This profile not only serves as a foundation for informed decision-making but also underscores the need for collaborative efforts to innovate and adapt in a rapidly changing urban environment.

The report is structured as follows. Section two sets out the local context, including demographic, socio-economic, jurisdictional/institutional, geographical, and natural factors. Section three contains an analysis of the food system of Dhaka by key value chain nodes (food production, processing and manufacturing, storage, markets and distribution, food loss and waste, and consumption), followed by case studies of three value chains – rice, beef, and mango – in Section four. Section five provides details of governance mechanisms and processes. Section six contains analysis, both of the strengths and weaknesses of the value chains and of Dhaka's food system governance. Finally, section seven contains conclusions and recommendations that may inform future directions for CGIAR's work to support urban food systems in Dhaka and across Bangladesh.

2. Area covered and context

Population

The DNCC and the DSCC cover areas of 196.22 km² and 109.24 km², respectively. The city of Dhaka boasts a diverse population of over 10.2 million residents, while the broader DMA is home to more than 13.9 million people (BBS, 2023a). Recent estimates indicate that the total population of the metropolitan area exceeds 20 million, making Dhaka the largest city in Bangladesh (World Population Review, 2024). Dhaka's population is expected to reach an estimated 34 million inhabitants by 2041 due to migration from the other cities and rural areas of Bangladesh for employment, better education, better health services, social exclusion and climate change effects (river erosion, salinity intrusion, cyclone, etc.), increasing pressure on food production and services (Hermán et al., 2022). With a population density of 23,234 individuals per km², Dhaka ranks among the most densely populated regions globally (World Population Review, 2024). Islam is the dominant religion, with 90 per cent of the population identifying as Muslim, followed by Hinduism as the second most practiced faith. Minorities include Christians and Buddhists. Bengali is the primary language spoken, while English is a common second language.

Socio-economic landscape

The socio-economic landscape of Dhaka reflects a complex mix of growth, challenges, and inequalities. As the economic heart of Bangladesh, the city contributes significantly to the national GDP—approximately 40 per cent (Ahmed & Karim, 2018; Tellusant, 2023). Dhaka's economy is driven largely by its robust garment industry, one of the largest globally, alongside key sectors such as international trade, pharmaceuticals, and finance. In 2023, exports from Dhaka amounted to around US$4.69 billion (BBS, 2023b). The city is also home to major financial institutions, including the Dhaka Stock Exchange, Bangladesh Bank, and various non-government banks, as well as prominent companies like Grameenphone, Walton Group, BEXIMCO, and others. Moreover, many multinational corporations, including GlaxoSmithKline, HSBC, and Nestlé, have established regional headquarters in Dhaka. The Dhaka Stock Exchange stands as the largest in Bangladesh and the third largest in South Asia, boasting a market capitalization of US$72.1 billion (DSE, 2023).

Dhaka's job market is diverse, offering opportunities in textiles, manufacturing, services, trade, and information technology. While the average income in Dhaka is higher than the national average, the cost of living is also elevated. Although Dhaka's state income is growing at an impressive rate of approximately 9.3 per cent per year—one of the fastest in Asia—the city currently faces the highest unemployment rate (25.44 per cent) in the country (BBS, 2023a).

Inequality levels are greater in Dhaka than elsewhere in the country; many residents thrive in the formal economy while a large segment works in the informal sector, which often lacks job security and benefits. Approximately 17.4 per cent of residents live below the national poverty line (ANN, 2023), and over 90 per cent of the urban poor lack secure housing (DIG 2008). Urban poverty is exacerbated by rapid migration and insufficient infrastructure.

Food security

Food insecurity and undernutrition continue to be significant issues in Dhaka, particularly among the poor and vulnerable populations; a survey conducted by Bakker et al. (2022) reveals that 36 per cent of the population of DMA experience moderate food insecurity and 14 per cent experience severe food insecurity.

On the other hand, as overall incomes rise food choices are evolving from diets based largely on a few staple items (e.g. rice and wheat) to more varied diets that provide greater energy and macronutrients. This shift includes increased consumption of food groups like meat, sugar, and processed foods, as well as more frequent meals eaten outside the home; 3.2 per cent of the study population were identified as overweight and obese in Dhaka city (Herman et al., 2022).

Infrastructure

Rapid urbanization in Dhaka has led to the growth of slums, with over 5,000 informal settlements housing around 4.4 million people (Dhaka Tribune, 2022). These slums are often constructed from makeshift materials, and residents face daily challenges such as lack of access to clean water, sanitation, and pollution, compounded by migration.

In terms of healthcare, Dhaka offers better facilities than other cities, with 8,719 beds in government health complexes, 620 private hospitals, and numerous diagnostic centres (BBS, 2013). However, low-income residents often struggle to access adequate healthcare services, relying on overcrowded and under-resourced public healthcare systems. Major public health challenges include air pollution, water quality issues, and communicable diseases, largely due to urban density and inadequate sanitation.

The city's infrastructure is struggling to keep up with population growth, leading to severe traffic congestion and limited public transportation options. Dhaka's roadways are used by more than 1.7 million registered motor vehicles as of 2021 (Ahmed et al. 2023). Dhaka suffers from one of the highest congestion indices and commuting times in South Asia, averaging 50 minutes and sometimes reaching two hours during peak times (World Bank, 2012). This congestion incurs significant costs for both individuals and the economy, with about 90 per cent of daily trips made by bus (Ahmed & Karim, 2018), alongside other modes like metro rail, private cars, and auto rickshaws.

Education

The city features over 4,214 educational institutions (BBS, 2013), ranging from primary schools to universities, resulting in higher educational attainment among its residents. The literacy rate in Dhaka is about 78.09 per cent, surpassing the national average (BBS, 2023a), though access to education varies widely among different socio-economic groups.

Gender and inclusion

Over recent decades, gender inequality has decreased due to government initiatives, but significant challenges persist, especially in terms of women's access to education, employment, and healthcare. Women in Dhaka often face social and cultural pressures that limit their autonomy and decision-making capacity. Problems such as domestic violence and underrepresentation in leadership roles further contribute to inequality. Ongoing efforts by various organizations aim to tackle these issues, promoting women's rights and gender equality through education, policy reform, and community involvement.

Environment

Fast growth of Dhaka city has resulted in various environmental problems including air, water and soil pollution. The huge number of motorized vehicles, as noted above, create air and sound pollution. There are 1042 different industries in Dhaka city, and in the garment industry alone there are over 3,000 factories (Ahmed & Karim, 2018). Industrial waste and human and chemical waste pollute the soil, water and air of the city. The sewerage system of Dhaka is very much inadequate; only 20 per cent of the city -- and 22 per cent of households – are connected to the sewerage system (Ahmed & Karim, 2018). The use of plastic goods has increased tremendously, and polyethene bags and plastic goods are thrown indiscriminately by the city dwellers and block the drainage system. As a result, the city is experiencing water logging from heavy rains in the roads. The surface water enters the sewerage pits and many parts of the city are flooded by dirty water during monsoon, causing outbreaks of water borne diseases (e.g. diarrhoea, dysentery, jaundice, etc.). The poor infrastructure and sanitation facilities in the slum areas makes them particularly vulnerable to water borne diseases, with implications for the earning capacity of residents when they are sick, and for food safety.

Climate change

Bangladesh is ranked as the seventh-most vulnerable country to climate change on the 2021 Global Climate Risk Index (Eckstein et al. 2021). Dhaka is particularly vulnerable. With its tropical wet and dry climate, the city has a distinct monsoonal season with heavy rainfall causing flash floods. The city has an annual average temperature of 25°C and monthly means varying between 18°C in January and 29 °C in August (BBS, 2023c). However, the city

experienced temperature as much as 40°C during heat wave in May 2024. The average temperature of Dhaka remains at about 2°C higher than that of the rural areas in summer and monsoon seasons.

Only 2.7 per cent of the total area in Dhaka is now protected as a green area (Razi, 2020), with a total of 218 playing fields and 103 grass-covered open areas. The rest of the terrain has been filled with various types of infrastructure. No new parks or green spaces have been established in Dhaka since independence, and the city master plan is not designed with consideration to climate resilience. Rather, new settlements have been developed to accommodate the growing population by filling up water reservoirs one by one. In the city, water bodies and lowland areas decreased by 32.57 per cent and 52.58 per cent respectively over the period 1960 to 2008, constituting a 49 per cent decrease in total wetland areas (Islam et al., 2014).

Climate change and the resulting extreme weather affect food producers in and around the city, impacting food availability, accessibility, and quality. Heavy rainfall during monsoon affects transport and supply of foods in the city due to flooding and waterlogging. High temperatures affect the quality of foods. Flash floods with waters contaminate foods and affect Dhaka's food safety. Given the loss of livelihood, home, and cultivable lands induced by climate change, rural-urban migration is increasing day by day.

Significant uncertainties related to climate change, natural disasters, environmental degradation, pollution, biodiversity loss, environmental impact, uneven income growth, disease outbreaks, price volatility, and unstable global food markets complicate the paths of change (FAO, 2023). Tackling these challenges necessitates a comprehensive food systems approach and cannot be solved by individual disciplines, institutions, departments, or sectors alone. A holistic approach to food systems challenges is required, necessitating coordinated actions among all stakeholders to achieve food and nutrition security, livelihoods, health, and environmental goals. The government of Bangladesh is actively working to enhance Dhaka's food system through initiatives such as the Detailed Area Plan (2022–2035) and structural plans, focusing on areas like fresh markets, storage facilities, road networks, land use, and processing units (FAO, 2023).

3. Characterization of the food system

3.1. Introduction

Dhaka's food system is a very complex phenomenon that encompasses food production, processing, storage, distribution, markets, consumption, and the issues of food loss and waste. Key food items include rice, vegetables (principally potato), beef, dairy, poultry, fish (primarily rohu, pangas, and tilapia), and fruits (especially mangoes and bananas), all of which are vital to both the local economy and the diets of its residents. Additionally, street food is particularly popular among the city's inhabitants.

The characterization of the food system outlined here encompasses food production, processing and manufacturing, storage, marketing and distribution, consumption, as well as food loss and waste (FLW).

3.2. Food production

Bangladesh is suitable for the production of a variety of crops, fruits and vegetables, livestock and fish. The tropical monsoon climate and soil and water quality are conducive to year-round food production. The government of Bangladesh has developed policies aimed at improving agricultural productivity and food security that are supporting overall growth in the sector, with a focus on addressing poverty, enhancing access to nutritious food, and mitigating climate-related challenges. The government has implemented various initiatives to enhance food security, including investment in irrigation, the use of high-yielding varieties, and improved farming techniques.

The country's total agricultural output was around 70 million metric tons in 2019-20, with rice, potato and sugar accounting for around 80 per cent, while fruits, vegetables and spices accounted for 17 per cent (BIDA, 2024). Quantities of major crops, vegetables, fruits, fish and livestock produced in 2022-23 are presented in Table-1 and Table-2 (BBS, 2023c). The country produced 14.07 and 8.71 metric tons of milk and meat respectively and 23376.30 million eggs in 2022-23 (BBS, 2023c). Dhaka contributed 0.51 per cent, 0.38 per cent, 0.34 per cent, 0.26 per cent, 0.48 per cent, 2.14 per cent, 2.97 per cent, 5.68 per cent, 0.08 per cent, 1.41 per cent, and 1.76 per cent to the total production of banana, mango, jackfruit, pineapple, lichi, fish, cow, buffalo, goat, sheep, chicken, and duck respectively. These contributions of Dhaka is much more lower than the other cities due to loss of agricultural land and urbanization.

Table 1: Production of major crops, vegetables, fruits and fish in 2022-23 in Bangladesh

Sl. #	Crops/Vegetables/Fruits/Fish	Production (million metric ton)
1	Rice	39.10
2	Wheat	1.11
3	Maize	4.56
4	Pulses	0.44
5	Vegetables	14.23
6	Banana	0.84
7	Mango	1.48
8	Jackfruit	1.06
9	Pineapple	0.20
10	Lichi	0.10
11	Fish	4.91

Source: BBS, 2023c

Table 2: Production of major livestock in 2022-23 in Bangladesh

Sl. #	Animal	Production (million individual)
1	Cow	24.86
2	Buffalo	1.52
3	Goat	3.83
4	Sheep	26.95
5	Chicken	319.69
6	Duck	66.02

Source: BBS, 2023c

Intensive farming practices and urbanization are reducing arable land and soil fertility. Rapid urbanization has significantly reduced agricultural land in Dhaka (Figure 3), with per capita agricultural space decreasing by 50 per cent over the past 25 years (Razi, 2020). Limited space constrains agricultural production within the city, confining activities to small plantations, rooftop gardens, kitchen gardens, and dairy and nursery operations (Pramanik, 2013). Consequently, most of the food consumed in Dhaka is sourced from other districts (Figure 4). Surrounding districts such as Munshiganj, Manikganj, Narayanganj, and Gazipur supply fresh vegetables, fruits, poultry, and dairy products. Rice is cultivated in almost all districts of Bangladesh, but the major share of production is concentrated in a few districts, with Mymensingh district being the top rice-producing area. The majority of vegetables come from northern districts like Rajshahi, Bogura, and Rangpur, while poultry is mainly sourced from Gazipur, fish from Mymensingh, Kishoreganj, Netrokona, Jamalpur, Manikganj, Fardipur, Barishal, Cumilla and Chittagong, and fruits (particularly mangoes and bananas) from Rajshahi, Dinajpur, Rangpur and Gaibandha districts.

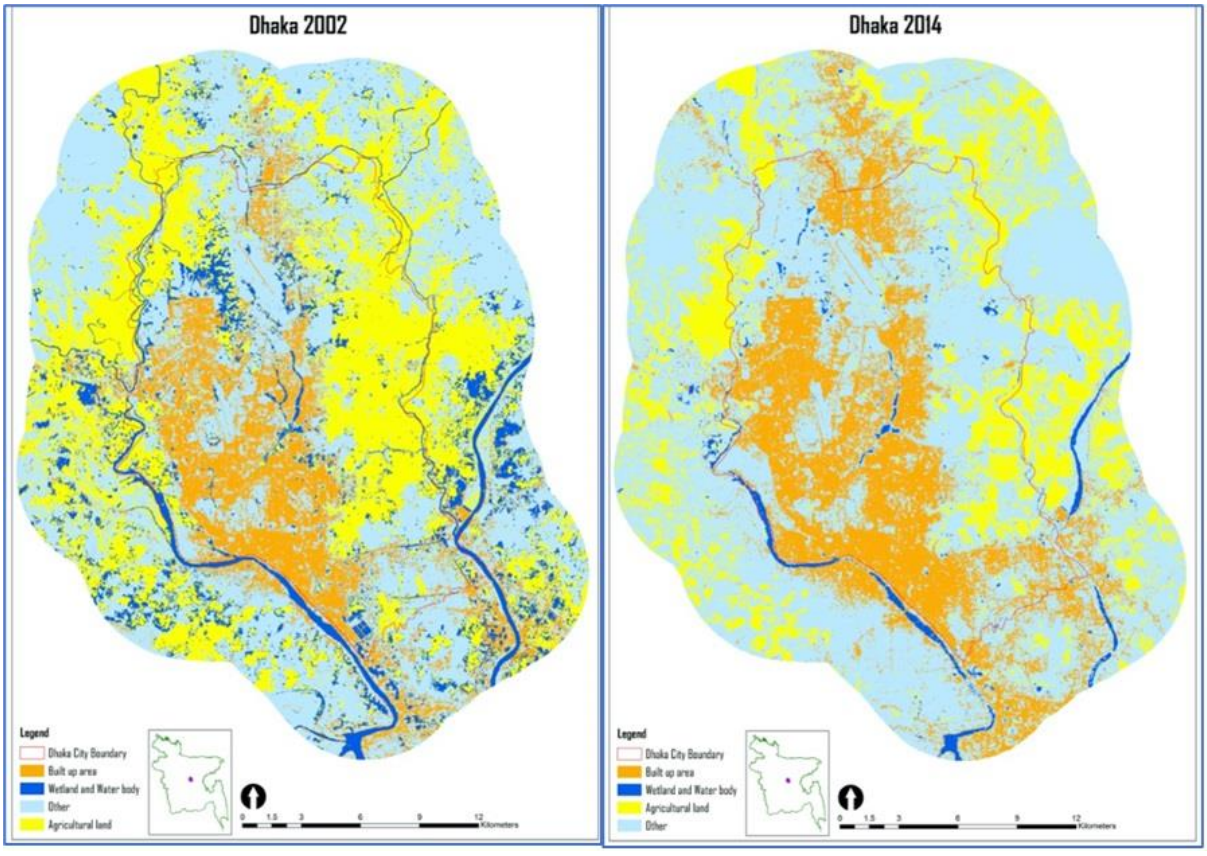

Figure 3: Spatial pattern of farmland loss of Dhaka City and its peripheral areas
Source: Bengal Institute

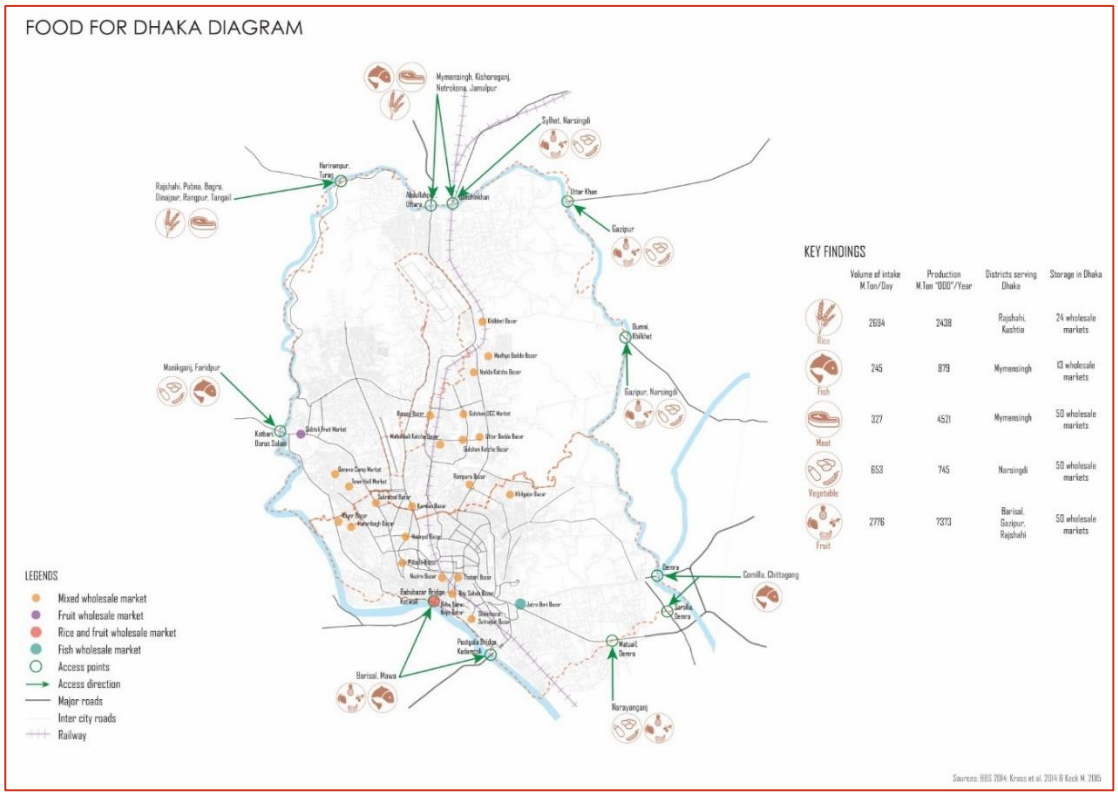

Figure 4: Food flow in Dhaka city
Source: BBS, 2012

Urban agriculture is emerging in response to growing demand for fruits and vegetables in Dhaka, which has spurred the development of small farms on the city's outskirts, as well as residents growing food on rooftops, homesteads, and vacant spaces (Figure-6). A similar trend is seen for livestock, poultry and dairy. Rooftop gardening may also help mitigate heat in the city, although more investigation is needed.

Figure 5: Rooftop gardening in Dhaka
Credit: Md. Sahidul Islam

City corporations are implementing policies offering rebates on holding taxes for Dhaka residents to incentivize safe food production. The relevant government agencies can initiate other, targeted programs to bolster urban food production.

The nursery industry is thriving in the city. Approximately 74 per cent of private plant nurseries in the capital are located on government-owned land (Mamun et al., 2018). In contrast, nurseries in the peri-urban areas of Gazipur and Savar are primarily on rented properties.

Dairy production is considered a viable option for the economically disadvantaged populations around the city, with each cow generating about $20 per month during the milking period. Approximately 1000 cattle farms have been established in the outskirts of Dhaka, particularly in Keraniganj (Razi, 2020). Additionally, slum residents often engage in poultry production, with practices varying significantly based on the slum density. Kitchen gardens are common among the urban poor, with women and children in the slums primarily responsible for their maintenance. There is inadequate investment in research and development to enhance crop yields and resilience to climate change, and less public-private partnerships to further investment in agricultural innovation and infrastructure in the city.

Despite the potential, current food production systems are largely unsustainable, frequently neglecting health risks and environmental impacts, and relying heavily on chemicals such as pesticides, herbicides, and synthetic fertilizers. Ongoing challenges such as soil degradation, water scarcity, pest infestations, and climate change impacts—like floods, cyclones, droughts, rising temperatures, and salinity intrusion—continue to affect yields. Farmers often lack training and resources to cultivate climate-resilient crops, a crop production calendar to address climate change impact and reduce vulnerability, and timely provision of high-quality inputs, including seeds, fertilizers, irrigation, feed, and medicine supplies. Small-scale farmers lack access to credit and financial services for food production in and around Dhaka. Production may also be hampered by outbreak of diseases of agricultural plants and animals, reducing food supply to city markets. In addition to all these factors, the increased population means demand may outpace supply, leading to food insecurity. Global economic fluctuations can further impact food prices.

Food safety has become a significant concern in Dhaka due to insufficient adherence to Good Agricultural Practices (GAP), food adulteration, residual effects of pesticides/insecticides used in agriculture, antibiotics used in fish and poultry and livestock, and poor market infrastructure causing cross contaminations in the fresh food markets. Inadequate regulatory frameworks and lack of awareness of farmers and food vendors lead to concerns about food quality and safety. The government is promoting GAP among farmers, but the progress is not satisfactory so far. The government should strengthen the GAP initiative through engaging people actively and effectively. Food safety regulations must be implemented and enforced to ensure the quality of food products, alongside training for farmers and food processors on best practices for handling and safety.

Sustainable water management practices also need to be promoted to ensure efficient water use for food production. Promoting organic farming and sustainable practices, such as organic practices and agroecology, could improve soil health and market competitiveness. Meanwhile, there is a widespread lack of awareness regarding rights among farmers, along with insufficient self-organization. Many of the smallholder farmers in Dhaka are lacking access to modern farming techniques and technologies, which affects productivity. However, there is a lack in manpower in related government departments like Department of Fisheries (DoF), Department of Livestock Services (DLS), Department of Agriculture Extension (DAE), which means many of the farmers do not get adequate support.

In terms of agricultural inputs, the cost of inputs and labour have increased while the number of agricultural labourers has decreased, resulting in higher food prices in Dhaka. The farmers in Dhaka and other districts need better access to farm inputs and services, as well as market information to get fair prices for their produce. A cooperative structure between farmers can enhance access to farm inputs and facilitate better information sharing, empowering them in the market. An improved information and communication system among producers/farmers and the fresh markets in Dhaka is necessary, alongside government actions against market syndicates and intermediaries.

3.3. Processing and manufacturing

Food processing in Dhaka has experienced significant growth, driven by domestic demand spurred by population growth, and export potential. Key areas of focus include the processing of fruits, vegetables, dairy, fish, poultry, and grains. There are around 1,000 food processors in Dhaka, with 10 per cent classified as large or medium enterprises and 90 per cent as small businesses (BIDA, 2024). Approximately 250 agro/food processing companies in Dhaka are involved in exporting food products.

The food processing and manufacturing sector in Dhaka is vital for enhancing the value of raw agricultural goods, improving food security, and generating employment opportunities. Currently, the agro-processing sector in Dhaka is valued at about $2.2 billion, contributing 20 per cent to the manufacturing sector's GDP and employing 2.2 per cent of the total workforce (GFSS, 2024). Food commodity production is projected to grow at an average rate of 8.5 per cent annually from 2020 to 2025 (BIDA, 2024).

Despite the growing market for agro-processed products both locally and internationally, many products face safety and quality challenges that originate at the farm level, including the use of chemical inputs that affect processing, transportation, and storage. Food safety issues, such as adulteration, pesticide residues, and microbiological contamination, persist throughout the food chain (GFSS, 2024). Producers and food supply chain actors in Dhaka can be educated about government regulations on food safety issues through training, awareness campaigns, and media outreach.

The current food safety system and testing infrastructure in Dhaka are insufficient to effectively assess foodborne pathogens and other risks. This shortfall in food safety poses a significant barrier to the emerging agro-processing industry, hindering the expansion of products in both local and global markets (Suman et al. 2021).

3.4. Storage

Food storage facilities are crucial for maintaining the quality and safety of food products in Dhaka and other districts. There are three main types of food storage: dry storage for items that do not need climate control; refrigerated storage for foods that require cool temperatures; and frozen storage. Currently, there are 405 cold storage facilities in the country including 15 cold stores in Dhaka, with over 95 per cent used for storing potatoes (The Business Standard, 2023). The remainder is allocated for small quantities of dry chilies, turmeric, cumin seeds, fish, garlic, and fruits. Surprisingly, the most perishable items—onions and vegetables—are not accommodated in these cold storages, leading to post-harvest losses of nearly 40 per cent (The Business Standard, 2023). Proper storage could significantly reduce these losses and enhance food security.

Existing food storage options in Dhaka face various challenges. The options include traditional methods like bamboo and mud structures, as well as modern climate-controlled warehouses, though the latter are often limited in number and capacity. Cold storage is vital for perishable items such as fruits, vegetables, and dairy products. While demand for these facilities is rising, availability is still insufficient in Dhaka as well as across the country.

Many facilities lack adequate infrastructure, making them vulnerable to pests, moisture, and temperature changes, which lead to considerable losses, especially during the monsoon season. Additionally, many farmers and stakeholders lack knowledge of best practices for food storage, contributing to high spoilage rates. There is often insufficient monitoring and quality control in these facilities, resulting in food spoilage and safety issues that affect the entire supply chain.

Both the government and private sectors are working to enhance food storage infrastructure through investments and initiatives aimed at increasing capacity and adopting better technology. Improvements are also essential for boosting food security, minimizing waste, and supporting Bangladesh's agricultural economy.

3.5. Markets and distribution

Food marketing and distribution in Dhaka is a multifaceted system influenced by economic conditions, cultural preferences, and logistical hurdles. This landscape is evolving, driven by urbanization, shifting consumer preferences, and technological progress. Bangladesh features both traditional and modern retail markets. Traditional markets, such as weekly and daily local markets and wholesale hubs, are primarily found in rural and peri-urban areas. In contrast, modern retail markets, like supermarkets, are concentrated in Dhaka and other major cities.

Dhaka city has about 130 traditional retail fresh markets and 87 wholesale fresh markets. Besides, there are several super shops including Swapno, Aogra, Meena Bazar, etc. which sell fresh foods in Dhaka. Locations of major retail and wholesale fresh markets are shown in Figure 6 and Figure 7 Most low-income people go to the traditional retail markets while the modern retails markets (super shops) are popular with people on higher incomes.

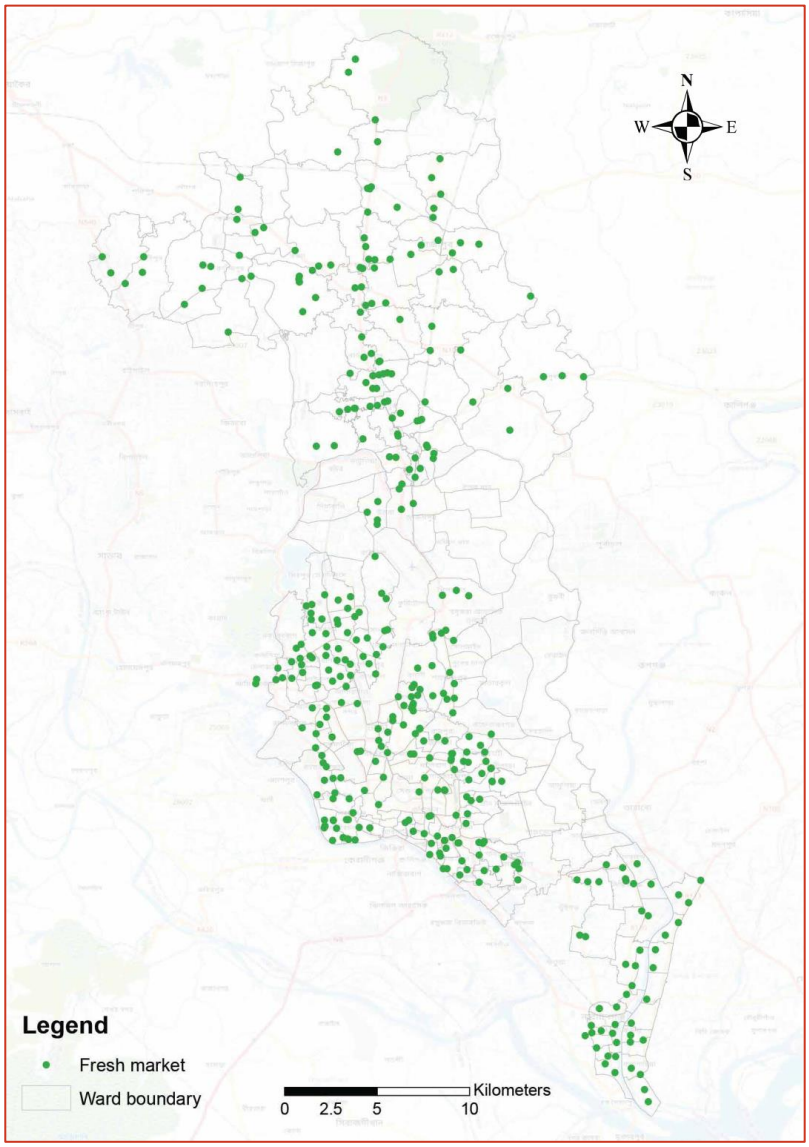

Figure 6: Location of retail fresh markets in DMA
Source: FAO, 2023

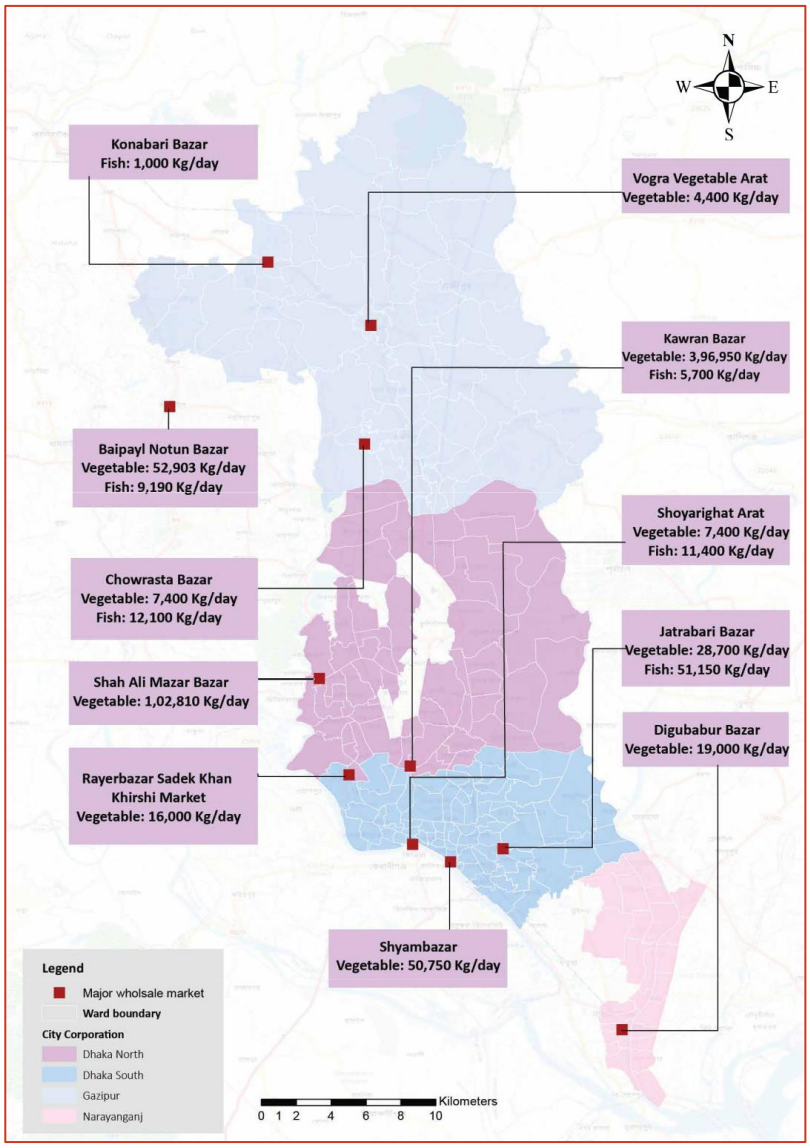

Figure 7: Location of major wholesale markets in DMA
Source: FAO, 2023

Dhaka has good road communication with almost all the districts, and fresh foods are transported to Dhaka mostly by trucks and pick-up vans.

Food distribution involves various channels, including wholesale marketing, direct selling and e-commerce. Wholesale traders purchase goods from farmers to supply retailers in urban areas. In direct distribution, farmers sell their products directly to consumers or local markets. E-commerce platforms for groceries have also gained momentum, especially after COVID-19, providing convenience and broadening market access for consumers in urban settings.

Where the food supply chain includes several intermediaries who buy foods from farmers and sell to wholesale markets, this contributes to higher food prices in city markets. One potential solution is establishing farmers' markets in strategic locations in Dhaka, allowing producers from surrounding regions to sell directly to city consumers. The Bangladeshi government's Department of Agricultural Marketing has initiated efforts to create such markets, and the FAO's Dhaka Food Systems project successfully launched 16 farmers' markets in the metropolitan area, yielding positive results (Figure 8). The locations of these markets are shown in Figure 9. Out of 16 markets, 12 markets are still running although DFS programme is finished. The International Potato Center (CIP) is supporting 4 of the farmers' markets in DNCC. The continuation of these farmer's markets has been possible due to the availability of fresh and safe vegetables and fruits, reasonable price and vicinity of the city people.

Figure 8: Farmer's market in Dhaka
Credit: Md. Sahidul Islam

The farmer's market approach allows farmers to receive fair compensation while enabling consumers to purchase fresh produce directly at lower prices. Implementing technologies like mobile apps can connect farmers with buyers and provide essential market information.

Every fresh market has a market management committee which is responsible for overall management of the fresh market. However, urban fresh markets face challenges related to logistics, including inadequate drainage, biosecurity issues, and the risk of food cross-contamination, raising concerns about food safety and quality. Government should provide necessary logistics (e.g. designated place with water and sanitation facilities, lighting, food waste disposal, etc.) in the farmer's markets.

Food adulteration remains a significant problem in these markets. While the government has implemented a National Food Safety Policy and local authorities conduct mobile courts[1] to combat adulteration and enhance public health, there is often insufficient manpower within city corporations and the Food Safety Authority to cover all markets effectively. An alternative approach could involve forming neighbourhood-level food safety committees comprising consumers, local leaders, and local government representatives to help ensure food safety in fresh markets. More proactive roles of the government departments and law enforcement agencies are also needed in monitoring food markets in Dhaka.

Pandemics and other health crises can significantly disrupt supply chains and access to food in Dhaka. During COVID-19, it was noticed that transportation restrictions, labour shortages, and disruptions to national and international trades delayed the delivery of food supplies. This led to shortages, inflated prices, and difficulties in accessing nutritious food, particularly for vulnerable populations. Additionally, market closures, hoarding, and reduced agricultural productions further exacerbated food insecurity.

[1] Special type of courts consisting of magistrate and relevant officials from city corporation, fisheries, agriculture and livestock departments, etc. for enforcement of food laws and imposing penalties on the crime spot.

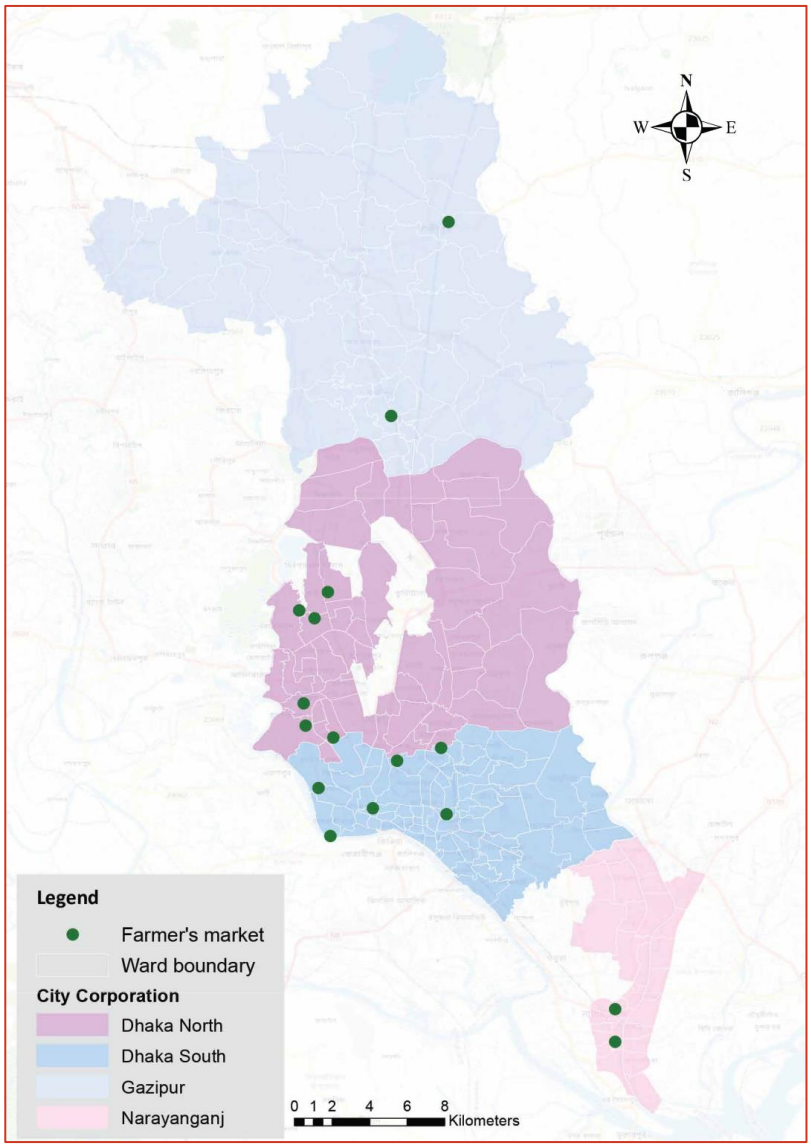

Figure 9: Location of 16 Farmer's Markets in DMA established by DFS project
Source: FAO, 2023

3.6. Food loss and waste

Dhaka generates approximately 5,000 tonnes of food waste daily (Razi, 2020).

Along the supply chain, poor transportation of foods from supplying districts and food storage facilities in Dhaka lead to post-harvest losses and inefficiencies in Dhaka's food system. There is currently insufficient investment in infrastructure, including roads and storage facilities, to minimize post-harvest losses and improve market access in the city. Extent of food losses due to transportation to Dhaka's fresh markets needs to be assessed and measures should be identified and implemented.

Around 5.5 per cent of the total procured food is wasted. Of this waste, 3 per cent occurs during the procurement and preparation stages, 1.4 per cent during serving, and 1.1 per cent from leftovers on plates (BIDS, 2019). An average estimate of food loss and waste of 7.4 per cent, with a range 0.2-35.0 per cent occur due to other causes. Food and vegetable waste makes up the largest portion of solid waste, ranging from 70 to 80 per cent. However, solid waste collection does not differentiate between types of waste. Projections indicate that by 2050, the daily per capita waste will reach 0.6 kilograms (Razi, 2020).

The waste collection system comprises three components: formal waste collection by city authorities (City Corporation), community-based initiatives, and informal waste collectors known as *tokais*, who gather waste for

recycling. Both the DNCC and DSCC are primarily responsible for waste collection and management in the city. A significant amount of waste remains uncollected due to inadequate infrastructure, funding, and collection vehicles.

Despite the city's limited waste management services, community-based door-to-door collection from households to local bins has been relatively successful. City corporation employees transport this waste to landfill sites in Matuail and Amin Bazaar, two disposal locations near Dhaka (Figure 10). The waste collection patterns in slum areas differ somewhat, as the City Corporation generally does not provide waste management services in these neighbourhoods (Razi, 2020).

Opportunities for waste reuse and recycling are currently under exploited. The fresh market waste in Dhaka could be used in productive ways – such as energy production and organic waste composting for agricultural use. Onsite waste management strategies are essential. Training on kitchen waste management can significantly reduce organic waste burdens on DNCC and DSCC. Introducing black soldier flies (BSF) for organic waste management can be an alternative option for productive use of organic wastes in the fresh markets, which will provide food for fish and poultry in the city. Action research need to be carried out on appropriate ration for BSF rearing and the efficiency of such an initiative in converting organic waste of the fresh market.

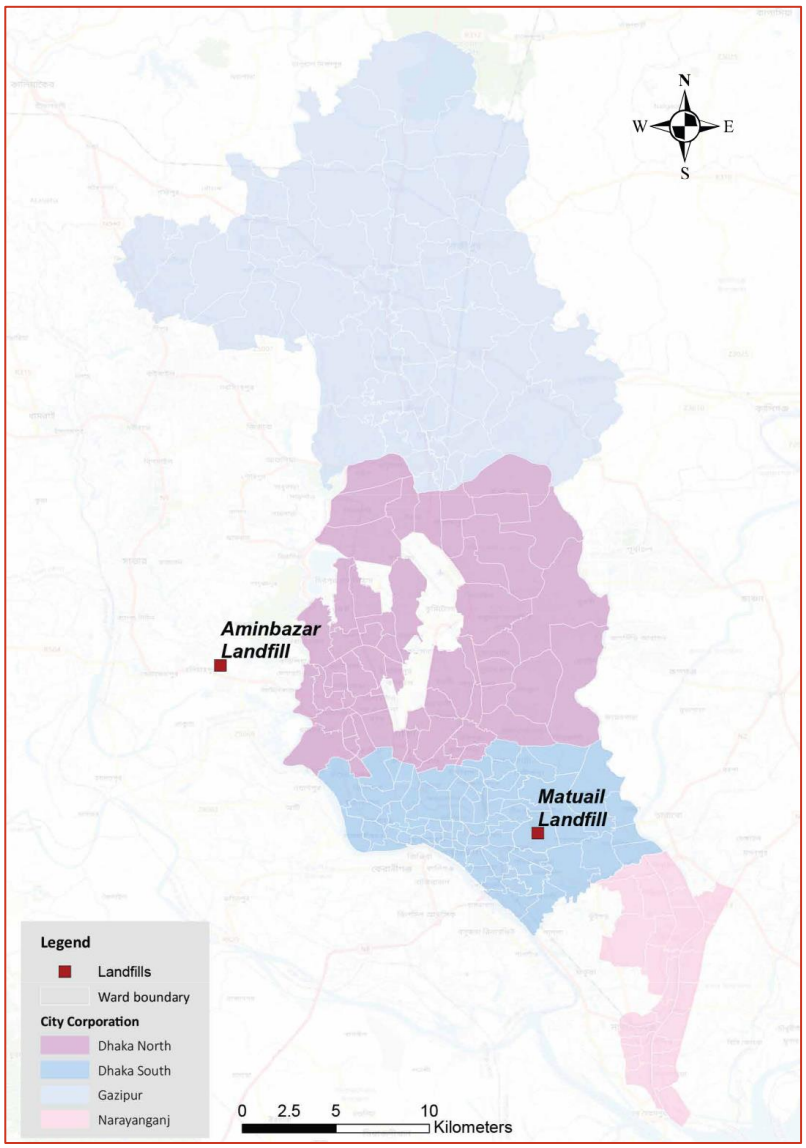

Figure 10: Land fill locations in Dhaka
Source: FAO, 2023

3.7. Consumption

Food consumption in Dhaka reflects the country's cultural richness and agricultural diversity, influenced by both traditional practices and modern trends. The traditional food practices and local cuisines promote regional food systems and biodiversity. The Dhaka population enjoys a wide variety of food items available throughout the year. The major food items consumed by people in Bangladesh, including in Dhaka, along with their average amounts, are detailed in Table 3. Rice is the primary staple, typically served with various curries made from fish, chicken, beef, or mutton, alongside lentils and vegetables. Spices are essential for enhancing flavours. A typical meal includes rice, lentil soup, a vegetable dish, and either fish or meat, often enjoyed in a communal setting that emphasizes sharing among family and friends.

Table 3: National rate of food consumption by Bangladeshi people

Sl. #	Food	Consumption rate (gram/person/day)
1	Rice	328.9
2	Wheat	22.9
3	Pulses	17.1
4	Vegetables	201.9
5	Fish	67.8
6	Meat	40.0
7	Egg	12.7
8	Milk & milk products	34.1
9	Fruits	95.4

Source: BBS, 2023d

Dhaka also offers fast food and local and international cuisines, whereas traditional diets are more focused on locally sourced ingredients including rice, pulses, meat, fish, vegetables, fruits, eggs, milk and milk products. Food consumption is significantly affected by seasonal availability, with certain fruits and vegetables being more abundant at specific times of the year. Street food is very popular in Dhaka due to cultural heritage, taste, flavour and easy availability to the consumers. Street foods are particularly very important to the low-income people in the city as it is cheaper than food served in formal restaurants.

Despite a rich culinary heritage, challenges such as malnutrition and food insecurity remain in Dhaka, especially among vulnerable populations. Bakker et al. (2022) reported that 36 per cent of the population suffers from moderate food insecurity and 14 per cent from severe food insecurity in the DMA. Hossain et al. (2024) reported that 3.2 per cent of the study population were identified as overweight and obese in Dhaka city. These issues are linked to poverty, limited access to nutritious foods, and climate-related impacts on agriculture. The government is working to address poverty, improve access to nutritious food, and mitigate climate-related shocks, aiming to align these efforts with the needs of both urban and rural communities.

There are some school food programs in Dhaka supported by the Government of Bangladesh and other national and international organizations to address malnutrition and food insecurity. For instance, the Government of Bangladesh backs the Mid-Day Meal scheme to enhance the nutritional status of school-age children. Additionally, the Government of Bangladesh and the United Nations World Food Program (WFP) collaborate on the School Feeding Program, which offers fortified biscuits and cooked meals to children in poverty-stricken areas. Another initiative, the School Tiffin/Lunch Program, is supported by Charity Right Bangladesh, providing a hot meal to children in Dhaka's slums every school day.

Food also plays a vital role in cultural and religious practices, with special dishes prepared for festivals, weddings, and religious ceremonies in Dhaka. Various regions are renowned for specific foods; for instance, Rajshahi and Rangpur divisions are famous for mangoes, Dinajpur district for Katari rice and lychee, Gazipur for jackfruit, and Chandpur, Barishal, and Patuakhali for hilsa, the national fish. Dhaka is particularly noted for its biryani. Additionally, there is a growing interest in health and nutrition in Dhaka, leading more people to adopt healthier eating habits, including increased consumption of fruits and vegetables.

4. Case studies

4.1. Introduction

The three case studies in this section sketch out the main characteristics of three important value chains for Dhaka – rice, beef, and mango – which illustrate many of the points raised on section three. These value chains were selected due to their importance to the diet of Dhaka residents and the economy.

4.2. Rice value chain

Rice is a staple food in Bangladesh, central to the nation's agricultural economy and influencing key sectors like GDP growth, employment, and food security (Murshid & Yunus, 2016). In 2022-23, Bangladesh produced 39.10 million metric tons of rice (BBS, 2023c), with Dhaka sourcing about 6,578 metric tons daily from surplus-producing districts. Despite strong production, Bangladesh still imported 1.06 million metric tons of rice in 2022-23 (FPMU, 2023), highlighting a persistent deficit. Projections suggest Bangladesh will need an additional 10.8 million tons of rice by 2050 to meet the demands of its growing population (Hossain, 2011). By 2050, Dhaka's population is expected to reach 30 million, requiring 50 per cent more rice than current consumption levels, pushing demand for increased rice production.

Government initiatives, such as crop diversification and extension services, are improving rice yields, but challenges like climate change (e.g., saltwater intrusion and drought) and land reduction due to urbanization remain significant threats. Rice processing, though crucial, faces hurdles such as inadequate storage, high mill costs, and environmental challenges. Commercial rice mills are essential, with over 18,700 operating in the country (IDLC, 2021), but issues like power outages and pest infestations affect storage and quality.

The rice value chain is complex, with multiple intermediaries impacting price stability and access to fair market value for farmers. Figure 11 shows the intermediaries in rice value chain where *faria* refers to itinerant traders who procure supplies from growers, *bepari* are long-distance traders who collect paddy from faria and growers, and *aratdar* is a broker or commission agent, working from a fixed location to link bepari with buyers.

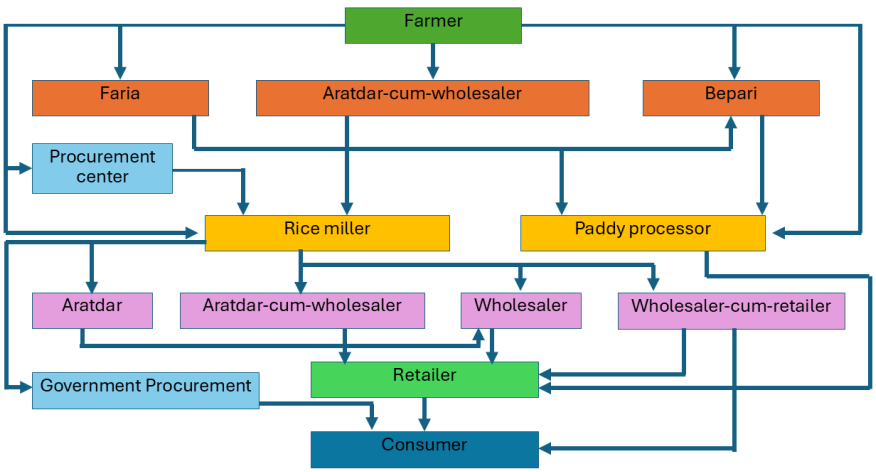

Figure 11: Typical Marketing Channels of Paddy/Rice in Bangladesh
Source: Murshid, 2011

Rice losses during postharvest operations, particularly during harvesting and transportation, are also a concern, with losses averaging 10-12 per cent (Bala et al., 2010; Nath et al., 2016). Improving rice processing, reducing intermediaries in the supply chain, and enhancing storage facilities could help address these issues. Furthermore,

quality concerns and the lack of effective regulation in rice mills need to be addressed to ensure food safety and reduce costs in Dhaka's urban markets.

4.3. Beef value chain

Beef is a vital component of nutrition and the economy in Dhaka and across Bangladesh. The country ranks 25th globally in beef production and achieved self-sufficiency by 2019 (FAO-UNIDO, 2019). In 2017-18, livestock contributed 13.62 per cent to agricultural GDP, providing direct employment to 20 per cent and part-time work to 45 per cent of the population (DLS, 2019). The beef industry contributed 1.47 per cent to the GDP in 2019 (LightCastle, 2019). Dhaka's beef supply primarily comes from northern districts such as Dinajpur, Bogura, and Rajshahi.

Figure 12 illustrates a typical beef marketing channel in Dhaka as well as in overall Bangladesh. Local and regional markets generally function twice a week and consist of buyers and sellers from two or three villages (Kok et al., 2020). Regional markets involve a greater number of participants from one or two districts.

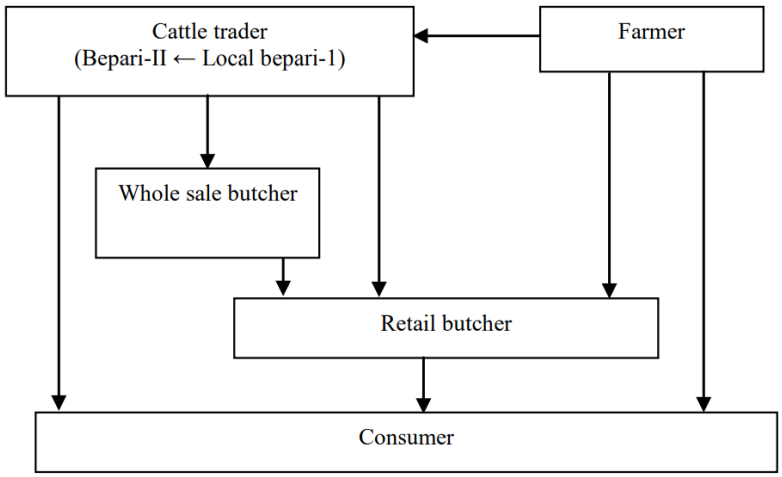

Figure 12: Marketing channel of beef cattle in Bangladesh
Source: Ahmed et al., 2010

Despite successes, the beef sector faces challenges like disease outbreaks, limited access to credit, climate change impacts, and feed shortages. Disease management remains a significant concern, compounded by the Department of Livestock Services' limited resources. Farmers, especially smallholders, need more support in nutrition, disease control, and marketing. Furthermore, there is a shortage of modern processing facilities, with many slaughterhouses failing to meet safety standards.

In Dhaka, around 30 per cent of cattle are processed in five official slaughter houses, with much of the slaughtering occurring in unregulated, unsanitary environments (Kok et al., 2020). Many butchers do not have refrigeration, displaying meat unsafely throughout the day, compromising quality. Weak law enforcement and a lack of awareness among both butchers and consumers exacerbate these issues. Improving beef storage facilities and introducing modern cold storage infrastructure could enhance meat safety and reduce waste.

Beef consumption in Dhaka is significant, with an estimated daily per capita consumption of 15g. However, high mortality rates among cattle, along with high feed and veterinary costs, create waste in the value chain. While beef prices remain relatively stable, they are unaffordable for many, highlighting the need for further development in the sector.

4.4. Mango value chain

Bangladesh ranks 10th in global mango production, contributing 2.61 per cent of the world's total in 2019 (Tridge, 2021). Mango is the country's most significant fruit, with an annual production of 1.17 million metric tons in 2018,

increasing to 1.48 million metric tons in 2022-23 (BBS, 2023c). Dhaka contributes 5,599.81 metric tons. The growth is driven by improved varieties, better farming techniques, and rising market demand (Miah et al., 2018). Mangoes are mainly transported to major consumption hubs in Dhaka and Gazipur and sold in all the fresh markets.

The primary mango distribution channel in Dhaka involves farmers selling to local traders, who then supply urban retailers (Figure 13). In mango supply chain, traders range from smaller-scale operators such as faria, bepari, and arathdar to larger wholesalers (local, divisional, and regional) and retailers (local and urban). The primary distribution channel for mangoes in Bangladesh, which accounts for 85 per cent, is: farmer/advance buyer → bepari → urban arathdar → urban retailer → urban consumer (Miah et al., 2018).

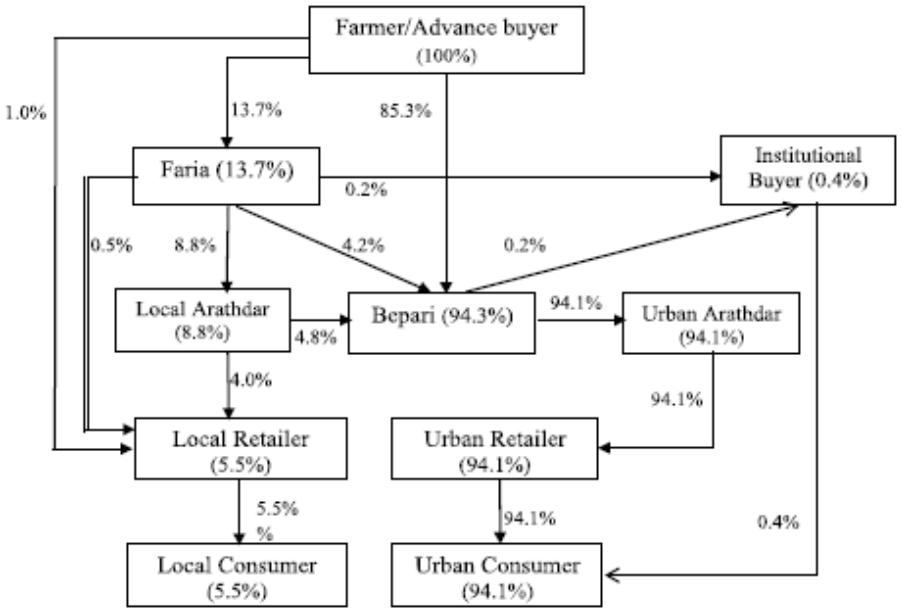

Figure 13: Flow diagram of mango supply chain
Source: Miah et al., 2018

Mango processing in Dhaka includes various methods such as slicing for fresh consumption, drying, and producing pickles, chutneys, or beverages. In Dhaka, companies like PRAN Foods and Akij Food are active in processing. However, household-level processing raises health concerns due to poor hygiene practices. Many processors lack training in food safety, and there is insufficient monitoring by authorities.

Mango consumption is culturally significant, with substantial consumption in Dhaka. Despite this, mango losses occur at various stages of the supply chain, particularly at the end, where unsold mangoes often end up as waste or animal feed (Kok et al., 2021).

Mango production faces challenges such as climate change, water scarcity, pest pressures, and soil degradation due to overuse of chemicals. The excessive use of pesticides without proper withdrawal periods is a concern for safe mango production. A significant issue is the lack of temperature-controlled storage, leading to spoilage and price reduction. Without adequate cold storage, farmers often have to sell mangoes at lower prices. The absence of proper storage and handling knowledge also contributes to quality degradation. Improved storage facilities and management practices are essential to minimize post-harvest losses and ensure fruit quality.

5. Governance mechanisms and processes

5.1. Key government departments, policies and programmes

Transforming food systems cannot be achieved by a single stakeholder or through interventions at just the national or sub-national levels. Coordinated actions among all relevant stakeholders are essential to achieving outcomes related to food and nutrition security, livelihoods, health, and the environment.

There are 18 ministries located in Dhaka, along with various departments, councils, and institutes that contribute to food systems governance at the national level in Bangladesh. Key departments include the Department of Agricultural Extension and the Bangladesh Agricultural Research Council under the Ministry of Agriculture, the Department of Fisheries and the Department of Livestock Services under the Ministry of Fisheries and Livestock, the Food Planning and Monitoring Unit (FPMU), the Department of Food, and the Bangladesh Food Safety Authority (BFSA) under the Ministry of Food. The Bangladesh National Nutrition Council operates under the Ministry of Health and Family Welfare. Local government institutions (such as city corporations and union parishads) fall under the Ministry of Local Government, Rural Development, and Cooperatives. Other relevant ministries include those for Commerce and Women Affairs, among others.

Bangladesh has several acts, national policies, strategies, and programs related to food systems, as follows:

- United Nations Food Systems Summit (UNFSS) pathway 2021 of the Government of Bangladesh.
- Perspective Plan of Bangladesh 2021- 2041 (PP2041)
- Eight Five Year Plan 2021-2025
- Third Country Investment Plan for Nutrition-Sensitive Food Systems 2021-2025 (CIP3)
- Second National Plan of Action for Nutrition 2016-2025 (NPAN2)
- Bangladesh Dietary Guidelines 2020
- National Agriculture Policy 2018 (NAP)
- National Agricultural Policy Plan of Action 2020 (NAP PoA)
- National Agriculture Mechanization Policy 2019
- Bangladesh Agricultural Good Practices Policy 2020
- National Livestock Policy 2007
- National Poultry Development Policy 2008
- Animal Disease Act 2005
- Fish Feed and Animal Feed Act 2010
- Animal Slaughter and Meat Control Act 2011
- Bangladesh Delta Plan (BDP) 2100
- Local Government and Rural Development Sector Strategy Paper 2018
- National Strategy for Pourashava Governance Improvement 2016-2025
- Bangladesh Public-Private Partnership Act 2015
- National Nutrition Policy 2015 (NNP)
- National Women Development Policy 2011
- National Financial Inclusion Strategy of Bangladesh 2020-24
- National Youth Policy 2017
- Food Safety Act 2013

5.2. UN Food Systems Summit pathway

Food systems thinking gained significant prominence in Bangladesh in 2021 when the government was preparing the UNFSS pathway, presented by the former Prime Minister at the United Nations Food Systems Summit (UNFSS) in September 2021 in New York. The UNFSS 2021 pathway marks a significant milestone for the Government of Bangladesh in driving meaningful changes in food systems. Prior to this, food systems were not a major focus in policies; instead, ministries and departments developed and implemented policies in a fragmented and isolated manner, lacking a consumer-focused framework for sustainable and healthy diets.

While progress is being made, it remains slow. The Prime Minister outlined the pathway along five action tracks, reflecting the government's commitment to achieving the Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger). The key areas of Bangladesh's UNFSS pathway and commitments include:

- Zero Hunger and Ending Malnutrition
- Ensuring Safe and Nutritious Food and Healthy Diets for All
- Building Sustainable, Inclusive, Nutrition Sensitive and Resilient Food Systems
- Enhancing Social Security for the vulnerable
- Reducing Food Loss and Waste (FLW)
- Sustainable intensification, diversification and resilience of production systems
- Transformation of agricultural and non-agricultural livelihoods
- Promoting One Health
- Women and Youth engagement
- Promote private sectors involvement
- Emphasize to research
- Coordination and Cooperation

However, there is currently no specific focus on urban food systems in Bangladesh's UNFSS pathway, which represents a significant gap. Unplanned urbanization has heightened food and nutrition insecurity for urban populations. Nevertheless, the multi-stakeholder groups at the FPMU and ministry levels are working on a National Action Plan (NAP) to implement the UNFSS pathway 2021 and develop a Monitoring and Evaluation (M&E) framework to assess the outcomes of the NAP. This is crucial for achieving measurable progress by the 2030 SDG deadline. Additionally, in July 2025 the UN Food Systems Coordination Hub will hold a stocktaking event in Italy, where the Government of Bangladesh aims to showcase its progress. Under the leadership of the FPMU within the Ministry of Food, several UN agencies, including IFAD, FAO, WFP, GAIN, and IFPRI, along with relevant ministries and various institutions from academia, research, and NGOs, are involved in creating the NAP and M&E framework.

5.3. Governance and decision-making processes

Formal processes at national level

With strategic oversight from the Prime Minister's Office, the formal governance and decision-making process for food systems is led by the Food Planning and Monitoring Unit (FPMU) of the Ministry of Food (Figure 14). There are several multi-stakeholder platforms operate at the Ministry of Food, the Food Planning and Monitoring Unit (FPMU), and city corporation levels. The primary multi-stakeholder platform at the Ministry of Food is the Food Planning and Monitoring Committee (FPMC), chaired by the Honourable Minister of Food. In addition, there are the National Committee and various Thematic Teams.

Below are the four layers of multi-stakeholder platforms at Ministry of Food, and FPMU:

1. **Food Planning Monitoring Committee (FPMC):** Chaired by the Honorable Minister of the Ministry of Food, this committee provides strategic guidance on food security and facilitates high-level coordination among 18 ministries and divisions.
2. **National Committee (NC):** Led by the Secretary of the Ministry of Food, this committee includes representatives from all relevant ministries and ensures high-level guidance while connecting with the Cabinet.

3. **Food Policy Working Group (FPWG):** Chaired by the Research Director of the FPMU, this group coordinates the monitoring process through thematic teams, engaging all relevant government agencies.
4. **Thematic Teams (TTs):** Led by the Research Directors of the FPMU, these teams are responsible for monitoring the implementation of the national food and nutrition security action plan (2016-2030).

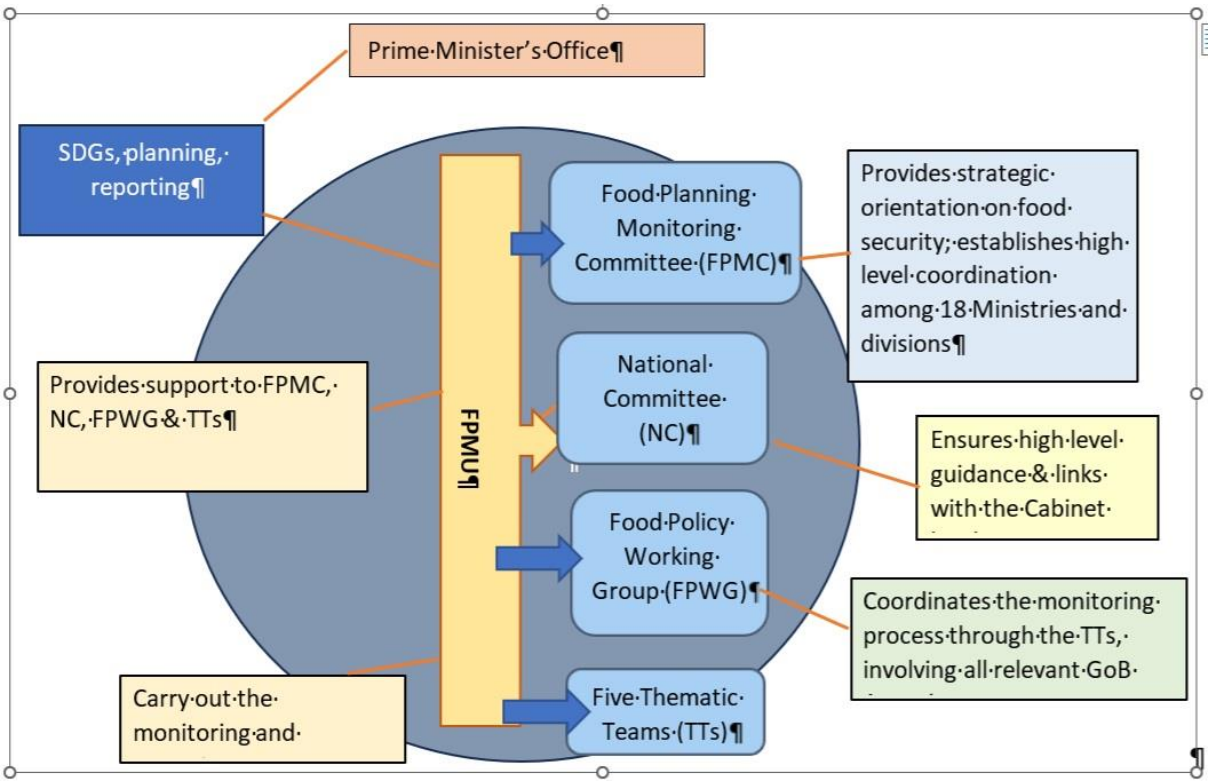

Figure 14: Food and Nutrition Security Coordination Mechanism in Bangladesh
Source: NAP 2021

The governance structures in Bangladesh are organized across various levels by a range of institutions, spanning from national to divisional, district, sub-district, and local levels (Figure 15).

Figure 15: Diagram the urban food systems governance mechanism
Source: Roosendaal et al., 2022

The roles of City Corporations

In urban areas, City Corporations serve as the primary governance bodies at the local level. The city corporations play a crucial role in the functioning of urban food systems.

The trade section regulates food markets by issuing trade licenses, while the conservancy section manages the removal of food waste from fresh markets to maintain cleanliness; the electricity section provides lighting for these

markets, and the market section oversees market monitoring. the Sanitary Inspectors are responsible for inspection of food manufacturing/processing and selling premises as well as collecting food samples and laboratory testing.

The city corporations manage and regulate the fresh food markets located within their geographical areas, with the urban planning section handling local planning for market structures and green spaces; and the health section ensuring public health standards are met.

To enhance the performance of these City Corporations, major cities in Bangladesh, including DNCC, DSCC, GCC, and NCC, have implemented a zonal structure alongside their headquarters. Each zone is overseen by a Zonal Executive Officer (ZEO), with zones further divided into wards managed by Ward Councillors, who assist the ZEO and the City Corporation in their responsibilities.

At the city corporation level, multi-sectoral nutrition coordination committees oversee nutrition-and food related activities.

To make food systems governance more practical and action-oriented, the Dhaka Food Systems (DFS) project of FAO provided technical support to establish the City Working Group (CWG), a multi-stakeholder governance structure within the city corporations (DSCC and DNCC). This framework aims to facilitate coordinated actions to address food-related issues in the cities, striving to make food systems more inclusive, accessible, resilient, and sustainable, ultimately ensuring affordable, safe, and nutritious food for urban residents. This governance structure has been effective, with necessary capacity-building and policy support provided to the city corporations to ensure its sustainability. The CWG includes the Departments of Health, Conservancy, Market, Electricity, Urban Planning, Trade of the City Corporation. In addition, the Department of Agriculture Extension (DAE), Department of Fisheries (DoF), Department of Livestock Services (DLS), Department of Agricultural Marketing (DAM), research institutes, relevant NGOs, private sector organizations, and community-based groups (such as Town Federations) also participate in the platform. Together, these stakeholders engage in discussions on food system issues, make decisions through a participatory process, and provide coordinated support. Engaging local communities in Dhaka food system decision-making is very important to ensure that initiatives are culturally relevant and effective.

To further support policy initiatives for city corporations, the Local Government Division (LGD) of the Ministry of Local Government, Rural Development, and Cooperatives (MoLGRD&C)—the line ministry for city corporations—established a food desk staffed with capable officers, including a Deputy Secretary in charge. This desk provides essential information and coordinated support to relevant ministries to advance the policy recommendations of the Dhaka Food Agenda (DFA) 2041. For example, food desk helped city corporations to be members of the Milan Urban Food Policy Pact (MUFPP, a voluntary global urban food systems agreement) by communicating with the MUFPP secretariat and helped city officer to fill out the registration forms. At present the food desk is also helping the Ministry of Health and Family Welfare to share the draft multisectoral urban nutrition strategy with their city level officers (as some part of that strategy will be implemented by city corporations and city level stakeholders) and collecting feedback to share with the Health Ministry for finalization. Additionally, the food desk collaborates with the Food Planning and Monitoring Unit (FPMU) of the Ministry of Food to integrate the food systems transformation process through the UNFSS pathways 2021. The DFA 2041 is a resource document developed through a multi-stakeholder consultative process led by the LGD of MoLGRD&C, with technical support from FAO and WUR in the Netherlands, aimed at addressing current and future challenges of urban food systems in Bangladesh.

Informal and trade networks

Informal networks also play important roles in Dhaka's food systems. For instance, the Dairy Farmers Association represents many dairy farmers who advocate for policies that enhance the dairy sector in Bangladesh. The Bangladesh Restaurant Owners' Association is a nationwide organization that represents restaurant owners, working to voice their concerns to the government, address growth constraints, and advocate for the recognition of restaurants as a vital industry in the country. Furthermore, Market Management Committees (MMCs) are established in each fresh market and wholesale food market. These committees consist of city corporation staff, market vendors, city residents, and market personnel, working together to improve market planning and management, thereby promoting good governance in the marketplace.

6. Analysis

6.1. SWOT analysis

A number of strengths, weaknesses, opportunities and threats are evident in the above characterization the Dhaka food system. These are presented in Table 4.

Table 4: SWOT analysis

Strengths	**Weaknesses**
• Diverse agricultural production in districts around Dhaka • Tropical monsoon climate and soil and water quality are conducive to food production. • Rapidly expanding domestic food market. • Rich cultural heritage centred around food. • Government's strong commitment to improve Dhaka's food system. • Government developed policies aimed at improving agricultural productivity and food security • Despite limited land, many Dhaka residents are engaged in urban food production, including vegetables, fruits, poultry, dairy. • Network of markets and vendors means Dhaka residents have access to fresh produce and other food, contributing to a dynamic local food economy. • Good road communication with almost all the districts for food transport.	• Inadequate transportation, market infrastructure, and storage facilities contribute to post-harvest losses and inefficiencies. • High congestion due to overcrowding and insufficient infrastructure. • Reduced availability of agricultural land due to rapid urban growth. • Weak regulatory frameworks and lack of awareness among farmers and food vendors, causing concern over food safety and quality. • Environmental problems due to urban expansion, including air, water, and soil pollution, affecting food production. • Climate change and extreme weather negatively impacts food producers, affecting food availability, accessibility, and quality. • Significant food safety concerns due to adulteration, contamination, and poor adherence to GAP. • Inadequate drainage, biosecurity risks, and potential cross-contamination in fresh markets, compromising food safety and quality. • Multiple intermediaries in supply chains can lead to unfair prices for farmers and higher costs for consumers. • Storage facilities that are poorly equipped and vulnerable to pests, moisture, and temperature changes, resulting in losses. • Dhaka's fresh markets have not been upgraded to meet growing demand for safe food and to manage waste. • Unsustainable food production practices, ignoring health and environmental impacts. • Increased labour and agricultural input costs significantly raise food prices.
Opportunities	**Threats**
• Investment in research and development can further enhance crop yields and resilience to climate change. • Promoting organic farming and sustainable practices can improve soil health and market competitiveness. • Government policies aimed at improving agricultural productivity and food security are supporting overall growth.	• Food crops are under the threat of being wiped out by floods due to climate change effects. Rising sea levels and extreme weather events threaten agricultural productivity and food security. • Increasing demand for food due to increased population may outpace supply, leading to food insecurity. • Pandemics and other health issues can disrupt supply chains and access to food.

• The government is focused on addressing poverty, enhancing access to nutritious food, and mitigating climate-related challenges, aligning these efforts with the needs of the populations.	• Food production may be hampered by outbreaks of plant- and animal diseases, reducing food supply to city markets.

6.2. Governance analysis

The governance processes and mechanisms for the food system are evolving to enhance resilience, inclusivity, and sustainability, ensuring access to healthy diets and safe food for everyone. The Government of Bangladesh has demonstrated strong commitments to improving the food system, reflected in its signing of various international agreements and the approval of national policies and strategies. These commitments include adherence to the Sustainable Development Goals (SDGs), Nutrition for Growth, and the United Nations Food System Summit 2021, among others. In line with this, the government has outlined several action plans, including the Plan of Action (2021-2030) for the National Food and Nutrition Security Policy 2000, the 3rd Country Investment Plan, the 2nd National Plan of Action on Nutrition, and the Mujib Climate Prosperity Plan (2022-2041), as well as the ICT Master Plan 2041.

The UNFSS 2021 pathway represents a key milestone for the Government of Bangladesh in advancing significant changes to its food systems, particularly in relation to SDG 2 (Zero Hunger) and other Sustainable Development Goals. The Bangladesh Perspective Plan 2041 outlines the vision and strategies for transforming the country's food system. The Mujib Climate Prosperity Plan 2022-2041 aims to strengthen agricultural food systems to enhance climate resilience and sustainability. The ICT Master Plan 2041 includes various tools and approaches to transform both agricultural and industrial food systems. The Food Policy Monitoring Unit (FPMU) of the Ministry of Food has developed a Bangladesh food systems dashboard to provide accessible data to both national and international stakeholders. Numerous multi-stakeholder committees operate at different levels to improve decision-making, increase transparency and accountability, and promote efficient resource use. The country has a capable workforce ready to lead changes in food systems. Strong governance structures exist at the national, sub-national, and city corporation levels, with city working groups, multisectoral nutrition coordination committees, and thematic groups at the national level supporting food systems transformation.

However, while it is positive that Bangladesh has several national plans and frameworks in place, their implementation has been inconsistent, and progress remains slow. Financial support from development partners is steadily declining, as Bangladesh has transitioned from being classified as one of the least developed countries to a lower-middle-income nation. Fragmentation persists among sectors, ministries, and departments within the food system, with limited cooperation and collaboration across various actors. This lack of coordination is impeding the achievement of shared objectives and the broader goals outlined in strategic plans. A focus on short-term goals, such as increasing production, often overlooks environmental sustainability and resource conservation.

Food loss, waste, and safety continue to be pressing issues. Healthy diets remain unaffordable for many, creating barriers to accessibility. Moreover, there is an increasing prevalence of obesity and overweight, particularly among urban women, which highlights the negative consequences of the existing food system. Although Bangladesh has food-based dietary guidelines specifying age-related calorie and food requirements, these are not widely practiced or disseminated, and healthy diets remain expensive.

7. Conclusions and recommendations

7.1. Summary of key findings

Dhaka's food system is a complex web that includes food production, processing, storage, distribution, markets, consumption, and the challenges of food loss and waste. Key issues for agrifood initiatives in the city include unhealthy diets, limited access to nutritious food for the urban poor, food safety, waste reduction, pollution, environmental degradation, climate change impacts, and a lack of visibility and support in urban policy, governance, and investment frameworks. As one of the fastest-growing megacities globally, Dhaka faces considerable challenges in managing its food system, which is vital for the health and well-being of its residents.

Dhaka is among the world's most climate-vulnerable cities, with extreme weather conditions impacting food producers both within and outside the city, affecting food availability, accessibility, and quality. As agricultural land in Dhaka decreases due to urban growth, most food consumed is sourced from surrounding districts.

Urban agriculture is emerging to meet Dhaka's growing demand, with many residents engaging in food production, such as vegetables, fruits, poultry, and dairy, often utilizing rooftops and limited space. Dairy production is particularly viable for economically disadvantaged communities, while slum residents often rear poultry. Kitchen gardens are common among the urban poor, with women and children typically responsible for their upkeep.

Food storage facilities in Dhaka and other districts face numerous challenges, including inadequate infrastructure that makes them susceptible to pests, moisture, and temperature fluctuations, leading to significant losses, especially during the monsoon season. Cold storage options are limited, and inadequate monitoring results in food spoilage and safety concerns across the supply chain. Both government and private sectors are investing in enhancing storage infrastructure, but many farmers lack knowledge of best practices, contributing to higher spoilage rates. Improving food storage facilities is crucial for boosting food security, reducing waste, and supporting the agricultural economy.

Dhaka features a mix of traditional and modern retail food markets, with modern supermarkets. Food distribution involves various channels, including direct sales, wholesale marketing, and e-commerce, with significant variation in management processes across different segments. These processes are influenced by product types, production timelines, required inputs, and broader drivers such as government policies, climate change, demographic shifts, and consumer behaviours.

Intermediaries play a role throughout the food supply chain, which often prevents farmers and food producers from receiving fair prices while driving up costs for consumers. Establishing farmer's markets in different strategic locations in Dhaka can address the intermediary problems. By setting up farmers' markets, direct sales from producers to consumers can take place, cutting out the middlemen. This would enable farmers to receive fair compensation and allow consumers to purchase fresh produce directly from them at lower prices.

Dhaka's food consumption patterns reflect its cultural richness and agricultural diversity, influenced by traditional practices and modern trends. Dhaka offers diverse food options, including fast food and international cuisine. Despite this diversity, malnutrition and food insecurity persist, particularly among vulnerable populations, linked to poverty, limited access to nutritious foods, and climate-related agricultural impacts.

There has been a considerable income increase of the Dhaka residents. As overall incomes rise, food consumption patterns are changing in Dhaka. Residents are moving from diets centred on a few staple foods to more varied options that provide greater energy and macronutrients. Food insecurity and undernutrition remain significant issues, while rates of overweight and obesity are rising among higher-income groups.

Food safety is a pressing concern, with issues of adulteration and contamination prevalent. Dhaka fresh markets struggle with logistics, inadequate drainage, biosecurity concerns, and risks of cross-contamination, heightening food safety worries. Insufficient manpower in city corporations and other relevant departments hampers effective

market monitoring. One potential solution could involve forming neighbourhood-level food safety committees with consumers, local leaders, and government representatives to ensure food safety.

Dhaka generates around 5,000 tons of food waste daily. Its fresh markets have not been upgraded to manage waste effectively. Municipalities are responsible for the overall waste management. Current waste management practices involve collecting waste from homes and transporting it to secondary dumping stations, from which the city corporation moves it to landfills. This approach is not sustainable, as the ineffective utilization of waste is leading to rapid landfill fill-up.

The food production systems in Dhaka often overlook sustainability, neglecting health hazards and environmental impacts while relying heavily on chemicals like pesticides and synthetic fertilizers. Uncertainties related to climate change, natural disasters, environmental degradation, and market volatility complicate efforts for change. Addressing these challenges requires a holistic food systems approach.

Coordinated action among all stakeholders is essential for improving the city food system. Multi-stakeholder platforms at the Ministry of Food and city levels, including multi-sectoral nutrition coordination committees and city working groups, help coordinate urban food and value chain activities. The Bangladesh Restaurant Owners' Association advocates for restaurant owners, addressing growth constraints and promoting the recognition of the restaurant sector as vital to the economy. Market Management Committees (MMCs) oversee the overall management of fresh markets.

Food systems thinking gained traction in 2021 during the preparation of Bangladesh's UNFSS pathway. The government is actively working to enhance Dhaka's food system through initiatives like the Detailed Area Plan (2022–2035) and structural plans that focus on fresh markets, storage facilities, road networks, land use, and processing units.

7.2. Recommendations

The following recommendations are based on the characterisation of the Dhaka food system and its governance, and may inform future directions for CGIAR's work to support urban food systems in Dhaka and across Bangladesh.

Food production

1) **Ministry of Agriculture/Department of Agricultural Extension should promote sustainable farming techniques**, such as organic practices and agroecology, can enhance soil health and productivity. Farmers should receive training and resources to cultivate climate-resilient crops, and a crop production calendar can be developed to address climate change impacts, reducing vulnerability. Strengthening climate-smart agriculture programmes is crucial.
2) **Ministry of Local Government, Rural Development, and Cooperatives should facilitate farmers' organisation into cooperative structures or farmers' associations**, to enhance timely access to high quality farm inputs, including seeds, fertilizers, irrigation, feed, and medicine supplies, and facilitate better information sharing, empowering farmers in the market.
3) **Banks and finance organizations should improve the offer of credit and financial services for small-scale farmers** in and around Dhaka and facilitate access, to help them invest in their operations.
4) **Ministry of Agriculture / Department of Agricultural Extension should take necessary steps in ensuring GAP** among the farmers through active community engagement. This can improve food quality and safety at the production level in and around Dhaka.
5) **Government agencies and NGOs should launch campaigns** encouraging the cultivation of a variety of crops, including fruits and vegetables on the rooftops, to enhance dietary diversity. This can contribute to combatting food insecurity and undernutrition, while addressing overweight and obesity rates in Dhaka.
6) **City corporations and government departments should develop policies and programmes to encourage urban agriculture** among Dhaka city dwellers – on rooftops and/or homesteads, and vacant

spaces to meet the growing demand within the city. This may include increased support for the production of safe and affordable crops, vegetables, fish, poultry, dairy, and meats; rebate on the holding taxes of the Dhaka residents to encourage them for food production; and development of new urban food production programmes.

7) **The Ministry of Planning should include in urbanization plans measures to protect green areas and wetlands, and to encourage planting fruit trees** on rooftops and porches of multi-story buildings, to both support access to food and help prevent temperature rises in the city.

8) **Universities and research institutes should conduct research on the benefits of urban agriculture in Dhaka** – in particular the positive impact of urban agriculture on reducing heat in the city.

9) **Universities and research institutes should continue agricultural research to develop new technologies and practices** that meet the increasing food demand from city residents. Collaborations between research institutions and farmers should be fostered to tailor solutions to local conditions.

Processing and manufacturing

1) **Government must implement and enforce food safety regulations** to ensure the quality of food products, alongside **training for farmers and food processors on best practices for handling and safety**. The government should also promote sustainable water management practices to ensure efficient water use.

2) **City corporations should facilitate and incentivize the private sector to establish modern slaughterhouses** near the fresh markets in Dhaka to ensure that butchering occurs within regulated facilities.

Storage

1) **Government and the private sector must invest more in enhancing food storage infrastructure** in Dhaka.

Markets and distribution

1) **City corporations should establish farmers' markets in strategic locations in all the Wards of Dhaka city** to mitigate intermediary issues in the food supply chain. This will allow farmers to receive fair compensation while enabling consumers to purchase fresh produce directly from farmers at lower prices. **They should also provide necessary infrastructure in the markets,** e.g. designated place with water and sanitation facilities, lighting, food waste disposal, etc.

2) **Technology developers should introduce and make widely available communication technologies like mobile apps** to connect farmers with buyers and provide essential market information, allowing them to negotiate prices directly.

3) **Government should strengthen actions against market syndicates and intermediaries** to benefit both farmers and consumers.

4) **Government departments and law enforcement agencies should be more proactive in monitoring food markets** in Dhaka, including mobile courts in fresh markets regularly to ensure food safety, increasing the number of field staff where necessary. Neighbourhood-level food safety committees, comprising consumers, local leaders, and government representatives, could help ensure safe food in fresh markets.

5) **City corporations and the private sectors should invest more in upgrading Dhaka's fresh markets** to meet increasing demands for safe food and effectively manage waste. Improvements in drainage systems and biosecurity in these markets are vital to minimizing food cross-contamination.

Food loss and waste

1) **Universities, research institutes, or international organisations should assess the extent of food losses due to transportation to Dhaka fresh markets**, and identify and implement solution measures.
2) **Government and the private sectors should increase investment in infrastructure, including roads and storage facilities**, to minimize post-harvest losses and improve market access. Enhancing food storage facilities is critical for food security, reducing waste, and bolstering Dhaka's agricultural economy. Installing cold storage near Dhaka's fresh markets can extend food shelf life and preserve unsold foods.
3) **Government and the private sectors should develop initiatives for recycling and energy production from fresh market waste**, along with organic waste composting for agricultural use. Onsite waste management strategies are essential, and training on kitchen waste management can significantly reduce organic waste burdens on both DNCC and DSCC.
4) **Research institutes should conduct action research on the potential of black soldier fly (BSF) initiatives** to converting organic food wastes of the fresh markets into food for fish and poultry in the city, including the appropriate ration and efficiency.

Consumption

1) **Government agencies and NGOs should launch campaigns to raise awareness about nutrition** and the importance of a diverse diet.
2) **Government should introduce measures to increased skilled manpower and reduce unemployment** in Dhaka, thereby increasing purchasing power of the city people which will enable them to choose safe and nutritious foods.

Cross-cutting

1) **Government and the private sectors should strengthen support to ensure access to inputs, climate-smart technology, and capital** for food production, processing, distribution, retail, consumption, and waste management in Dhaka.
2) **Government should take steps to educate producers and food supply chain actors in Dhaka about regulations on food safety** issues through training, awareness campaigns, and media outreach.
3) **Government and the private sectors should develop more public-private partnerships** to further invest in agricultural innovation and infrastructure in the city.

Governance

1) **DNCC and DSCC should continue the multi-stakeholder platforms,** and ensure they are active and effective to improve city food systems. A holistic approach to food systems challenges is required, necessitating coordinated actions among all stakeholders to achieve food and nutrition security, livelihoods, health, and environmental goals.
2) **City corporations and other stakeholders, including NGOs, should engage local communities in food system decision-making**, to ensure that initiatives are culturally relevant and effective. This includes ensuring the presence and meaningful participation of, representatives from local communities in the multi-stakeholder meetings/workshops on food systems of the city.
3) **Government should strengthen initiatives to address gender inequality** and enhance women's access to education, employment, and healthcare.
4) **FAO and partners, as well as other international organizations active in Bangladesh, should develop more and longer-term projects to advance food system transformation**, building on and extending the work of the Dhaka Food Systems (DFS) project.

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Annex: List of interviewees

Sl. #	Name	Designation	Organization	Location
1.	Md. Arafath Hossain	Asst. Chief Waste Management Officer	DNCC	Dhaka
2.	Md. Humayun Kabir Khan	Slum Development Officer	DNCC	Dhaka
3.	Dilbahar Ahmed	Urban Planner	DNCC	Dhaka
4.	Md. Shafiqul Islam	Waste Management Officer	DSCC	Dhaka
5.	Mst. Shormeara Sultana	Slum Development Officer	DSCC	Dhaka
6.	Md. Zahirul Haque	Additional Deputy Director	DAE	Dhaka
7.	Md. Motiur Rahman	Agricultural Economist	DAE	Dhaka
8.	Dr. Ashis kumar kundu	Additional District Livestock Officer	DLS	Dhaka
9.	Dr. Mohammed Aminul Haque	Upazila Livestock Officer	DLS	Dhaka
10.	Umme Kulsum Ferdousi	Deputy Director (Deputy Secretary)	DAM	Dhaka
11.	Dr. Muhammad Tanvir Hossain Chowdhury	Senior Assistant Director (Blue Economy)	DoF	Dhaka
12.	Mohammad Mamunor Rashid	District Fisheries Officer, Planning section	DoF	Dhaka
13.	Dr. Mohammed Shakhawat Hossain	Senior Scientific Officer	BARI	Gazipur
14.	Md. Hannan Miah	Former Councilor	GCC	Gazipur
15.	Md. Abdul Hamid Sarkar	Slum Development Officer	GCC	Gazipur
16.	Malay Kumar Das	Food and Sanitation Officer	GCC	Gazipur
17.	Mr. Md. Moinul Islam	Senior Urban Planner	GCC	Gazipur
18.	Md. Khademul Islam	District Sanitary Inspector	Civil Surgeon Office	Gazipur
19.	Md. Hasibul Hasan	Upazila Agriculture Officer	DAE	Gazipur
20.	Dr. Kaisir Muhammad Moinul Hasan	District Fisheries Officer	DoF	Gazipur
21.	Md. Abdus Salam	Marketing Officer	DAM	Gazipur
22.	Dr. S. M. Okil Uddin	District Livestock Officer	DLS	Gazipur
23.	Tanjina Afrin	Food Safety Officer	BFSA	Gazipur
24.	Dr. M. Nazim Uddin	Senior Scientific Officer	BARI	Gazipur
25.	Mr. Belal Hossain	Field Manager	Karmojibi Nari	Gazipur
26.	Ms. Monisha Mafruha	Technical Coordinator	CARE	Gazipur
27.	Mr. Omor Faruq Bhuiyan	District Coordinator	Bdclean Bangladesh	Gazipur
28.	Md. Ruhul Amin Munshi	City Coordinator	SNV Netherlands	Gazipur
29.	Abu Hanif	Organizing Secretary	Alhaj Shamsuddin Sarker Super Market	Gazipur
30.	Rina Halim	President	Gazipur Town Federation	Gazipur
31.	Md. Saiful Islam	General Secretary	Gazipur Poultry Association	Gazipur

Sl. #	Name	Designation	Organization	Location
32.	Md. Niot Ali	Meat Seller	Meat Seller Association	Gazipur
33.	K M Faridul Miraj	Slum Development Officer	NCC	Narayanganj
34.	MD. Moinul Islam	Urban Planner	NCC	Narayanganj

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We would like to thank all funders who support this research through their contributions to the CGIAR Trust Fund: www.cgiar.org/funders.

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