



# **MARKET SYSTEM AND CONSUMER DYNAMIC ANALYSIS OF THE FISH SECTOR IN BANGLADESH**

## List of Acronyms

BDT	-	Bangladeshi Taka (currency of Bangladesh)
DoF	-	Department of Fisheries, Government of Bangladesh
EPB	-	Export Promotion Bureau, Government of Bangladesh
FDI	-	Foreign Direct Investment
FY	-	Fiscal Year
GAP	-	Good Agricultural Practices
GDP	-	Gross Domestic Product
IDEA	-	“Aquaculture: increasing income, diversifying diets, and empowering women in Bangladesh and Nigeria” project” project
KG	-	Kilograms
LCP	-	LightCastle Partners
LDC	-	Least Developed Countries
MT	-	Metric Tonnes
NGO	-	Non-governmental Organization
SEC	-	Socio Economic Class
USD	-	United States Dollar

## Acknowledgements

LightCastle Partners (LCP) would like to express their gratitude and appreciation to all the relevant stakeholder groups that have assisted the study team for the completion of this project. A special thanks to all the members of WorldFish Bangladesh team associated with the “Aquaculture: increasing income, diversifying diets, and empowering women in Bangladesh and Nigeria” project” (IDEA) project.

LCP would also like to acknowledge the contribution of a handful of private sector representatives, experts and academicians who were consulted for their valuable insights when developing this report.

Lastly, a special thanks to all the relevant intermediaries of the fish sector, starting from small retailers, to Commission Agents’ Associations, who have contributed to the primary findings of the study and helped analyze the overall status quo of the industry.

## List of Terms Used

<i>Deshi</i>	- local, indigenous fish species are referred to as <i>deshi</i> fish
<i>Khas</i>	- government owned fallow land, where nobody has property rights
<i>Paurasabha</i>	- municipal corporations of the Government of Bangladesh
<i>Ijarat</i>	- rental fee
<i>Panchmishali</i>	- refers to a mix of different varieties of small, <i>deshi</i> fish, usually locally captured
<i>Maund</i>	- local measure of weight, generally equating 40 kilograms
<i>Bhaga</i>	- a portion of fish used mostly in sale of small fish; one <i>bhaga</i> does not have any specific measure but can typically vary between 150 grams to 300 grams
<i>Dhol/Dholon</i>	- weight of fish obtained per <i>maund</i> . Varies according to region and markets
<i>Khuchra</i>	- small volume retail sales to consumers
<i>Shutki</i>	- version of dried fish which is a delicacy in Bangladesh
<i>Chepa shutki</i>	- version of <i>shutki</i> made with Puti, a variety of small fish
<i>Shidol shutki</i>	- a mix of <i>shutki</i> and taro, a vegetable
<i>Mahajan</i>	- refers to moneylenders, leasers and/or farm owners within the fish value chain
<i>Dadandar</i>	- another term for <i>Mahajan</i>
<i>Arat</i>	- wholesale fish auction market
<i>Aratdar</i>	- commission agent within the fish value chain
<i>Paikar</i>	- wholesale buyer and seller of fish
<i>Jele</i>	- local term for fishermen
<i>Faria</i>	- commission agent within the fish value chain
<i>Bepari</i>	- commission agent within the fish value chain
<i>Pahela Baisakh</i>	- the Bengali New Year

### Notes:

The term **Northwest region** or **Northwestern zone** when used in this report, refers to the northwestern region of the Bangladesh including districts in the Rajshahi and Rangpur divisions.

**Small fish**, in this study, refers to the relatively smaller species of fish. In technical terms, small fish has been defined to encompass fish species that are smaller than 50g on average per piece of fish (i.e. more than 20 fish in one kilogram of fish).

This study has adopted a wider definition of **live fish**, encompassing all fish species that are or have the potential to be marketed in live form to consumers including Jiyol (air-breathing) fish such as Koi or Shing as well as non-Jiyol fish.

Distinction between **Urban, Semi-urban and Rural**: Within the survey locations, for the districts Rajshahi, Rangpur, Bogra, Pabna and Dinajpur, respondents from city centers in the District HQs have been classified as **urban**, and those from town centers in Upazila HQs are classified as **semi-urban**. Respondents from city center markets in Gaibandha district HQ has been classified as semi-urban. All respondents from Dhaka surveys have been classified as urban. Surveys taken from respondents from all other locations have been classified as **rural**.

**The names of respondents in the case studies in this report are fictional and the actual names of respondents have not been shown to preserve their identity.**

## Income Classifications

Classification	Range of Monthly Household Income
Low Income Households (SEC Group C)	Up to BDT 14,200 (USD 168)
Middle Income Households (SEC Group B)	Between BDT 14,201 (USD 168) and BDT 90,000 (USD 1,066)
High Income Households (SEC Group A)	BDT 90,001 (USD 1,066) and above

## Executive Summary

Over the last few decades Bangladesh has witnessed population growth and rapid economic growth that has resulted in higher disposable incomes. This has been driving demand for fish. According to statistics from the Department of Fisheries, in 2017-18, the fisheries sector contributed 3.57% to the national GDP and that over 11% of the country's total population were employed in this sector. In the past year, fish production in the country topped 4.27 million metric tonnes. The average annual growth rate of the fisheries sector has been 5.26% - that of agriculture has been even higher at around 10% - over the last 10 years and total fisheries production is projected to rise to 4.55 million MT by 2021 on the back of rising cultured fish production.<sup>1</sup>

As a result of massive investments into aquaculture, the fisheries market, which had traditionally been supply-driven, where supply dictated the taste and purchases of the consumer has more recently taken on a demand-driven form. This means that consumers now demand specific types of fish, and cultured fish types such as Tilapia, Rui, Catla, Shing, Magur and Pabda that are in abundant supply are seeing a downward trend in prices. Aquaculture has proliferated to provide a steady stream of fish supply across the year at local markets, accounting for over 56% of national production. The sector is also commercially important as an export driver of the country with a share of 1.2% of the country's exports, which includes mainly shrimp. Leading importers of Bangladeshi fish include China and the European nations of Netherlands, Belgium, Germany and the United Kingdom<sup>2</sup>.

Given the prominence of the fisheries sector in the Bangladeshi economy, LightCastle Partners, appointed by WorldFish, is conducting a detailed study on the fish and fish-based products market in Rajshahi, Rangpur and some parts of Dhaka. This research project, in its first phase, covered over 1,000 consumer respondents spread over 75 fish markets to better understand market systems and consumer dynamics in this sector. Under the study, consumers have demonstrated a strong affinity towards fish purchases along the following points:

### *The prominent role of fish in the diet of Bangladeshis*

Fish has traditionally been an important part of the Bangladeshi cuisine, and remains so with consumer surveys showing that around 25% of total weekly spending on food and grocery items going towards fish. The typical consumer shops for fish 2-3 times a week and expends around 25% of his/her food spending on fish, a purchase which was most likely made from his/her local fish market or a regional hub/market. While respondents are price-sensitive, they are also concerned about freshness of the fish and its taste.

### *Female participation is low in fish markets*

Fish purchase remains a male responsibility with only 13% of respondents purchasing fish being female. This varies heavily within and outside Dhaka: 23% of respondents inside Dhaka were female whereas only 7% of respondents outside Dhaka were female. Most women cited the unclean shopping environment and the occasional crowding in marketplaces as key deterrents. Apart from a handful of women fish retailers in Karwan Bazar of Dhaka who were the exception, women fish sellers were not observed anywhere else.

### *Larger, cultured fish the most popular purchases*

In this Phase 1 consumer study, medium to larger-sized fish such as the large carps (which includes Rui, Catla, Mrigel and Silver Carp among others), Tilapia and Pangas were the most purchased fish types. These fish species are commercially cultured and are in some cases priced to accommodate the demand for the low-income communities. Prices of these species are close to or just above the prices for its nearest protein alternative, the broiler chicken. Larger fish varieties such as Rui and Silver Carp are also family favorites, being less of a hassle to dress and prepare, and also contains fewer bones which make them more popular with children.

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<sup>1</sup> Ministry of Fisheries and Livestock, Bangladesh. 2018. *Yearbook of Fisheries Statistics of Bangladesh*

<sup>2</sup> Export Promotion Bureau, Bangladesh. 2019. *Country Wise Export (Goods) for the Months of July-June 2018-19*

### **Differences and similarities in fish type preferences across income groups**

The more affordable species of Pangas, Tilapia, Silver Carp, Mrigel and Bata (with prices ranging from BDT 140 – 210 per KG) are popular among the low-income population, with over 50% of the low-income respondents having bought at least one of these fish species in their last purchase. Conversely, high income respondents purchased a high proportion of the most expensive fishes (prices of BDT 450 per KG and above) – including Ilish, Rupchada, Golda, Shol, Pabda and Boal - and less of Pangas and Tilapia varieties. Rui, however, remains visibly popular among all income classes, the main distinction being a general trend of purchasing bigger Rui fishes the higher the household income; the average sizes for Rui fish purchases among low, middle and high-income respondents were 883 grams, 1,121 grams and 1,854 grams respectively.

### **Indigenous fish species are consumed less but very much an aspirational item**

Indigenous fish species, known as *deshi* fish, are very much an aspirational item, and most households prefer a mix of large and small fish in their basket, with only 13% of households not purchasing small fish species. Small fish species are perceived to be a much healthier alternative to cultured fish and consumer perceive them to contain more vitamins and protein. People also purchase smaller fish species for their distinctive taste and for the sake of variety. In the rural areas *deshi* fish are sold along with a mix of other fish species which is referred to as *Panchmishali* and is often locally caught from open water bodies. *Panchmishali* is also highly seasonal with catches being higher during the dry season. Gura Chingri, also locally caught and sold in small portions known as *bhaga*, are favorites in vegetable dishes and among the most-aspired fish in several Northwestern districts.

### **Marine and brackish fish less popular in the Northwestern zone**

Marine and brackish water (brackish water or briny water is water that has more salinity than fresh water, but not as much as seawater) fish are prevalent in Dhaka, but in the Northwestern zone, only selective marine fish are available with the occasional Ilish from Barisal or Chittagong being the key exception. Popular marine fish and seafood such as Rupchada, Coral and Bagda Chingri were not purchased by respondents in the Northwestern zone. Where marine fish were bought outside Dhaka, they tended to be at higher prices than in Dhaka and are visibly less fresh. So, it comes as no surprise that marine fish were thought to be less of a value purchase by Northwestern respondents than respondents in Dhaka, and they preferred the taste of freshwater fish.

Dhaka, with its more refined palate for seafood, has one marine fish (Rupchada) and prawns (Golda Chingri) among the top five most-aspired fish. None of the other regions apart from Rajshahi feature any marine fish among their top aspirations (explicitly given that if price was not a factor in consumers' decision-making). So, if there is any demand among Northwestern region for marine fish, it remains latent and suppressed by the high prices, lower freshness and more importantly, by a lack of awareness or unfamiliarity with marine fish.

### **Ilish and Rui fish among top aspirations**

In terms of aspirations, Ilish and Rui are among the three top-most aspirational fish across all regions. For those consuming Silver Carp or Catla, Rui is perceived to be a stepping stone upwards and indeed among the high-income respondents, Rui was the most popular of the carp species. Larger *deshi* (indigenous) fish such as Ayre, Boal and Pabda are preferred due to their distinctive tastes and perceived freshness. Smaller *deshi* fishes including the Tengra and the Shing (thought to have medicinal value) round up the list of most aspired fish.

### **Shutki is the most popular type of processed fish item**

*Shutki* (dried fish) is the top choice among processed fish types having been purchased by 47% of respondents within the past year, with a smaller proportion of respondents also preferring varieties of dried fish items such as chepa *shutki*, shidol *shutki* and salted fish. Only a minuscule proportion of respondents are familiar with other types of processed fish items - the exception being the small community of upper middle and high-income residents in Dhaka who shop from supermarkets, which have been their gateway to western-style processed fish items such as fish fillet and marinated fish. Given the relative success of supermarkets in circulating processed fish items, local market entrants might leverage the presence of corner stores across the country to market their products.

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### ***Aratdars a very important but exclusive group of intermediaries***

It was evident from interviews and focus group discussions with *aratdars* that they require assistance in accessing mainstream financial channels. The reason they cannot access finance effectively is due to a lack of paper trail. Because most *aratdars* do not maintain any deeds when providing *dadan* or credit to their buyers, they often do not have any acceptable form of records to help them recover their loans. This means that they cannot seek legal measures to recover the loans through a court of law. For this reason, banks are not willing to extend loans to fish *aratdars*. Since only a certain number of people have the financial means to set up an *arat* of their own, the pool of *aratdars* remains small and they can have significant leverage over their suppliers.

Overall, the study found that consumer choice of fish is dynamic and somewhat unpredictable as it depends on a number of factors such as preferences and taste of family members, seasonality of fish, market prices, price of alternatives, and overall demand-supply equilibrium for each fish species.

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## The Context

An annual production of nearly 2 million tonnes of cultured fish makes Bangladesh the world's fifth largest producer of inland aquaculture (FAO), and the overall fisheries sector is a key economic driver, contributing 3.69% of the country's GDP and over 23% of agricultural GDP.

However, the sector is faced with various challenges such as degradation and pollution of natural water bodies, low value addition and low economic power of stakeholders, a scarcity of good quality spawn, fries, feed and other inputs in aquaculture and a general poor infrastructure and unhygienic conditions throughout. Moreover, despite the sector contributing to 11% of the country's employment, the role of women remains largely understated and limited to small roles in the homestead.

## Objective of the Study

In this backdrop, the Bill and Melinda Gates Foundation have embarked on the project "Aquaculture: increasing income, diversifying diets, and empowering women in Bangladesh and Nigeria" which aims to nurture sustainable growth of the aquaculture sector to help enhance the income of smallholder families, the diets and nutrition of vulnerable women and children and the empowerment of women in Bangladesh.

With a specific focus on the Rajshahi and Rangpur divisions in northwest Bangladesh – a region which is economically backward but has a high development potential for aquaculture - WorldFish is working with the project on strengthening partnerships with private sector businesses, investors and government to develop profitable value chains and transform local government policies to enable increased production, create an environment for private uptake and incorporate fish into nutritional improvement initiatives.

As part of this initiative, LightCastle Partners has been selected to conduct a detailed study on the fish and fish-based products market in Rajshahi, Rangpur and some parts of Dhaka to better understand market systems and consumer dynamics in the fisheries sector. Specifically, LCP is undertaking a thorough value chain analysis and market system assessment by engaging groups of key actors and stakeholders in order to provide insights on the following dynamics of the aquaculture market:

- The volume and value of fish flowing through the upazilla, district and regional markets, specifically in the Northwest and Dhaka market.
- The various customer segments and buying patterns, the competition, and the economic environment in terms of barriers to entry and regulation
- Fish preferences by species, sizes and price within markets of the Northwest and Dhaka
- A market system assessment for fish and fish-based products, access, demand, and embedded technical services
- The growth potential of the fisheries market, taking into account trans-boundary import and export dynamics
- Identify a list of fish markets in the Northwest identifying major retail and wholesale markets.

It is expected that the findings of the study will effectively guide and inform World Fish and the Bill and Melinda Gates Foundation in the strategic design and intervention planning under the project, and ultimately help strengthen the sustainability of the fisheries ecosystem in Bangladesh.

This is an interim report, and highlights key value chain dynamics and consumer behavior and trends identified after completion of Phase 1 surveys of this project.

## The Study Methodology

### Research Instruments Overview

Under this assignment, LCP is taking a mixed methods study approach to understand the consumer level dynamics of the fish sector. The following table shows the list of data capture tools and instruments that have been used for the purpose of this assignment.

Table 1 Research Instruments Breakdown

Instruments	Objective	Execution plan	Details
<b>Desk Research</b>	To collect secondary research on the socioeconomic, cultural, government policy and regulations aspects among others.	Published articles, research papers, journals, news reports, relevant websites, books, magazines and other sources.	Secondary research completed
<b>Key Information Interview (KII)</b>	To gather preliminary insights and current practices from fish markets, authoritative bodies and other relevant stakeholders.	Qualitative interviews of concerned stakeholders including relevant government authorities.	30 KIIs with value chain actors (incl. <i>Arottdar</i> , Retailer and <i>Paikar</i> ) planned for each of Phases 1 and 2
<b>Questionnaire Survey</b>	Structured questions asked to consumers to extract specific information (quantitative) designed for statistical analysis of the responses.	Develop questionnaire, orient field workers, conduct workers level surveys, and analyze data.	570 consumer level surveys planned for each of Phases 1 and 2
<b>Focus Group Discussion (FGD)</b>	Small number of people (6 to 10) brought together with a moderator to focus on a specific topic discussion.	FGD with fish consumers living in Rajshahi, Rangpur and Dhaka will be conducted.	FGD to be carried out for final stage of project

### Sampling Method

The total number of households in the three regions was found to be 4,838,861 according to the 2011 Census of the BBS (Dhaka division 3,580,687; Rajshahi division 773,947; and Rangpur division 484,227). With a 99% confidence interval and a 4% margin of error, sampling unit was derived to be 1038 – rounding off to 1050. It was decided put 60% emphasis on Rangpur and Rajshahi and 40% in Dhaka. The table below shows the sample breakdown:

Population	4,838,861
Confidence Interval	99%
Error Level	4%
Sample Units	1,038
Rounded off sample units	1,050
Rangpur & Rajshahi	630
Dhaka	420

The total of 1,050 samples was further broken down into two phases, with an equal distribution of 525 surveys in each phase of the study. Phasing was done to account for seasonality in the fish markets during the period under study.

## Pilot Surveys and Seasonality Follow-Ups

In this initial stage of the project, a pilot study was conducted for a period of 4 days to understand the fisheries market and consumer preference dynamics in Dhaka, Rajshahi and Rangpur covering 105 consumers. Among them, 30 respondents were called back during the month of Ramadan to take part in a follow-up survey. The main objective this follow-up survey was to understand the impact of seasonality - specifically during the month of Ramadan and pre-Eid-ul-Fitr season – on purchase as a proportion of total spending on food and how the specific season impacts purchase of specific types of fish.

Based on the results and feedback from the pilot survey, the questionnaire had been fine-tuned for Phase 1 where LCP had embarked on a broader survey collection effort to best reflect real market scenarios.

## Fish Market Consumer Surveys

Surveys were conducted in the city centre and in an adjacent rural upazila for each of the districts of Rajshahi, Bogra, Pabna, Rangpur, sGaibandha and Dinajpur to provide data and insights into consumer study of the Northwestern markets. A list of major markets in each upazila was prepared in advance and from them, markets were randomly chosen to decide on where surveys will be carried out. In total, surveys were administered to 1,064 respondents across various income classes and approximately 37% of total surveys and KIIs were also administered in various locations throughout Dhaka city.

## Phase 1 Surveys

In Phase 1 of the survey, LCP has completed surveys and Key Informant Interviews (KIIs) in 55 markets across the three regions of Bangladesh. Phase 1 surveys ran from 14<sup>th</sup> June to 24<sup>th</sup> of June, 2019.

- **In Dhaka city:**
  - 195 Consumer Surveys targeting consumers belonging to Socio-Economic Classes A, B and C
  - Key Informant Interviews with 2 Commission Agents (*Arotdars*), 3 Wholesalers (*Paikars*) and 5 retailers (including 1 Supermarket)
- **In Rajshahi division:**
  - 149 surveys conducted in total the districts of Rajshahi, Bogra and Pabna. In each district, surveys were conducted in both the district headquarters area to represent the urban and semi-urban population and in an adjacent upazila to represent the rural population.
  - Key Informant Interviews with 2 Commission Agents (*Arotdars*), 3 Wholesalers (*Paikars*) and 5 retailers
- **In Rangpur division:**
  - 163 surveys conducted surveys in the districts of Rangpur, Gaibandha and Dinajpur. In each district, surveys were conducted in the district headquarters area to represent the urban and semi-urban population and in an adjacent upazila to represent the rural population
  - Key Informant Interviews with 2 Commission Agents (*Arotdars*), 3 Wholesalers (*Paikars*) and 5 retailers

## Phase 2 Surveys

In Phase 2 of the survey, LCP had completed surveys and Key Informant Interviews (KIIs) in 70 markets across the three regions of Bangladesh. Phase 2 surveys ran from 25<sup>th</sup> of September to the 7<sup>th</sup> of October, 2019.

- **In Dhaka city:**
  - 197 Consumer Surveys targeting consumers belonging to Socio-Economic Classes A, B and C
  - Key Informant Interviews with 2 Commission Agents (*Arotgars*), 3 Wholesalers (*Paikars*) and 4 retailers
- **In Rajshahi division:**
  - 179 surveys conducted in total the districts of Rajshahi, Bogra and Pabna. In each district, surveys were conducted in both the district headquarters area to represent the urban and semi-urban population and in an adjacent upazila to represent the rural population.
  - Key Informant Interviews with 2 Commission Agents (*Arotgars*), 3 Wholesalers (*Paikars*) and 5 retailers
- **In Rangpur division:**
  - 181 surveys conducted surveys in the districts of Rangpur, Gaibandha and Dinajpur. In each district, surveys were conducted in the district headquarters area to represent the urban and semi-urban population and in an adjacent upazila to represent the rural population
  - Key Informant Interviews with 2 Commission Agents (*Arotgars*), 3 Wholesalers (*Paikars*) and 5 retailers and 1 *shutki* Wholesaler

The survey was administered to consumers belonging to low, middle and high-income household respondents, who have been classified according to the following criteria:

*Table 2 Income Class Categorization*

Classification	Range of Monthly Household Income
<b>Low Income Households (SEC Group C)</b>	Up to BDT 14,200 (USD 168)
<b>Middle Income Households (SEC Group B)</b>	Between BDT 14,201 (USD 168) and BDT 90,000 (USD 1,066)
<b>High Income Households (SEC Group A)</b>	BDT 90,001 (USD 1,066) and above

These income classes have been adapted from the income deciles identified by UNDP in 2015<sup>3</sup>, to which yearly increments have been applied as per the official inflation rates<sup>4</sup> up until 2018.

[Annex 1](#) shows a breakdown of the actual survey dates and locations. [Annex 2](#) lists the markets where consumer surveys and KIIs had been carried out.

Following a rigorous data quality checking and validation process, among the collected consumer survey data, 507 datasets were approved (against an anticipated total of 570 responses) and have formed the basis for the findings and recommendations in this report.

<sup>3</sup> UNDP. 2016. *Bangladesh 2016 Politics, Governance and Middle-Income Aspirations - Realities and Challenges: An Empirical Study*

<sup>4</sup> According to Ministry of Finance of Bangladesh. 2016, 2017 and 2018. *Bangladesh Economic Review*

## Study Limitations

The study is limited by its technical scope, geographic location and timeframe.

This study is being conducted with a specific focus on the “Aquaculture: increasing income, diversifying diets, and empowering women in Bangladesh and Nigeria” project’s intervention zones in Bangladesh, namely Rajshahi and Rangpur divisions of Bangladesh. In addition, the study is also covering Dhaka city in its scope as demand for the fish produce of the two project zones are derived from consumers in Dhaka to a large extent. There may be large regional variations in consumer perspectives, production factors and market dynamics across Bangladesh, hence the findings of this study may not be generalized for all regions of Bangladesh.

From a technical perspective, this study is focused mainly on studying consumer perceptions, habits and preferences – with a focus on informing the implementation design of a development project. So, while the findings of this study can be applied by both development practitioners and private sector organizations alike, the study does not have the objective of making any strategic investment recommendations or presenting detailed business cases. And although, there is an adjacent focus on understanding the fish value chain and the associated market environments, these have not been studied in great depth in this study.

Finally, the study is also constrained by its timeline as the market dynamics for fish are shaped by seasonality. Seasonality affects both the supply-side production of fish due to environmental and technical factors<sup>5</sup> as well as the consumer-side demand. This study has made some attempts to account for seasonality through two intensive rounds of surveys and one round of rapid telephone-based survey. However, conducting a longitudinal study over a period of one annual cycle would have been recommended for an optimum representation of the effects of seasonality.

In regards to future projections, the consumption projections and production across the various fish species have been made taking into account a number of key assumptions, which may not necessarily hold true over time.

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<sup>5</sup> Hossain, M.I., M. Khatun, B.M.M. Kamal, K.A. Habib, A.S.Tumpa, B.R. Subba, M.Y. Hossain 2014. Effects of seasonal variation on growth performance of mirror carp (*Cyprinus carpio* Ver. *Specularis*) in earthen nursery ponds. *Our Nature*. **12(1)**: 8-18.



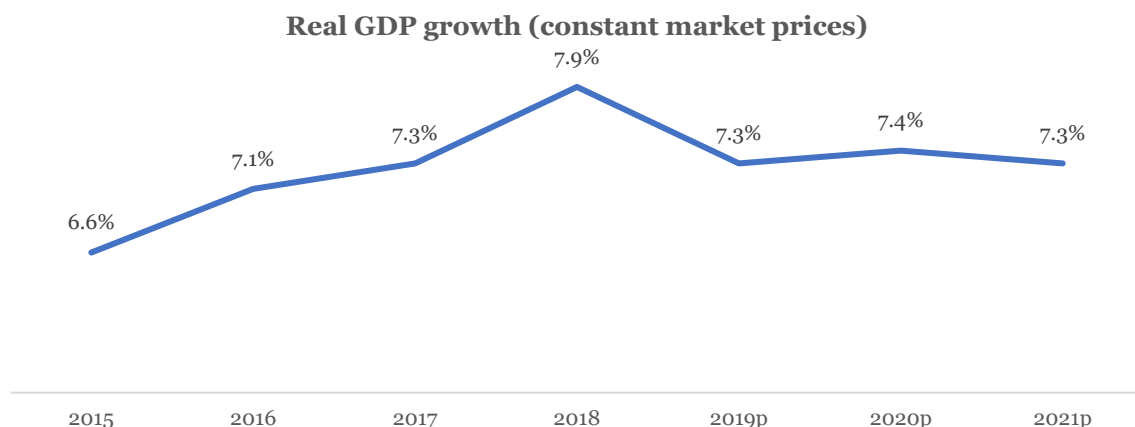
# Chapter 1: Bangladesh Economic Landscape

## 1.1. Country Dynamics

### *Strong economic indicators driving growth*

Bangladesh GDP has been a strong indicator of growth due to its consistent upward trajectory in the last decade or so. Although country reported numbers remain optimistically higher than those of predicted by World Bank, ADB or IMF, the recurrent census among all institutions has been that the country has performed consistently higher than regional peers. According to World Bank, Bangladesh recorded an impressive annual GDP growth rate of 7.9% in 2018, up from 7.3% of previous year. This growth has been driven mainly by consumption increase and infrastructure investments and the growth is predicted to sustain over the short to mid-term.<sup>6</sup>

Figure 1 Bangladesh GDP Growth Trend



Source: World Bank  
\*P=projected

<sup>6</sup> The World Bank, 2019. *Bangladesh Development Update*

The country's annual GDP growth rate officially surpassed that of India's in 2016 and unlike many of its South Asian neighbors, Bangladesh has been experiencing a continuously increasing GDP growth rate for the last five years.<sup>7</sup> Strong consumption and public investment, recovery of apparel exports and high remittance growth were the main propellers of economic growth. Remittance inflow increased by 17% in 2018 compared to last year to reach USD 14.9 billion, which is equivalent to about 5.4% of the GDP. For financial year (FY) 2019 (July - January), remittance so far has been recorded as USD 9 billion. Real public investments increased by 10.5% and merchandise imports expanded by 25.2%.

Economic growth and expansion have also had spillover effects on the poorer segments of the population and has helped many to their way out of poverty. According to the BBS, from the decade between 2005 to 2016, poverty rates have nearly halved with the number of people living at the lower poverty line diminishing from 25.1% in 2005 to 12.9% in 2016, while those living at the upper poverty line have reduced from 40% in 2005 to 24.3% in 2016.

### ***Rising middle and affluent consumers driving higher consumption***

With the rise in GDP over the last decade, the domestic market has undergone rapid transformation, with sharply rising per capita income, rapid urbanization and evolving nuclear family structure and more involvement of females in the workforce. In 2005, 26.8% of the total population lived in urban areas, which had increased to 34.3% in 2015. It is predicted that by 2025, 42% of the population will be living in urban areas.<sup>8</sup> The level of urbanization is expected to grow further in the next ten years with the growing Middle and Affluent Class (MAC) population. This particular segment of the population is expected to drive greater awareness and demand of nutritious and processed food items, including fish.

### ***Fish remains a major source of protein***

In the six years between 2010 to 2016, per capita protein intake in Bangladesh had increased but was still significantly low by international standards. In that period, per capita caloric intake had fallen and the consumption of per capita fish increased 26% from 49.50 grams to 62.58 grams whereas consumption of rice, wheat and potatoes fell.<sup>9</sup> Chicken as an alternative source of protein has been gaining prominence, increasing by over 50% during that period to 17.33 grams but still represented a small proportion of protein intake in absolute terms compared to fish.

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<sup>7</sup> LankaBangla Asset Management. 2019. *Bangladesh Economic Prospects*

<sup>8</sup> United Nations. 2018. *2018 Revision of World Urbanization Prospects*

<sup>9</sup> Bangladesh Bureau of Statistics (BBS). 2017. *Household Income and Expenditure Survey 2016-2017*



## Chapter 2: Bangladesh Fisheries Sector Overview

### 2.1. Present Country Market Overview

The Bangladeshi people have long relied on fish for their daily dose of protein with fish comprising 60% of the protein intake of the country<sup>10</sup> and the fisheries sector is contributing significantly in food and nutrition security.

Furthermore, the fisheries sector recently contributed 3.57% to the national GDP and more than one-fourth (25.30%) to the agricultural GDP, and over 11% of the total population were engaged in this sector for their livelihoods (FY 2017-18).<sup>11</sup>

Fish production in the country has now topped 4.27 million MT, with an average annual growth rate of 5.26% for this sector for the last 10 years. To this, inland open water (culture) contributed 28.45%, inland closed water (culture) contributed 56.24%, and marine fisheries contributed to 15.31% of total production. The Bangladesh government has projected that production will rise to 4.552 million MT by 2021.

### 2.2. Historical production and consumption trends of fish and participation of the labor force

According to the Yearbook of Fisheries Statistics of Bangladesh (Department of Fisheries, 2017-18)<sup>12</sup>, Bangladesh is one of the world's leading fish producing countries with a total production of 4.27 million MT in FY 2017-18, where aquaculture production contributed approximately 56% of the total fish production, 28% represented captured fish and 16% came from marine sources.

Broadly speaking, the fish value chain is bifurcated into two: the Captured Fish Value Chain and the Cultured Fish Value Chain. Capture fishery refers to all kinds of harvesting of naturally occurring living resources in both marine and freshwater environments. Cultured Fish refers to fish produced as a result of aquaculture. Aquaculture is defined by FAO as the farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants.

<sup>10</sup> Bangladesh Bureau of Statistics. 2016 *Household Income and Expenditure Survey 2016-2017*

<sup>11</sup> Bangladesh Department of Fisheries. 2018. *Yearbook of Fisheries Statistics of Bangladesh*

<sup>12</sup> Bangladesh Department of Fisheries. 2018. *Yearbook of Fisheries Statistics of Bangladesh*

The average growth performance of the fisheries sector has been 5.26% for the last 10 years, and remarkably the growth rate in aquaculture has been averaging almost 10% during this same timeframe. In comparison to 2008-09 FY production (1.063 million MT), the aquaculture production has more than doubled in 2017-18 FY (2.405 million MT)<sup>13</sup>. A slight growth in the production from both inland capture and marine fisheries was also noticed in recent years, save for a few exceptions. Inland aquaculture of indigenous and exotic carp species as well as Pangas, Tilapia and Koi expanded massively. Besides, there has been rising interest in the farming of indigenous species like Koi, Shing, Magur, Pabda, Gulsha, Mola etc. as they are getting scarcer in open water areas but have high market demand and better contribution to household nutrition supply. According to the DoF, both shrimp/prawn and finfish farming is expanding in compliance with good aquaculture practices (GAP), driven by domestic demand in the face of declining export (see [Section 2.4](#)) and stagnating productivity - around 350 kg/ha for the last 15 years.<sup>14</sup> Nowadays, eco-friendly integrated farming is also attracting investor attention. Small-scale floodplain aquaculture has also risen in prominence and is now contributing significantly to the country's total fish production.

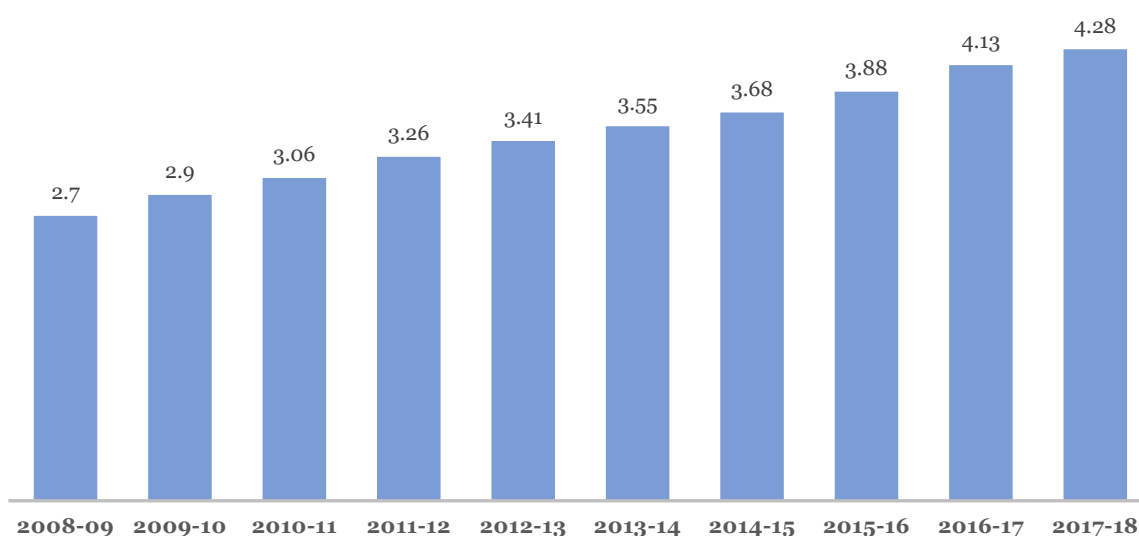


Figure 2 Total Production of inland and marine fisheries in Bangladesh from 2008-09 to 2017-18 (in million MT)

**Source:** Yearbook of Fisheries Statistics

During the past few decades, hatcheries and nurseries have developed very rapidly which has helped in the commercialization of aquaculture. However, according to the DoF, the seed quality of both finfish and shrimp/prawn is now a major threat for aquaculture expansion. Fish seed deteriorated mainly because of inbreeding and scarcity of quality brood stock, while shrimp seed quality deteriorated due to the scarcity of virus-free mother shrimp.

Apart from the economic benefits, this sector is contributing significantly with positive externalities in food and nutrition security through consistently providing safer and good quality animal protein. In addition, Bangladesh earns a considerable amount of foreign currencies by exporting fish, shrimps and other fishery products. In 2017-18, the country earned BDT 43,099.40 million (500.4 million USD) by exporting almost 68.94 thousand MT of fish and fishery products.<sup>15</sup>

### **Aquaculture Quickly Increasing Share of Total Fish Production**

Open water capture fishery has been shrinking as availability of fish on open waters viz. rivers, canals, haor, beel etc. declined rapidly. In many areas, fishing has become unrewarding as *catch per unit effort* is extremely low. But poor fishers still try to catch whatever they can and are subsequently destroying the natural resource through overfishing and stock depletion.

<sup>13</sup> Bangladesh Department of Fisheries. 2018. *Yearbook of Fisheries Statistics of Bangladesh*

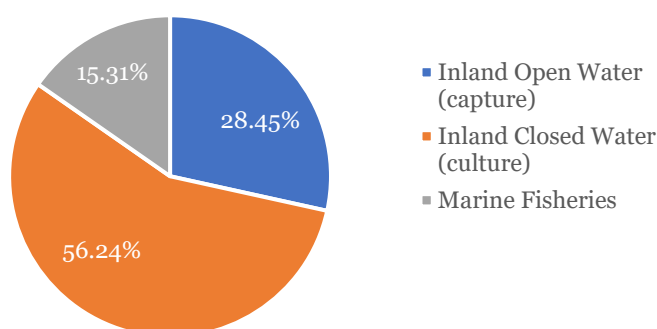
<sup>14</sup> According to WorldFish statistics

<sup>15</sup> Export Promotion Bureau, figures for FY 2018-19

The diversified fisheries resources of the country can be divided into three groups, i.e., inland capture, inland culture and marine capture. Inland culture includes mainly pond/ditch, baor, shrimp/prawn farm, seasonal cultured water-body, pen and cage culture etc. covering an area of about 797,000 ha and producing about 56.24% of the total fish production. This output can be attributed mainly to the adoption of improved farming practices. In addition, cage farming is also gaining popularity and being used in potential water-bodies. Considering the agro-ecological context of the country, there is a wide scope of flourishing the fisheries resource potentials both at vertical and horizontal dimensions. Realizing the sector potentials, the government along with development partners and NGOs have been implementing different initiatives to maximize fish production in a sustainable manner.

As of 2017-18, inland open water (capture) contributed 28.45% (1.217 million MT) and inland closed water (culture) contributed 56.24% (2.405 million MT) to total production. So, 84.69% of total production came from inland fisheries. Marine fisheries production was 655,000 million MT and its contribution to total fish production was 15.31%. Overall growth rate of total fish production in 2017-18 was 3.44%. Fish production had increased more than five times (754,000 MT in 1983-84 to 4.276 million MT in 2017-18) over the last three decades.

Figure 3 Breakdown of fisheries sector according to source (2017-18)



According to the FAO, in 2018, Bangladesh ranked 3rd in inland open water capture production and 5th in world in aquaculture production.<sup>16</sup> Bangladesh ranks 4th in tilapia production in the world and 3rd in Asia. The country's national fish hilsa has been making the highest contribution (around 12%) to the country's total fish production.

The fish production diversity of fisheries resources of inland open water fisheries of rivers, beels, floodplains and the Kaptai lake in 2017-18 were 321,000 MT, 99,000 MT, 768,000 MT and 10,000 MT respectively and corresponding year-on-year growth rates were 18.02%, 1.10%, 0.34% and 1.70% respectively. The respective contributions to total production were 7.50%, 2.32%, 17.97% and 0.24%. Fish production had increased compared to the previous year. The production of Sundarbans fishery had increased, with its production standing at 18,000 MT and contributing 0.43% to total production with an annual growth rate of 0.77%.

The fish production (aquaculture) in 2017-18 of pond, seasonal cultured waterbody, baor, shrimp farm, pen culture and cage culture (inland closed waterbody-culture) were 1.9 million MT, 216,000 MT, 8,000 MT, 254,000 million MT, 10,000 MT, 4,000 MT respectively. Subsequently, the corresponding contributions to total production were 44.43%, 5.06%, 0.19%, 5.95%, 0.24% and 0.10% respectively. The corresponding growth rates were 3.67%, 0.37%, 0.87%, 3.23%, (-) 23.06% and 70.80% respectively.

Crab production was 12,000 MT. The aquaculture production of crab had more than doubled (919,000 MT in 2005-06 to 2.405 million MT in 2017-18) during the last ten years. Thus, the overall growth performance from inland aquaculture shows a moderate increasing trend.

### Women play an important but understated role in the fisheries sector

Over 11% of the total population are engaged in the fisheries sector for their livelihoods, as of FY 2017-18.<sup>17</sup> So even from a gender perspective, fish culture in Bangladesh offers opportunities for women in smallholder farming households to take part as the ponds are usually constructed adjacent to the homestead which makes it convenient for women to culture fish, alongside other activities.

<sup>16</sup> FAO. 2018. *The State of World Fisheries and Aquaculture*

<sup>17</sup> Bangladesh Department of Fisheries. 2018. *Yearbook of Fisheries Statistics of Bangladesh*

Among other rural industries, women's growing involvement in aquaculture has been a noteworthy sign for the rapid development of fish farming in rural Bangladesh. According to BdFISH<sup>18</sup>, in rural Bangladesh, nearly 30% of women in 2010 were involved in fish culture. According to them, homestead-based aquaculture women's participation was higher (89%) than the corresponding rates for commercial fish culture (69%) and commercial shrimp culture (36%). Increased awareness and better capacity building initiatives had played a part in increasing women's participation in aquaculture activities<sup>19</sup>, and it is becoming increasingly common for such aquaculture programs to include cross-cutting gender-themed components.

### 2.3. Major Fish Species Available

Fish production in Bangladesh is dominated by carps and catfish, which together make up over 40% of total production in the country. However, the country has its own unique flora and fauna and of the 260 freshwater fish found in Bangladesh more than 140 are classified as small indigenous species (SIS). These fish are a particularly rich source of essential vitamins and minerals, but are becoming increasingly scarce.<sup>20</sup> The table below outlines the major fish species that are produced in Bangladesh through both inland and marine fisheries:

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<sup>18</sup> BdFish, Undated. *Women's Empowerment and their Role in Fisheries Development in Bangladesh*. Retrieved from <http://en.bdfish.org/2010/10/women-empowerment-role-fisheries-development-bangladesh>

<sup>19</sup> Asian Fisheries Society. 2017. *Gender in Aquaculture and Fisheries: Engendering Security in Fisheries and Aquaculture Asian Fisheries Science Special Issue*

<sup>20</sup> Belton, B. et al. 2011. *Review of aquaculture and fish consumption in Bangladesh*.

Sl. No.	Species/Group	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18	
		In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total
1	<b>Major Carp</b> (includes Rui, Catla & Mrigal)	777,005	23.8%	731662	21.5%	728695	20.5%	755074	20.5%	750880	19.4%	811588	19.6%	846397	19.8%
2	<b>Other Carp</b> (includes Kalibaus, Bata and Ghania)	60,356	1.9%	54130	1.6%	80138	2.3%	80997	2.2%	80647	2.1%	100730	2.4%	111373	2.6%
3	<b>Exotic Carp</b> (includes Silver Carp, Grass Carp, Common Carp, Mirror Carp, Big Head Carp and Black Carp)	299,494	9.2%	402490	11.8%	389642	11.0%	363737	9.9%	357933	9.2%	409801	9.9%	454078	10.6%
4	<b>Pangas (Cat Fish)</b>	-	-	-	-	371068	10.5%	406818	11.0%	504674	13.0%	510097	12.3%	453383	10.6%
5	<b>Other Cat Fish</b> (includes Boal, Ayre, Silon and Ritha)	288,887	8.9%	360722	10.6%	81536	2.3%	64537	1.8%	65130	1.7%	66646	1.6%	68850	1.6%
6	<b>Snake Head</b> (includes Shol, Gajar and Taki)	89,351	2.7%	53305	1.6%	60282	1.7%	69305	1.9%	70106	1.8%	72991	1.8%	73358	1.7%
7	<b>Live Fish</b> (includes Koi, Shing and Magur)	95,063	2.9%	102651	3.0%	115185	3.2%	133512	3.6%	136113	3.5%	127120	3.1%	144007	3.4%
8	<b>Tilapia</b>					298062	8.4%	347801	9.4%	377346	9.7%	370017	8.9%	381215	8.9%
9	Other Inland fish	763,668	23.4%	835457	24.5%	524488	14.8%	542711	14.7%	568446	14.7%	598923	14.5%	554558	13.0%
10	Hilsha/Ilish ( <i>Tenualosa ilisha</i> )	346,512	10.6%	351223	10.3%	385140	10.9%	387211	10.5%	394951	10.2%	496417	12.0%	517198	12.1%
11	<b>Shrimp (Includes Bagda and Other Coastal/ Marine Chingri)/Prawn (Includes Golda and Other Inland Chingri)</b>	252,523	7.7%	228769	6.7%	223788	6.3%	230244	6.2%	234188	6.0%	246774	6.0%	247304	5.8%
12	<b>Crab (Scylla Serrata &amp; Scylla Olivacea)</b>	-	-	-	-	-	-	-	-	13160	0.3%	14421	0.3%	11787	0.3%
13	<b>Sarpunti (Puntius sarana)</b>	-	-	-	-	-	-	-	-	-	-	-	-	91792	2.1%

Sl. No.	Species/Group	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17		2017-18	
		In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total	In MT	% of Total
14	<b>Sardine</b> ( <i>Sardinella fimbriata</i> )	20,187	0.6%	29636	0.9%	27590	0.8%	32835	0.9%	44386	1.1%	48704	1.2%	41486	1.0%
15	<b>Bombay Duck</b> ( <i>Harpondon nehereus</i> )	62,817	1.9%	71745	2.1%	51673	1.5%	53950	1.5%	58545	1.5%	69230	1.7%	75085	1.8%
16	<b>Indian Salmon</b> ( <i>Polydactylus indicus</i> )	3,030	0.1%	2445	0.1%	1960	0.1%	1020	0.0%	895	0.0%	775	0.0%	487	0.0%
16	<b>Pomfret</b> ( <i>Rupchada/ Hail/ Foli Chanda</i> )	39,537	1.2%	29693	0.9%	23355	0.7%	11437	0.3%	10593	0.3%	10686	0.3%	11899	0.3%
18	<b>Jew Fish</b> ( <i>Poa, Lambu, Kaladatina etc.</i> )	37,929	1.2%	30600	0.9%	36170	1.0%	31826	0.9%	31894	0.8%	33768	0.8%	35427	0.8%
19	<b>Sea Cat Fish</b> ( <i>Tachysurus spp.</i> )	19,700	0.6%	8594	0.3%	9719	0.3%	9476	0.3%	8695	0.2%	8424	0.2%	9455	0.2%
20	<b>Shark/ Skate / Ray</b>	3,865	0.1%	5017	0.1%	5648	0.2%	5093	0.1%	4622	0.1%	4495	0.1%	3974	0.1%
21	<b>Other Marine Fish</b>	101,858	3.1%	112115	3.3%	133976	3.8%	156661	4.3%	165120	4.3%	132827	3.2%	143527	3.4%
	<b>Total</b>	<b>3,261,782</b>	<b>100%</b>	<b>3410254</b>	<b>100%</b>	<b>3548115</b>	<b>100%</b>	<b>3684245</b>	<b>100%</b>	<b>3878324</b>	<b>100%</b>	<b>4134434</b>	<b>100%</b>	<b>4276640</b>	<b>100%</b>

Table 3 Species/Group-wise Annual Fish Production in Inland and Marine Fisheries between 2011-12 to 2017-2018



In FY 2017-2018 alone, the growth rates of inland capture and inland culture and marine fisheries were 4.55%, 3.09% and 2.71% respectively. Overall growth rate of total fish production in 2017-18 was 3.44%. This figure is lower than both the country's GDP growth and the agricultural sector growth rate, which was 4.2% in 2018.<sup>21</sup>

## 2.4. Export Market Situation

According to the Export Promotion Bureau of Bangladesh, fish export from Bangladesh has stagnated in recent years. Shrimps make up a large majority of the fisheries exports from Bangladesh, accounting for over 72% of all fisheries exports. The overall decline in exports can also be attributed largely to the shrimp sector, which has seen consecutive drops in export value over the last three years having declined as much as 8.4% in the 2017-2018 fiscal year. Significant growth in the export of frozen fish and live fish has helped to somewhat balance out the trends in declining shrimp and crab exports.

The table below illustrates the export trends in the fisheries sector of Bangladesh between 2015-2018.

Table 4 Bangladesh Fisheries Export Trends

Products	% Change of export 2018-19 to 2017-18	Export between July 2018 to June 2019 (in million USD)	% Change of export 2017-18 to 2016-17	Export between from July 2017 to June 2018 (in million USD)	% Change of export 2016-17 to 2015-16	Export between from July 2016 to June 2017 (in million USD)
a) Live Fish	100.8	17.53	8.45	8.73	-11.93	8.05
b) Frozen Fish	9.45	63.81	32.38	58.3	-6.44	44.04
c) Shrimps (including Golda Chingri)	-11.64	361.14	-8.37	408.71	-0.56	446.04
d) Crabs	147.01	42.93	-4.92	17.38	-21.14	18.28
e) Others	-2.03	14.99	52.49	15.3	39.64	10.04
<b>Total</b>	<b>-1.58</b>	<b>500.4</b>	<b>-3.42</b>	<b>508.42</b>	<b>-1.74</b>	<b>526.45</b>

## 2.5. Fish Import Figures

Bangladesh mainly imports carps, sea fish and hilsha from countries such as Myanmar, Oman, India and Thailand. In 2014-15FY, Bangladesh imported 97,384 MT of fish, worth BDT 3,040 million (USD 36.01 million)<sup>22</sup>. In the fiscal year 2016-2017, Bangladesh imported 78,506 MT of fish worth BDT 4,020 million (USD 47.61 million). As per DoF data, in the first five months of fiscal year 2017-2018 fish imports of the country had dropped by 12% year-on-year to 20,725 MT. (The Daily Star, 2018)<sup>23</sup>.

Table 5 Bangladesh Fish Import Trends

Period	Fish Imports (In MT)	Percentage Change
<b>FY 2016</b>	88,593	
<b>FY 2017</b>	78,506	-11%
<b>FY2018 (July-Nov)</b>	20,725	-12% (First 5 Months)

<sup>21</sup> World Bank. 2019. *Annual growth in value added for Agriculture, forestry, and fishing*. Retrieved from <https://data.worldbank.org/indicator/NV.AGR.TOTL.KD.ZG>

<sup>22</sup> Bangladesh Finance Minister. 2016. According to The Daily Star, 2016. *Bangladesh imports hilsha!*, Retrieved from [www.thedailystar.net/city/bangladesh-imports-hilsha-511165](http://www.thedailystar.net/city/bangladesh-imports-hilsha-511165)

<sup>23</sup> The Daily Star. (2018, January 12). *Imported fish to be tested for heavy metals*. Retrieved from [www.thedailystar.net/business/economy/imported-fish-be-tested-heavy-metals-1518652](http://www.thedailystar.net/business/economy/imported-fish-be-tested-heavy-metals-1518652)

## 2.6 Prospects of the Fisheries Sector

The fisheries sector in Bangladesh is showing promise as an industry that has seen consistently rising production and export values but it also faces several challenges as the sector has grown organically over the past few years with limited government support and planning.

Bangladesh is now ranked 5th among the aquaculture-producing countries, and the vast and diverse fisheries resources in the country sustain a large portion of total population employed. It has been an important tool for poverty alleviation and women empowerment, and even though it has recently seen an overall drop, fish exports form 1.2% of total country's exports and exports of frozen fish grew 1.58% in 2018-19. The rapid proliferation of cultured fish producers has led to recent growth levels of around 10% annually, which is likely to prevail in the short to medium-term.

However, the sector also faces a testing future with potential habitat degradation and pollution of water resources. Within the production value chain there is a scarcity of good quality spawn, fries, feed and other inputs, and the poor socio-economic condition of industry stakeholders has endured over decades.<sup>24</sup> Furthermore, the sector is hampered by poor infrastructure and unhygienic conditions. In terms of infrastructural adequacy, the handling, transportation and preservation of fishes remain largely traditional, whereby no fixed landing exists for caught fish and landing points are scattered in the entire coastal area of Bay of Bengal. Due to this, it takes more time for the fishes to reach destination than the normal shelf life. Furthermore, most landing, collecting and wholesale centers are not properly equipped and do not have proper ice storage and preservation facilities, leading to considerable amount of post-harvest losses take place every year.<sup>25</sup> Other than these, inadequate financial capacities and lack of capital of the stakeholders of this industry, non-optimal resources management by both government and workforce, lack of harmonized policies with complete enforcement<sup>26</sup>, and lack of research facilities for the development of this sector are also keeping from realizing the full potential fisheries sector.<sup>27</sup>

From a market perspective, fish is and remains an indispensable part of the diet of Bangladeshi population. Consumers generally prefer to eat fish because it is healthy and nutritious in terms of availability of proteins and essential micronutrients.<sup>28</sup> Although a study had found that with increasing age people tend to prefer fish to other protein sources like meat and chicken, younger people were found to prefer meat and chicken.<sup>29</sup> Another study has linked the abundance of heavy metals in sediments like lead, arsenic, cadmium, nickel, copper etc., and the health hazards associated with the intake of these metals as a factor which has averted people from consuming fish.<sup>30</sup>

There is a silver lining, however, as the sector stakeholders are open to education and skills support, which could address the shortage of skilled manpower and there exists significant scope for bringing more fish species into aquaculture with a focus on food fish, ornamental species and those with potentials for sport and tourism. Furthermore, many fish and seafood species also remain untapped as a source of export earnings such as crab.

To take advantage of these opportunities the sector needs to address the lack of credit facilities that limit growth of businesses and ensure that political interference into the markets do not hamper functionality<sup>31</sup>. High marketing costs and low marketing profits also need to be rationalized to encourage more players to invest in this sector.

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<sup>24</sup> Begum et al., 2014. *Potential for Development of Marine Fish Marketing Systems in Chittagong district of Bangladesh*. J. Sylhet Agril. Univ. 1(2):247-252

<sup>25</sup> Reza, M. S. (2009). *Shelf life of several marine fish species of Bangladesh during ice storage*, *International Journal of Food & Science*, 44

<sup>26</sup> Rahman, M. A. (2018) *Fisheries management and governance in Bangladesh*, *MedCrave*, 3(6)

<sup>27</sup> Ghose, B. (2014). *Fisheries and Aquaculture in Bangladesh: Challenges and Opportunities*. *Annals of Aquaculture and Research*

<sup>28</sup> Md. Taj Uddin, Mehedi Hasan Rasel, Aurup Ratan Dhar, Mr. Badiuzzaman & Md. Sazedul Hoque (2019): *Factors Determining Consumer Preferences for Pangas and Tilapia Fish in Bangladesh: Consumers' Perception and Consumption Habit Perspective*, *Journal of Aquatic Food Product Technology*

<sup>29</sup> Md Jakiul Islam, Md Abu Sayeed, Shakil Akhtar, Md Sakhawat Hossain, Afroza Akter Liza, (2018) *Consumers profile analysis towards chicken, beef, mutton, fish and egg consumption in Bangladesh*, *British Food Journal*

<sup>30</sup> Md. Saiful Islam, Md. Kawser Ahmed & Md. Habibullah-Al-Mamun (2016): *Heavy metals in sediment and their accumulation in mostly consumed fish species in Bangladesh*, *Archives of Environmental & Occupational Health*

<sup>31</sup> Coast, 2017. *Blue Economy: Bangladesh and the Bay of Bengal Regional Cooperation*

A photograph showing two men sitting at a table in an outdoor market setting. They are both smiling and looking towards the camera. The man on the left is wearing a white short-sleeved button-down shirt, and the man on the right is wearing a white t-shirt with a logo that says 'AQUA 2017 CONFERENCE'. They are surrounded by stacks of money, including several large stacks of banknotes and some smaller stacks. The background shows a busy market with other people and stalls.

## Chapter 3: Value Chain Dynamics in Rajshahi, Rangpur and Dhaka

An important change that has been shaping the fisheries sector in Bangladesh is the shift from a supply-driven sector, where supply dictated the taste and purchases of the consumer, to a demand-driven form. This means that consumers now demand specific types of fish, and cultured fish types such as Tilapia, Rui, Catla, Shing, Magur and Pabda that are in abundant supply are seeing a downward trend in prices.

<sup>32</sup>

This is due to a large expansion in production coming from inland water culture and, in recent years, from inland aquaculture of indigenous and exotic carp species as well as Pangas, Tilapia and Koi. Given the increased water pollution of natural water bodies and stock depletion of many major fish species, aquaculture is gaining more popularity over captured fisheries with large swathes of water bodies having been diked for commercial fish culture.

### 3.1. Value Chain Mapping

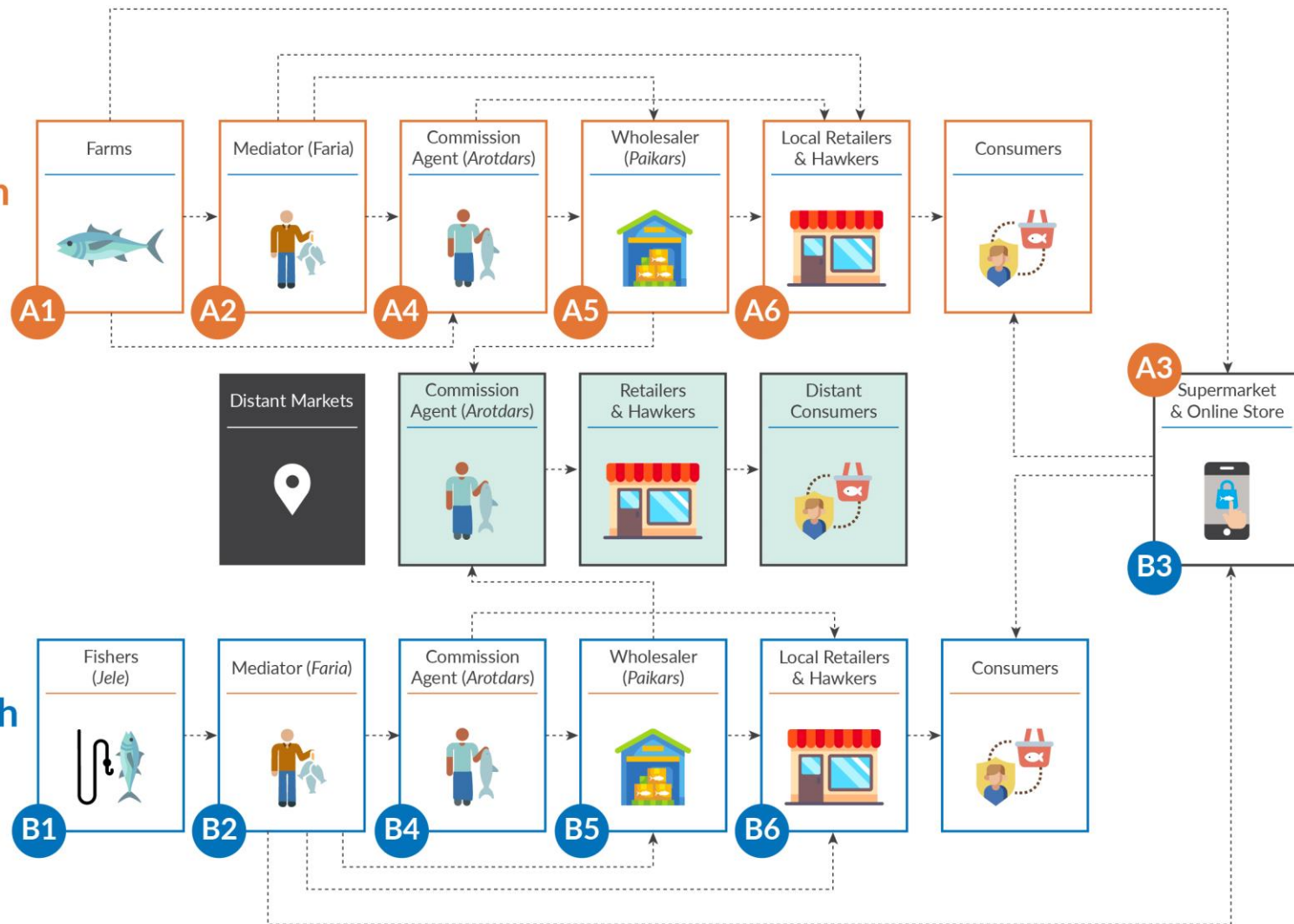
The fish delivery value chain in Bangladesh is dominated by traditional *arat* (wholesale) markets and local retail markets. However, modern trade channels and supermarkets along with increasing online e-commerce platforms are starting to capture a bigger stake of the market. This has been driven by demand in urban areas that has resulted from a growth in disposable incomes, increased demand for convenience and on-demand services accompanied by the increased penetration of smartphones and the internet. In addition to convenience, consumer groups are also looking at alternative marketplaces such as supermarkets to avoid the often unclean environment in traditional local fish markets and also because supermarkets offer a wide range of support facilities such as icing and preservation, cutting and dressing and packaging facilities under one roof that all contribute to both a seamless experience for shoppers as well as fresher and more hygienic produce for end consumers.

The figure below shows a simplified form of the Captured and Cultured fish value chain.

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<sup>32</sup> According to KIIs with *arotdars* in Dhaka

### A. Cultured Fish Value Chain



### B. Captured Fish Value Chain

Figure 4 Simplified Fish Value Chain

The individual actors and influencers in the value chain are explored in further detail in the following section:

### a) Value chain actors and influencers

The fisheries sector in Bangladesh directly and indirectly employs 11% of the total population of the country. As previously mentioned, cultured fish forms over 55% of the fish production in Bangladesh. The cultured fish value chain can take on three distinct forms: the fish farmer, the *Mahajan/lessor model* and commercial farms.

Distinct from this is the captured value fish chain which, while similar to the cultured value fish chain, has its unique set of intermediaries and value chain actors. For the sake of clarity, the term “fish farmer” refers to growers in cultured fish value chain, while “fisher” refers to the harvesters belonging to the captured value chain.

This section highlights some of the main actors in the overall fish sector:

#### **A1 - The Fish Farmers**

Smallholder farmers are those who culture smaller amounts of fish compared to commercial fish farms. In such cases, production value is low and a share of the produce actually goes in to feed the members of the family, with the remainder sold in local markets or in rare cases, in the local *arats*. In Bangladesh, it is commonplace in rural areas for small ponds to be constructed adjacent to a homestead generally to raise the plinth of the house. Such smallholder farmers can sometimes borrow money from their relatives or local moneylender and in some cases can finance their operations with their own savings as the outlay is not very large.

#### ***Mahajans/ Dadandar – The Financier***

The title of *Mahajan* or *Dadandar* usually refers to the financiers of fish farms. In some cases, the *mahajan* can be owner of an artificially enclosed local water body which is outright owned by the *Mahajan* who can employ farmers to harvest the fish. But oftentimes, the *mahajan* plays a bigger role by providing a loan to farmers (known as *dadan*), in addition to land, before fishing season to cover input costs and farmers then repay the lease and loan principal and interest fees once they have sold the catch.

It is usually the *Mahajan* who initiates the sales process by inquiring about the market price (usually over telephone) of their produce in the specific *arat*/market where the commission agent is located. The *mahajans* make similar inquiries to a list of *arotdars* with whom they maintain a close relationship with, and send them the produce for sale.

Sales to *arotdars* can be made on either cash or credit. Credit is extended to the *arotdar* when the *arotdar* sells on to *Paikars* and retailers on credit. In such cases, the payment from *arotdars* to the farmers/*mahajans* takes anything between a day to a week to settle. The credit risk here is entirely shouldered by the farmers/*mahajan*.

Study interviews suggest that no national fish farm chains or franchises exist, but some farms have made a name for themselves at the regional level such as “Sordar Motsho” which sell in the Bogra and Rangpur region and have been gold-certified by the Bangladesh government.

#### **B1 - Jeles/ Jele Groups – The Fisher**

*Jele* (fishermen) are the first link to the supply chain in case of captured fishes such as Ilish and they carry out negotiations and transactions for sales through a *Bepari* or *Faria*.

## A2/B2 - *Faria* – The Mediator

For captured marine fish (usually Ilish as it is the most widely consumed marine fish across all of the surveyed regions), there is an extra layer of intermediary referred to by the commission agents as the *Faria*, who are based in the southwestern regions such as Barisal and Chittagong where this type of fish is captured. *Faria* are aggregators of fish, purchasing smaller quantities from a large number of fishers and shipping the accumulated catch to local markets or *arats*. To determine where to sell their catch, *Faria* contact the commission agents over the phone and make price inquiries at several commission agents to sell the catch at the best price. Unlike another intermediary, the *arotdar*, the *Faria* purchases the fish (i.e. holds the stock) and does not simply act as a commission agent.

## The Transporter

Transporters of fish and are critical members of the supply chain since fish is a perishable good with strict requirements for transport. They are utilized at various stages of the value chain, picking up and delivering shipments between each adjacent actor in the supply chain. They provide important transport services through their fleet of trucks and pick-up vehicles, and contracts with the transporters are often based on a lump-sum price depending on the size of a vehicle and the distance to be travelled.

Carrying containers, even for live fish are usually not provided by the transporters, but rather by the respective parties – e.g. the *mahajan* has his own container for taking shipments to an *arat* and the *Paikar* brings his own container to take away the fish from the *arat*. In a minority of cases, containers can also be hired from the transporters on a pay-per-use basis.

The logistics of transporting live fish over long distances is even more delicate and requires specialized vehicle and equipment such as oxygen tanks and containers.

## A4/ B4 - *Arotdars* – The Commission Agents

Commission Agents (*arotdars*) play a key role in the fish value chain by acting as exchange mediators that facilitate exchange between farmers, transporters, wholesalers (*Paikars*) and retailers. Acquaintance and past business experiences are important factors for *arotdar*-farmer relationships.

The standard commission rate for *arotdars* is 3% across all regions. In certain areas, the 3% commission is charged both from the seller and the buyer resulting in twice the commission for *arotdars*. However, in some markets of Dhaka and in a minority of markets outside (such as Horogram Bazar in Rajshahi) the commission rate was found to be as high as 5%.

Locals are usually provided 3-4 days of credit, while outsiders have to pay in cash. Even for credit payments cash is used and bank is not used for any settlements.

## A5/ B5 - *Paikars* - Wholesaler Buyers and Sellers

*Paikars* are wholesale buyers who purchase fish in bulk at *arats* from commission agents. Local *Paikars* often get a line of credit from commission agents depending on their relationship with the commission agents and if they are purchasing fish locally (local credit sales are considered safer and more recoverable by the *arotdars*). During the study, several commission agents had mentioned that many of their wholesale buyers arrive at the *arats* from distant places, and sometimes from different divisions. As a general rule, the larger an *arat* is in terms of its customer base, the more likely it is to attract *Paikars* from further away.

*Paikars* usually take advantage of the *dhol*, which is the weight of fish obtained per *maund*, and which varies from region to region – with Rajshahi at 44 KG, Naogaon at 42 KG and Rangpur at 41-42 KG. This gives a clear preference to *Paikars* for sourcing fishes from Rajshahi, and erodes preference for sourcing from regions further north as they are also more distant from Dhaka.

Study interviews suggest that most *Paikars* in fact play a dual role of *Paikar* and retailer (see below).

*Paikars* usually take a gross margin of 10-25%.

### A6/ B6 - Fish Retailers – Local Level Sellers

Fish retailers usually buy in bulk from *Paikars* but this category is composed mainly of wholesale buyers who purchase directly from *arat*, so they can also be termed as *Paikars* – the only exception being that they also sell in smaller quantities (known as *khuchra*) to individual consumers. Retailers, too, usually take advantage of the *dhol*, which is passed on from the *Paikar* to the retailer/ *arotdar* to the *Paikar*.

The gross margin at the retailer level is typically 10-25%.

### A6/ B6 - Hawkers – Door-to-door Sales

Hawkers operate at a similar position to retailers in the value chain with the distinction being that they are mobile sellers and usually sell fish door-to-door or on pavements/sidewalks. Hawkiers are a diverse group, with daily revenues and sales volume differing greatly depending on their financial capacity, the neighborhood, their target customer group and hence the type of fish being sold and many factors.

Hawkiers, too, can take advantage of the *dhol*, much like the retailers. It is expected that Hawkiers charge a margin similar to those of retailers.

### A3/ B3 - Supermarkets

Supermarkets are based mostly in urban areas, particularly Dhaka, and cater to the needs of the middle- and upper-income consumers. Part of the allure of supermarkets is their more appealing shopping environment and convenience factor of supporting services such as parking facilities and acceptance of digital payment methods.

Most commonly supermarkets follow a direct procurement method, obtaining fish directly from the farm gate from growers. This is the most commonly-used method for procuring cultured fish by supermarkets since only a small selection of cultured fish species make up the majority of the fish sales. More than half of the fish sold in supermarkets are sourced using this method.

The second largest procurement model is through vendors. In this model, supermarkets purchase from their enlisted vendors, who are often intermediaries between fish farms and the supermarket, or play an aggregator role linking fishers with the supermarkets. Vendors are sometimes chosen from certain localities to procure locally caught *deshi*/wild fish at volume during peak seasons. Around a third of the fish sold in supermarkets are sourced using this method.

There are also cases where supermarkets procure from large wholesale markets such as Kawran Bazar. Although this source makes up only 10-15% of fish purchased, procurement from wholesale market is done quite often and is important as it compensates for the fluctuating gap between projected demand and procurement from other sources.

Most purchases for perishable goods are made in cash by the superstores to ensure cheaper prices. Supermarkets follow a dynamic pricing model, deriving prices from a combination of data from their past sales records and based on their procurement and transportation costs.

Supermarkets transport fish using chiller vans for fresh fish transport and specialized vans for the transport of live fish. Live fish make only around 3-5% of fish sales and it is usual practice by supermarkets to lease transport vans used for live fish.

LCP interviews suggest that supermarkets purchase fish at higher prices than comparable retailers and also charge exponentially higher for their fish at the consumer level. It is not clear whether this higher price for supermarkets is due to purchase of higher-grade fish or whether it reflects the lower bargaining power of supermarkets due to smaller purchase volumes.

According to interviews conducted, supermarkets have some of the highest gross margins in the supply chain at 15-40%.

Supermarkets have also become a destination for live fish, offering customers a selection of live fish which are cut and dressed on-site. For the purpose of transporting live fish, specialized vehicles belonging to the supermarket chains are used.

### **A3/ B3 - Online Retail – Order with a Click**

Online retail outlets are part of the growing modern trade segment and are driven by the increasing penetration of the internet and digital payment methods. As a result, these are more popular in urban centres (where their services are based) but they are expanding their logistical reach to more semi-urban areas as well.

Although there are several online grocery retailers, online retailers for fish number in the few.

### **Fish Processing Plants**

In Bangladesh, fish processing plants mainly perform basic and primary processing functionalities such as cleaning, dressing, freezing and packaging. According to study interviews, the largest fish processing hub in north-western Bangladesh, mainly catering to fish exports from Bangladesh, is based in Pabna district but it is not clear what the nature of the exports from these processing hubs is.

### **Fish Drying Plants**

Fish processors also include dry fish processors. Typically, these processors categorize and pick the low-quality fish for drying. A variety of accessories such as *tripal*, bamboo, salt and other accessories are used to dry the fish. They erect shades where they hang the fish for processing. Approximately, 1 KG of dry fish is produced from 4 KG of fresh fish. The whole process of producing dried fish takes about 3 to 4 months to complete. In the project region, Saidpur *shutki arat* is a big aggregator of dried fish from smaller, dispersed processors across the region.

### **Fisheries Exporters**

Fish in Bangladesh are exported in both live form (which made up 18.2% of fisheries exports in 2018-19, not including shrimp and crabs<sup>33</sup>) as well as in frozen form. For frozen fish, fish exporters rely on fish processing plants as their immediate backward linkage.

### **Other Influencers**

Apart from the above value chain actors, the fish producers themselves have their own set of Input Suppliers, which includes a wide array of professionals including feed companies and their dealerships, aqua-chem retailers, fertilizer retailers, veterinarians and medicinal providers, and fishing input suppliers such as boats and nets.

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<sup>33</sup> Export Promotion Bureau, figures for FY 2018-19



## **b) Region wise segregation and value chain dynamics of three regions especially Northwest Region**

The value chain dynamics across each region are dependent to an extent on the regional characteristics, which shape the number of actors in the value chain and their interactions.

### ***Dhaka is a major fish consumption hub***

Dhaka is the central hub of the country where fish from all across the country arrive. There is moderate local production but it this is a megacity that has some of the highest per capita income in the country and where people from all income levels and origins can be found. It is also home to the largest group of middle income and high-income consumers across the country and their consumption basket reflects a wide variety in consumption that is different from any other area in Bangladesh.

### ***Rajshahi Division is a major carp fish production zone***

The Rajshahi division is a key carp fish production hub in Bangladesh, especially for the carp varieties which have come to dominate the market and are exported far and wide including the capital city of Dhaka. The eight districts under Rajshahi division produced a total of 458,400 MT of fish<sup>34</sup> against its demand for 404,800 MT in 2018 – a surplus of 53,600 MT. Rajshahi is home to Bogra district, which is a major urban conglomeration in the Northwest and has some of the largest carp hatcheries in the country.

Pabna, a fish export processing hub is also located within Rajshahi division. Case in point, Bengal Meat, one of the country's leading meat and fish processors has meat processing plant with livestock rearing & slaughtering facilities in Pabna with an abattoir which is ISO- 22000; 2005 certified. The plant also has fish processing facilities, producing two up-market value added fish items and processes 15 MT of fish annually.<sup>35</sup>

### ***Rangpur Division is the lowest fish producing region in Bangladesh***

Rangpur itself is a divisional city, and the division is home to some larger district headquarters urban areas such as Dinajpur. Study findings suggest that the division is a client zone for fish from Rajshahi, as it is the division with the lowest fish production in Bangladesh by far at just over 210,000 MT in FY 2017-2018.

## **Key Differences in the Value Chain**

The value chain among the Northwestern divisions are largely the same, with most carp varieties sources from within the Rajshahi division, and other fish types notably Ilish (from Barisal/Chandpur) and Pangas (from Mymensingh) are imported. Dhaka, on the other hand, is completely import-dependent but has a more diverse range of options for the local consumer. It was generally observed that for common varieties of cultured fish and *deshi* fish, prices were slightly lower in the Northwest region compared to Dhaka. Dhaka, however, generally had lower selling prices for marine fish species.

## **c) Typical market structure (hubs and major areas)**

In the Fish Value Chain, three types of marketplaces play the most important role, with modern trade such as online shops and e-commerce websites entering the fray. The following section provides an overview of the typical marketplaces for fish purchase and exchange.

<sup>34</sup> According to the Department of Fisheries, as cited by The Independent (Bangladesh), 2019, *Rajshahi division attains surplus fish production*. Retrieved from <http://www.theindependentbd.com/post/185573>

<sup>35</sup> Information retrieved from <http://bengalmeat.com/> and from phone interview with Bengal Meat representatives

## The Typical Arat



Figure 5 Rangpur Paura arat at peak hour (left) and Shothibari arat of Naogaon after closing of sales

The *arat* is a meeting place that connects *mohojons* and *Paikars*/retailers via commission agents. Here *mahajans*, fishermen and *Faria/Bepari* bring in the day's catch for sale. *Paikars* and Retailers come here in search of fish to purchase for reselling. The commission agent acts as the intermediary between the two parties and prices are determined by the day's market. The commission agent sells incoming fish in batches through an auction process, shouting the bid value and responding to any further price offers.

Fish is sold only at bulk at *arats* (usually starting from 5KG) and can offer considerable savings over retail prices. Middle income and high-income residents purchase fish in higher volume but even then they seldom venture outside of the local fish market or supermarket. A visit to the *arat* or wholesale market is a special occasion for most as it offers them better prices but more importantly access to fresher fish and a more diverse choice.

*Arats* are only open for a few hours every morning, and *arats* in Dhaka begin operating as early as 4AM, while those in Rajshahi open around 6AM. Since Rangpur is more distant from other fish export centres, *arats* open much later, around 10.30AM in the morning. Although some regional hubs and *arats* are located centrally in cities, most are located in city outskirts and usually far away from populated residential centres.

- **Customers:** 15-60 per *arotdar* per day. Larger *arotdars* can have 250-300 sales per day
- **Mode of Transactions:** Credit and cash. In case of credit, dues are settled in cash or bank transfer within 1-2 days
- **Number of Commission Agents (*Arotgars*):** Commission Agents generally number between 8-20 for a single *arat*. Larger marketplaces such as Karwan Bazar can have 100, smaller *arats* can have as few as 2 *arotgars*
- **Female Participation:** There are female buyers only in large, centrally located City Corporation markets in Dhaka, Rangpur and Rajshahi but in very small proportions. In *arats* outside of cities, no female buyers were observed. Female *arotgars* have not been observed, but women have been observed offering cutting and dressing services at *arats*.
- **Sales:** Sales for individual *arotgars* can be between BDT 100,000 (USD 1,185) up to BDT 1.5 million (USD 17,667) per day. Volume of sales can vary from 10-15 *maunds* up to 200-250 *maunds* where the *arotdar* numbers are fewer
- **Commission:** *Arotgars* offer their services in exchange for a 3%-5% commission which is charged on the buying price
- **Support Facilities:** Generally due to their importance to the local economy and the transactional volume, these services offer good support facilities compared to local markets. Storage, sanitation, icing and electric facilities are usually available. However, in rural areas, icing and sanitation facilities are not so widely available in *arats*
- **Fish-based Items:** According to observations, wet markets do not offer any other fish-based items other than *shutki*.

## The Typical Local Market



Figure 6 A typical fish market (left) and an open-air market with no infrastructure (right)

Local fish markets connect retailers with individual consumers. The typical local fish market is located in a corner of a larger food market. Consumers visiting the fish market during their weekly grocery purchase walk through the fish market on their way in or out of the market. This type of fish market is designed for convenience and caters to the communities living in close proximity to the market, lying within 2-3 km distance from consumer residence. The smaller footfall in these local markets mean that necessary investments into some essential services are not seen as feasible by market authorities and it can be an unpleasant experience for buyers and sellers alike. Some fish markets can simply be a congregation of street sellers next to the pavement, with no support infrastructure at all. Transactions in these markets are informal, and no receipts are exchanged at purchase.

For low-income residents, their purchase volumes are smaller and hence it does not warrant a visit to a larger market if it is far away as it outweighs the costs saved and there is no significant cost savings unless large or bulk amounts are purchased. So, local fish markets are more popular among this income category.

Local fish markets are usually open from early morning and remain open throughout the day, closing in late evening. Customer footfall during weekdays are highest in the evening, when the after-office crowd comes for purchases. During weekends, the busiest times are in the mornings and in the afternoon to late evening period.

- **Mode of Transaction:** Retailers only accept cash
- **Number of sellers:** Typically, 5-15 fish retailers. But bigger markets such as Kawran bazar can have up to 500-6000 sellers
- **Number of buyers:** Each retailer can have between 20 – 70 customers each day who can purchase from as low as half a KG to as much as 5 KG
- **Daily Sales:** Typical daily sales for each retailer can be between up to 2 *maunds* at a value of BDT 5,000 (60 USD) – BDT 10,000 (120 USD). However, sales can be as low as 20 KGs for smaller retailers in rural settings and much higher in retail fish markets attached to *arats*
- **Total Market Sales:** Total market sales can range from BDT 50,000 – 60,000 (600 to 700 USD) and even up to BDT 1 million (USD 11,845) for bigger markets with numerous sellers
- **Markups:** Markups at the retail level vary broadly depending on the type of fish, marketplace and even the buyer, as the prices are set on the basis of individual negotiation. Typically, markups at the retail level are between 15% to as high as 30%. *Paikars* in retail markets generally sell with slightly lower markups between 15% to 22%.
- **Support Facilities:** Usually smaller local fish markets lack even the most basic support facilities such as ice machines or cold storage. Many do not even have electricity, toilets or drainage systems resulting in huge inconvenience for both sellers and buyers
- **Female Participation:** Female fish retailers are extremely rare. Apart from a handful of women fish retailers in Karwan Bazar of Dhaka, which is hardly a local market and clearly an exception, women fish sellers were not observed anywhere else
- **Fish-based Items:** According to observations, wet markets do not offer any other fish-based items other than *shutki*

## The Typical Supermarket



Figure 7 Most supermarkets in Dhaka now stock Western-style processed fish items

Supermarkets are complete shopping destinations offering their customers a range of items under one roof. There are three major supermarket chains (Shwapno/ACI, Meena Bazaar and Agora) in Bangladesh, and their branches are mostly concentrated in Dhaka and Chittagong city. Other than these, smaller cities such as Rajshahi and Rangpur can have their own single-store supermarkets. The typical supermarket offers air-conditioning for a smooth customer experience, and being a one-stop shop, offers most grocery and food items in addition to basic cosmetics, garments and even utensils. The major supermarket stores even offer live fish which are on display for customers to choose from. Customer visiting pay higher prices than they would in their local markets, but it is much more convenient for them. Hence, supermarkets are most popular among the middle and high-income consumers.

- **Mode of Transaction:** In addition to cash, supermarkets accept payment through a debit and credit cards, digital wallets, cash transactions and mobile financial service providers
- **Daily Sales:** Daily sales can be between BDT 350,000 (USD 4,146) to BDT 550,000 (USD 6,515) per day and sales volume between 50-60 *maunds*. At the consumer level, prices are generally 20 - 50% higher than in other local fish markets
- **Live Fish Sales:** Only a select number of species are provided in live form. Live fish is marketed at premium prices and only make up about 3-5% of the total fish sales in supermarkets
- **Market Size:** Total volume of fish sold through modern trade is estimated to be 18-22 MT in Bangladesh
- **Customer Footfall:** The average supermarket will see 50-60 customers each day (among whom 35-40 are female customers)
- **Support Infrastructure:** Supermarkets offer solid infrastructure for their customers including air conditioning and in-house support facilities such as fish cutting and dressing. Supermarkets also have a strong supply chain network with specialized vehicles for transporting live fish and fresh fish with in-house cold storage facilities
- **Processed Fish Items:** Supermarkets sell a range of processed fish items (also referred to as value added items) including shutki, fish fingers and fish cakes, frozen fish, marinated fish and fish fillets. Major vendors for processed fish products are Kazi Farms, Ocean Us, Bengal Meat and Golden Harvest. Processing or value addition can be more minimal; for example, Shwapno supermarket has their own chain of cut and dressed flash-frozen fish (including small fish) - these items account for around 7-8% of Shwapno's daily fish sales. Please refer to [Annex 18](#) for a more comprehensive list of processed fish items on offer by supermarkets.

## The Online Shop

In addition to those above, an emerging format for purchase that is becoming increasingly popular among the urban population are online shops and e-commerce websites from which consumers can directly purchase fish. Users of this format of purchase were found to be mostly middle income and high-income respondents, but some low-income households have also taken advantage of them to purchase fish. Some of these online shops are extensions of supermarkets and are owned by supermarket franchises and leverage the same logistical network to deliver items to consumer households. Some standalone online retailers also use their network of vendors (intermediaries) to procure fish.

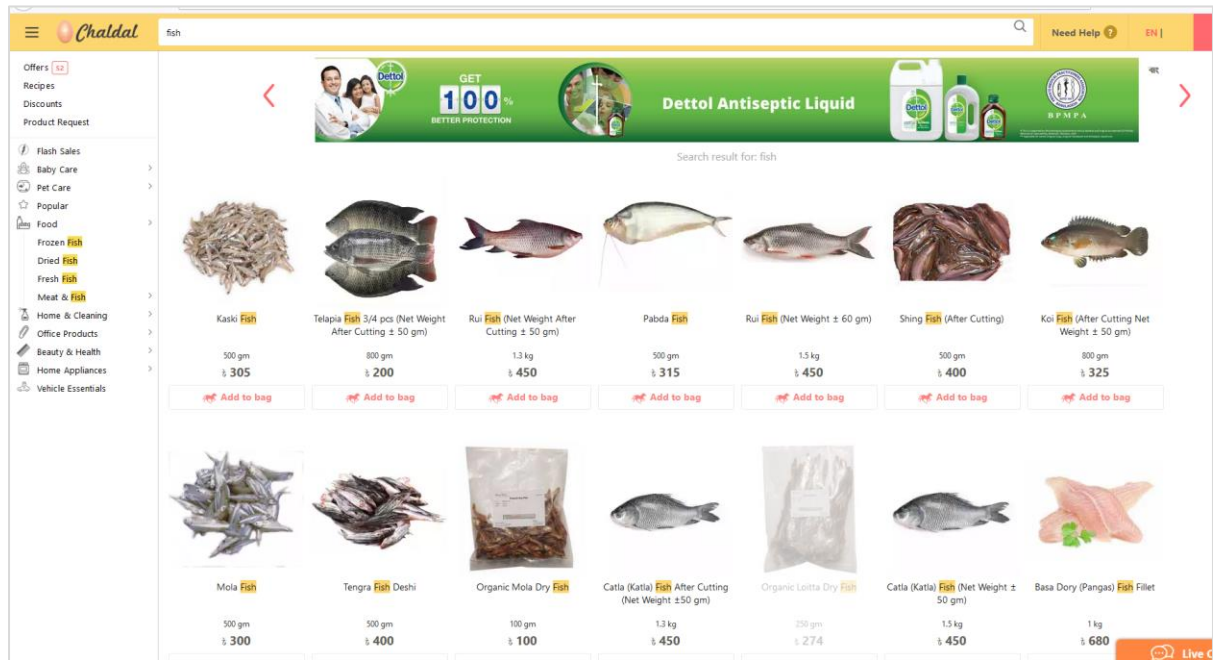


Figure 8 Chaldal.com, one of the largest online grocery shopping marketplaces

- **Mode of Transaction:** In addition to cash on delivery, online shops accept payment through a debit and credit cards, digital wallets, cash transactions and mobile financial service providers
- **Top Sellers:** Shwapno online, Chaldal.com, Fishmart BD
- **Sales Prices:** Selling prices for online shops are of a similar range to that in supermarkets, even in stores such as Chaldal.com that are not part of supermarket chains
- **Benefits:** Online stores offer unprecedented convenience, eliminating the need for visiting fish markets and are available 24X7 to order from and most users to schedule orders at their preferred times. Popular online shops like Chaldal.com offer deliveries within between 1 hour (for specific locations in Dhaka) to 8 hours, but these deliveries usually cover Dhaka – which makes these services inaccessible to the rural population. Delivery costs are also minimal and are usually cheaper than a trip to the local supermarket

#### d) Perceived barriers within the market systems

Interviews with actors along the value chain have revealed several perceived barriers:

- **Financial Support:**  
One of the most widely-cited barriers for businesses and particularly for business expansion is the lack of access to cheap finance. Retailers, *Paikars* and *arotdars* expressed demand for low-interest loans to support them in their needs for working capital and also to help them expand their business. Traditionally, they finance their business from personal funds or loans from close contacts.
- **Lack of Financial Records:**  
Because most *arotdars* do not maintain any deeds when providing *dadan* or credit to their buyers, they often do not have any acceptable form of records to help them recover their loans. This means that they cannot seek legal measures to recover the loans through a court of law. This is a major reason banks are not willing to extend loans to fish *arotdars*.
- **Uncertain Customer Demand:**  
Most value chain actors admit to having no scientific way to project their daily demand and use their instincts and experience to make purchase decisions instead. They often end up purchasing too little (which can truncate potential sales) or too much. In case of unsold stock, sellers prefer to store high-value fish such as Ilish in cold storage where available, but for other low-value fish types sellers are forced to sell off unsold stock at a loss.

The roles of each actor in the fish value chain, their relative market power and the unique challenges faced by them are summarized in [Annex 13](#).

### 3.2 Major markets within division (Upazila/district/regional markets)

This section lists the major markets for fish sales covering the districts and upazilas covered in Phase 1 and Phase 2 surveys under the study:

Table 6 List of Major Markets for Fish Sales

Name of Market	Location	Wholesale Market	Retail Market	No. of Sellers
Kawran Bazar	Dhaka CC	√	√	300 - 500
Mohakhali Bazar	Dhaka CC	√	√	80 - 90
Mirpur Arath	Dhaka CC	√	√	60 - 70
Jatrabari Mostsho Arath	Dhaka CC	√	√	250 - 300
Mirpur Kacha Bazar	Dhaka CC	√	√	40-50
Abdullahpur Arath	Dhaka CC	√	√	70-80
Bou Bazar, Tongi	Tongi, Gazipur		√	30-40
Tongi Kacha Bazar	Tongi, Gazipur	√	√	25-30
Fateh Ali Bazar	Bogra Sadar	√	√	70-80
Chachi Bazar	Bogra Sadar	√	√	50-60
Dhaper hat	Dhupchachiya, Bogra		√	20-25
Dupchachiya bazar	Dhupchachiya, Bogra	√	√	15
Boro Bazar	Pabna Sadar	√	√	40-50
Masum Bazar	Pabna Sadar	√	√	45
Chatmohor Bazar	Pabna Sadar	√	√	20-25
Notun bazar	Pabna Sadar	√	√	40-45
Bangla Bazar	Pabna Sadar	√	√	15-20
Rajbari Bazar	Pabna Sadar		√	20-22
Chatmohor Bazar	Chatmohor, Pabna	√	√	25-30
Shaheb Bazar	Rajshahi CC	√	√	60-65
Court Bazar	Rajshahi CC	√	√	50-60
Puthiya Bazar	Puthiya,Rajshahi	√	√	15
Baneswar bazar	Rajshahi CC		√	10-12
Rajbari Bazar	Rajshahi CC		√	10-15
New Market	Rajshahi CC	√	√	15-18
Pouro Bazar	Rangpur CC	√	√	70
Terminal Bazar	Rangpur CC	√	√	90-100
Balar hat	Rangpur CC		√	25-30
Shattibari bazar	Mithapukur,Rangpur	√	√	10-15
Puraton Bazar	Gaibandha Sadar	√	√	30-40
Notun Bazar	Gaibandha Sadar	√	√	25-30
Sadullahpur Bazar	Sadullahpur, Gaibandha	√	√	40-45
Chok Bazar	Dinajpur Sadar	√	√	35-40
Bahadur Bazar	Dinajpur Sadar	√	√	40
Notun Bazar	Parbotipur, Dinajpur	√	√	25-35

A more comprehensive list of markets in the surveyed districts can be found in [Annex 3](#).

A photograph of a man sitting in a fish market. He is wearing a white t-shirt and a patterned sarong. In front of him is a large white scale. To his right, a blue tarp is covered with several large fish. In the background, other people are working in the market, and there are various containers and equipment.

## Chapter 4: Consumer Dynamics in Project Locations

The consumer surveys under this study were conducted to provide insights into consumer dynamics in the project regions in northwest Bangladesh as well as the capital region of Dhaka, which is a major fish consumer in the country (see Chapter 5). The market study captured a range of consumer behavior across multiple categories such as their preference for fish types and processed fish items, their preferences for types of marketplaces as well as exploring deeper into the factors that affect their choices and purchase behavior.

### 4.1 Consumer Demographics

Consumer surveys were conducted in 7 districts in three regions of Bangladesh, namely Dhaka City, Rajshahi Division and Rangpur Division of the country. Given the limited geographical coverage, the moderate number of respondents and the administering of surveys only in fish markets, the respondent demographics do not represent the demographics of the Bangladeshi population.

Out of the 1,064 respondents, 37% were from Dhaka district and the remaining 672 responses were from outside Dhaka. Among these 672 respondents, the split was 40% Urban, 42% Semi-Urban and 18% were rural <sup>36</sup>.

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<sup>36</sup> For the districts Rajshahi, Rangpur, Bogra, Pabna and Dinajpur, respondents from city centers in the District HQs have been classified as urban, and those from town centers in Upazila HQs are classified as semi-urban. Respondents from city center markets in Gaibandha district HQ has been classified as semi-urban. All respondents from Dhaka surveys have been classified as urban. Surveys taken from respondents from all other locations have been classified as rural.



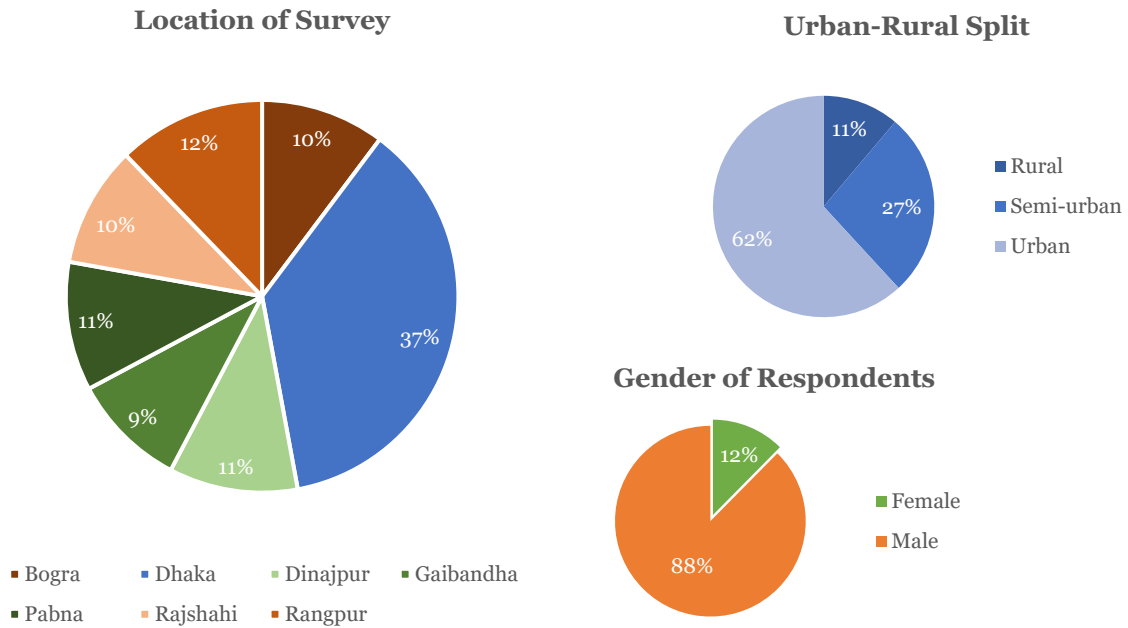


Figure 9 Location, Gender and Urban-Rural Split of Respondents

The overwhelming majority of respondents were males, making up 88% of all respondents. Breaking down the numbers further, approximately 19% of respondents in Dhaka were women and outside Dhaka less than 9% were.

### Monthly Household Income

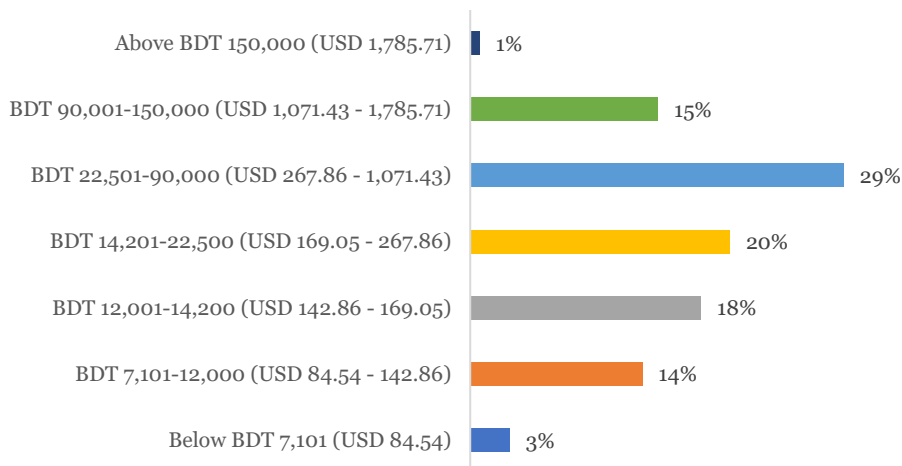
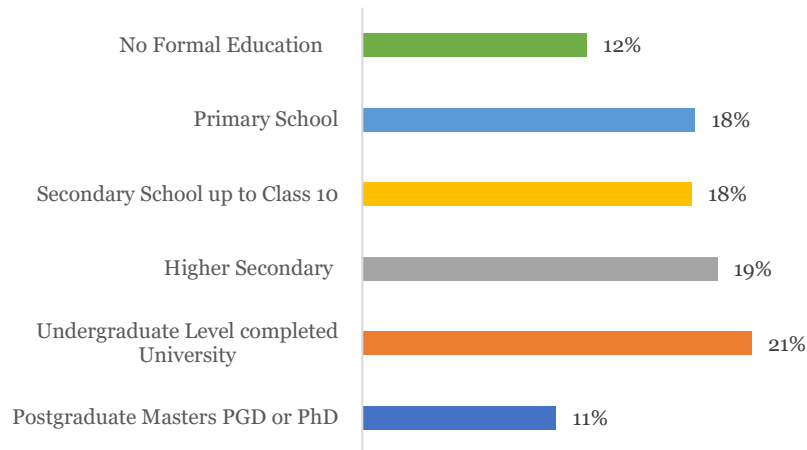


Figure 10 Breakdown of Income of Respondents

The majority of the respondents fell into the middle income (49%) and low income (35%) categories. Only 16% of respondents were from high-income households. For reference, low-income households have been categorized as households with monthly incomes of up to BDT 14,200 (USD 168); middle-income Households have been categorized as households with monthly incomes of between BDT 14,201 (USD 168) and BDT 90,000 (USD 1,066); and high-income Households have been categorized as households with monthly incomes of BDT 90,001 (USD 1,066) and above. This was done purposefully to get a holistic picture of fish consumption across income groups.

### Education Level



\* Candidates could choose only one education level

Figure 11 Breakdown of Respondents According to Education Attained

The dataset has an equal share (approximately 18%-19%) of respondents with the following education levels; higher secondary, primary school and secondary school. 21% of respondents had completed their undergraduate study, 11% of respondents had completed some form of postgraduate study while 12% had no formal education at all.

Each household had an average of 4.99 members in the family and the average Male : Female ratio among households was found to be approximately 11 : 10.

## 4.2 Consumer Behavior

The average household spending on grocery and food items across all households is BDT 3,650 (USD 43.45) per week. Of this, spending on fish makes up the largest share of spending (25%), followed by the purchase of staple foods (24%). Meat and eggs, and others spending category make up 22% and 15% respectively within the weekly household spending on grocery items, suggesting that for fish shoppers, fish is the most important source of protein.

### Breakdown of Average Weekly Spending of Respondents

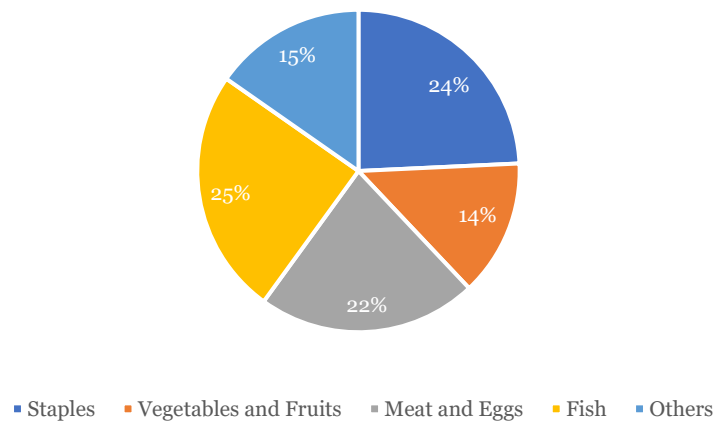


Figure 12 Respondents' Weekly Spending Breakdown

### Share of Spending on Food - According to Income Categories

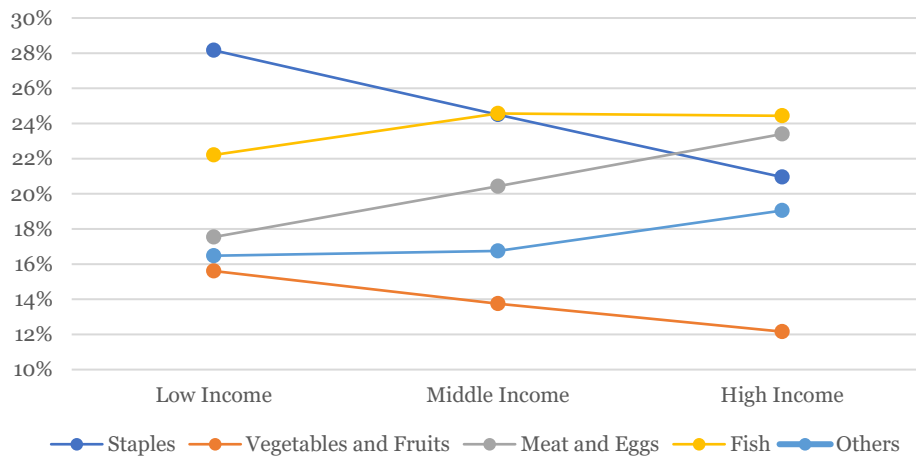


Figure 13 Respondents' Weekly Spending Breakdown according to Income Categories

### Lower income households spend a bigger portion on basic food categories

Breaking down by incomes, however, reveals that low-income households spend the largest proportion of their incomes on staple foods, while middle-income and high-income respondents spend a higher proportion than any other (over a quarter of their incomes) on fish items. This is to be expected as staple foods are considered as basic needs before purchasing other food items.

Furthermore, that household spending proportion on fish, meat and eggs and other headers increase overall with rising incomes, while spending on staple foods, and vegetables and fruits were found to decline as a proportion with rising household incomes.

Across regions, residents of Rajshahi were found to dedicate the lowest proportion of spending on fish (21%) and the highest proportion was found in Dhaka (28%). This can be attributed to the lower prices in Rajshahi of the most-purchased fish types across regions and higher prices in Dhaka with more diverse fish (see Table 23 Comparison of Fish Purchase in Overall and Dhaka Division Between Phase 1 and 2).

### Frequency of Fish Purchase (N = 1,063)

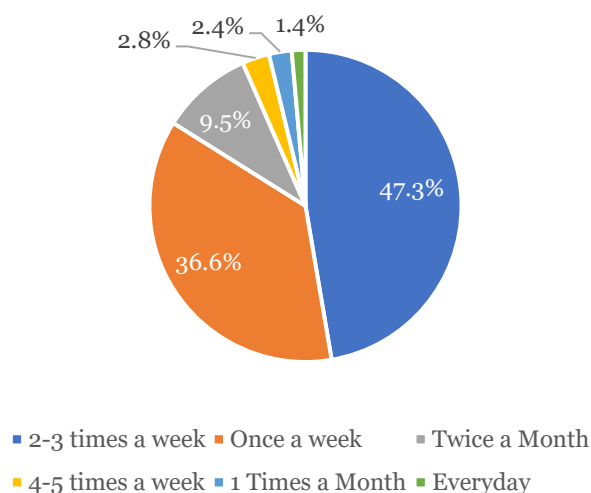


Figure 14 Frequency of Fish Purchase by Consumers

47% of households purchase fish 2-3 times a week, around 37% do so once a week and only 9.5% do so twice per month. Only 1.4% of total respondents purchase fish on a daily basis. Even among low income households, spending purchase frequency is mostly either 2-3 times a week (48%) or once a week (53%). This suggests that for even the poorest households, they can do without purchasing fish every day and can spread out their purchases and perhaps take advantage of bulk purchase prices. As LCP's segmentation profiles for low income households have revealed, they consume the fish within a day or two or purchase as they do not have refrigerators in most cases.

Further segregation of Spending on Food Categories according to Income and Regions can be found in [Annex 12](#).

### Relationship Between Purchase Volume Per Transaction and Household Income

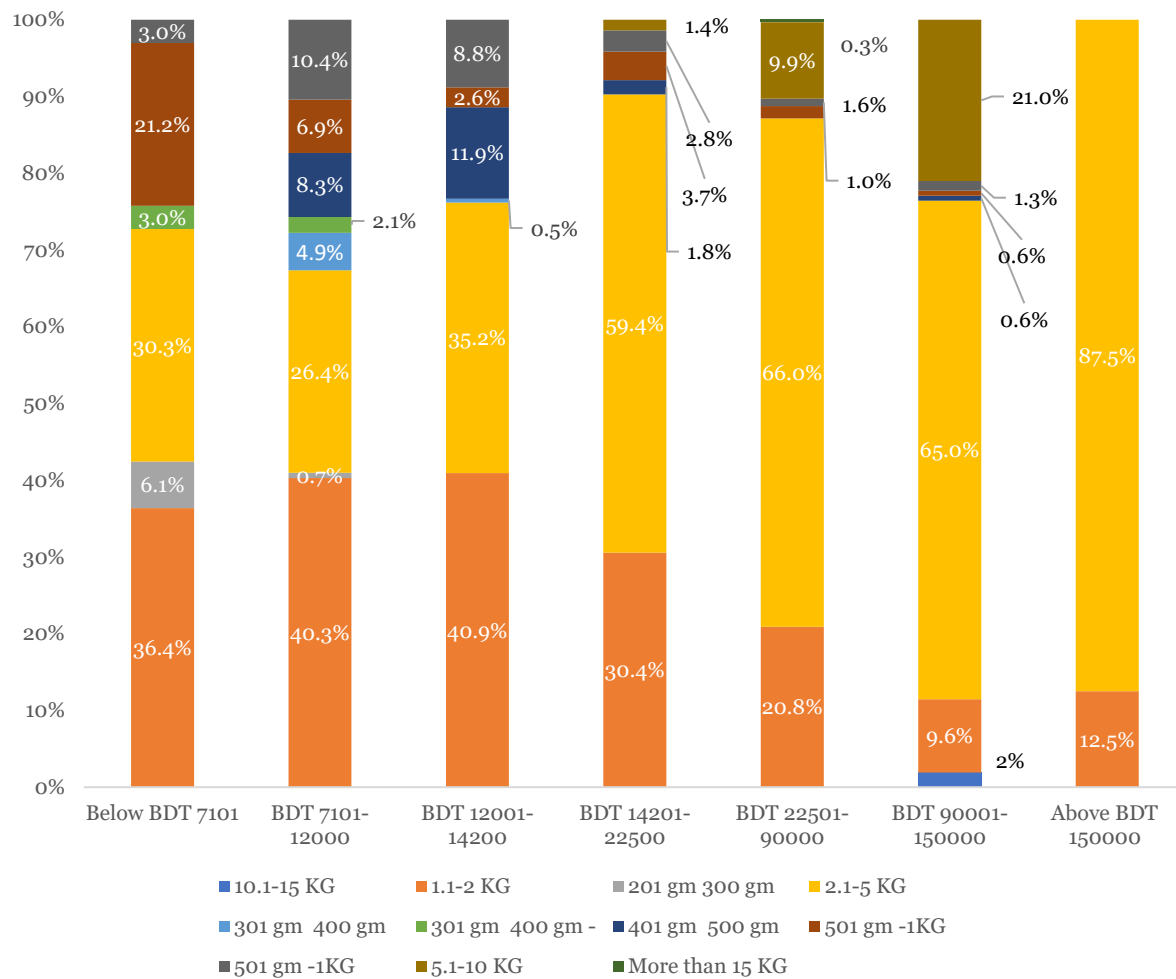


Figure 15 Relationship between Income Classes and Purchase Volume for Each Transaction (Incomes are in BDT per Month per Household)

The level of income was also found to affect the quantity of fish purchased during each visit to the market. At the lower end of the income groups, especially for the income categories up to BDT 14,200 (USD 169.05) of household income per month, consumers were found to purchase between 1.1 KG – 2 KG of fish most frequently in each purchase.

Otherwise, across income the middle-income and high-income households, the purchase frequency in terms of basket size (weight) is seen to be mostly homogenous. Across these households, consumers most frequently purchased between 2.1 – 5 KG of fish per transaction – which is unexpected given the wide array of disposable incomes. However, this can be attributed to the type of fish that is being

purchased rather than simply the total volume. Interestingly, one-fifth of the BDT 90,001 – 150,000 income households purchase between 5- 10 KG in each transaction.

**Buyers themselves are the biggest purchase influencer**

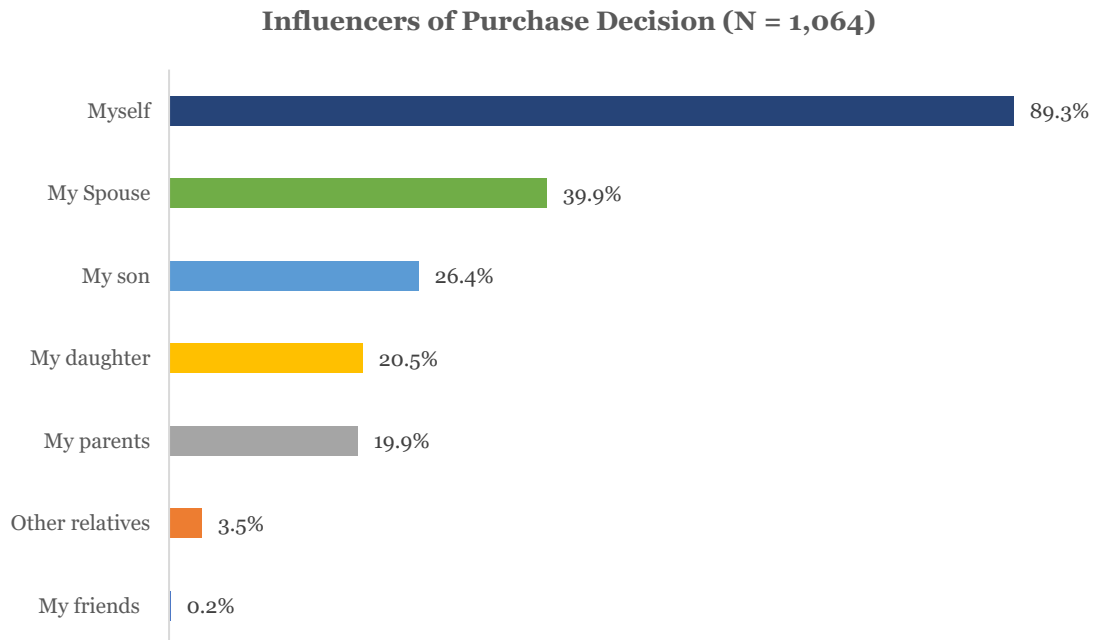


Figure 16 Influencers of Purchase Decision

At the marketplace, purchases take into account the choice and taste of a variety of family members and other relatives but in most cases the purchaser himself/herself is the decision-maker. Spouses make up the second biggest group of influencers in deciding the type of fish to purchase with 40% citing it as one of their purchase influencers. There is a considerable difference between the influence of the daughter (20.5%) and son (26.4%) in the family, suggesting a potential gender gap that needs to be explored.

Post-purchase - consistent with the frequency of fish purchase - over half of all respondents consume their fish within 2-3 days, and a quarter of respondents do so within 3-7 days of purchase. Less than 1% of respondents preserve and consume fish for up to a month, reflecting the perishable nature of fish – although this number could have been higher as more than 60% of respondents were middle or affluent class and could be reasonably expected to own a refrigerator. This suggests that households are averse to preserving fish for long periods, even frozen ones. This may be a challenge for purveyors of frozen fish in Bangladesh.

**Fish purchase remains a male responsibility**

Out of the surveyed 1,064 respondents, only 12% were women. Breaking down the numbers further, approximately 19% of respondents in Dhaka were women and outside Dhaka less than 9% were.

Speaking to women respondents indicate that there are no specific barriers to women shopping for fish, but that most women prefer male members carrying out shopping since that role had been traditionally assigned to men within Bangladeshi families with women having other roles in the household. In cases where women did shop for fish, both males and females in the household shopped with only one case where the female head of household exclusively shopped for fish.

**4.3 Choice of Marketplace**

As mentioned above, local fish markets are usually open from early morning and remain open throughout the day, closing in late evening but *arats* are open only during early morning. Furthermore, fish is sold only at bulk at *arats*, which is not convenient for regular shoppers, particularly low-income residents. Hence, local area markets have been found to be the most regular choice of respondents given the convenience factor.

### Type of Marketplaces for Fish Purchase

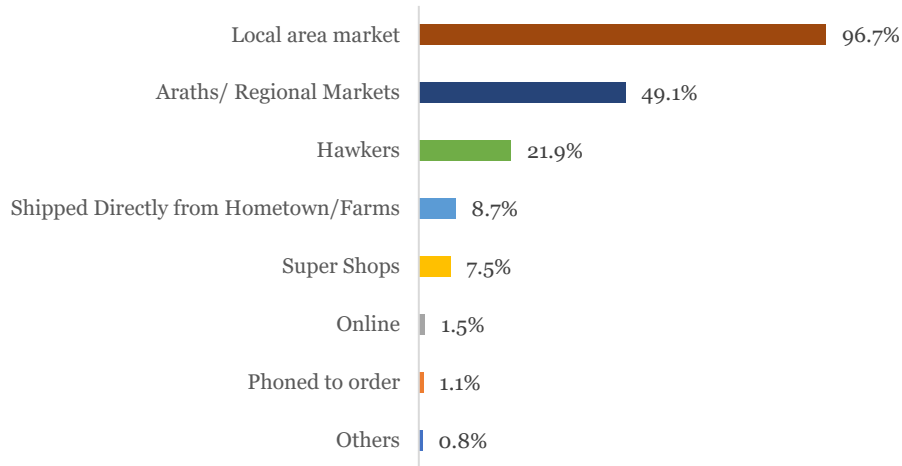


Figure 17 Consumer Choice of Marketplace

Other than traditional marketplaces, a considerable proportion of households (22%) purchased from hawkers and 7.5% of shoppers (mostly within Dhaka) have purchased fish from supershops. Almost 9% of households have fish shipped from hometown/farms in order to have fresh catch. Online shopping forms only a small proportion but has gained more traction in urban Dhaka - although this trend was on the decline during Phase 2 of the surveys (See [Chapter 5](#)).

### Choice of Marketplace according to Income Category (N = 1064)

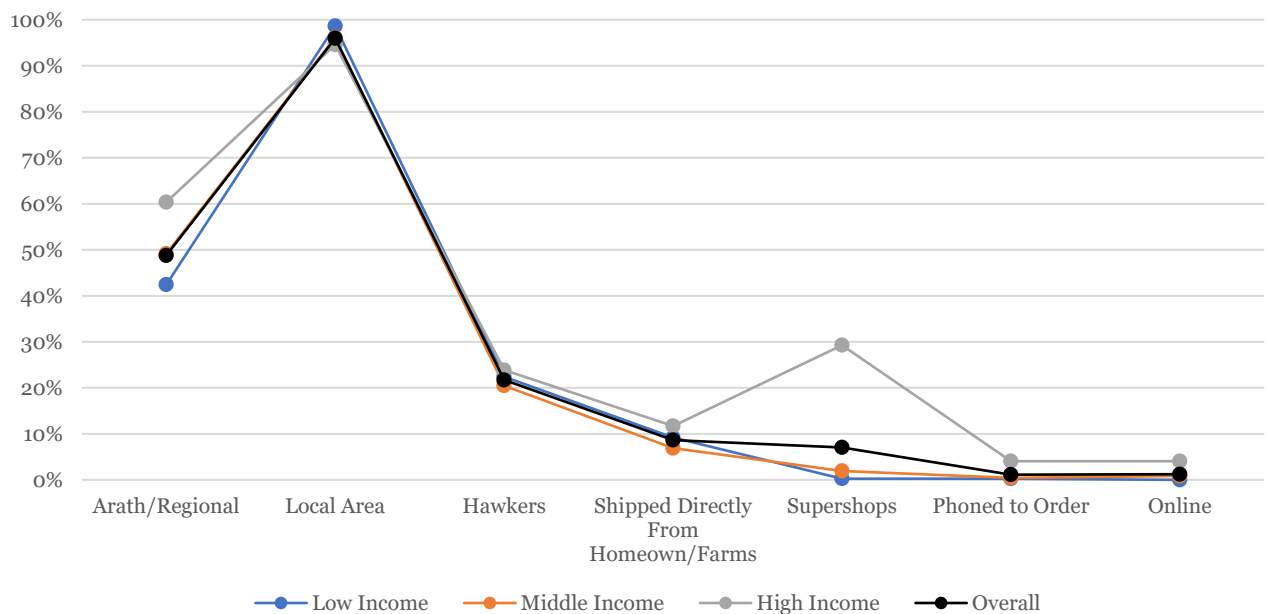


Figure 18 Choice of Marketplace According to Income Category

Breaking down by income categories, it can be seen that low and middle-income households follow a similar pattern in their choice of marketplace. Upper income households, however, display divergent patterns in their choice of marketplaces, especially when it comes to modern trade (supermarkets and hypermarkets that retail Fast Moving Consumer Goods). Upper income households also tend to have fish shipped from their hometown or farms directly to their homes, much more so than observed among other income categories. Low-income households make a slightly larger proportion of their purchases from local area markets, but this is to be expected given their low purchase volumes that rule out visits to the wholesale markets. Online purchases were not noticeably popular among any category of households, and their popularity had somewhat declined among the middle and higher-income households in the latter phase of the study.

### Top Decision Making Factors Considered When Choosing Marketplace for Fish (N = 1,064)

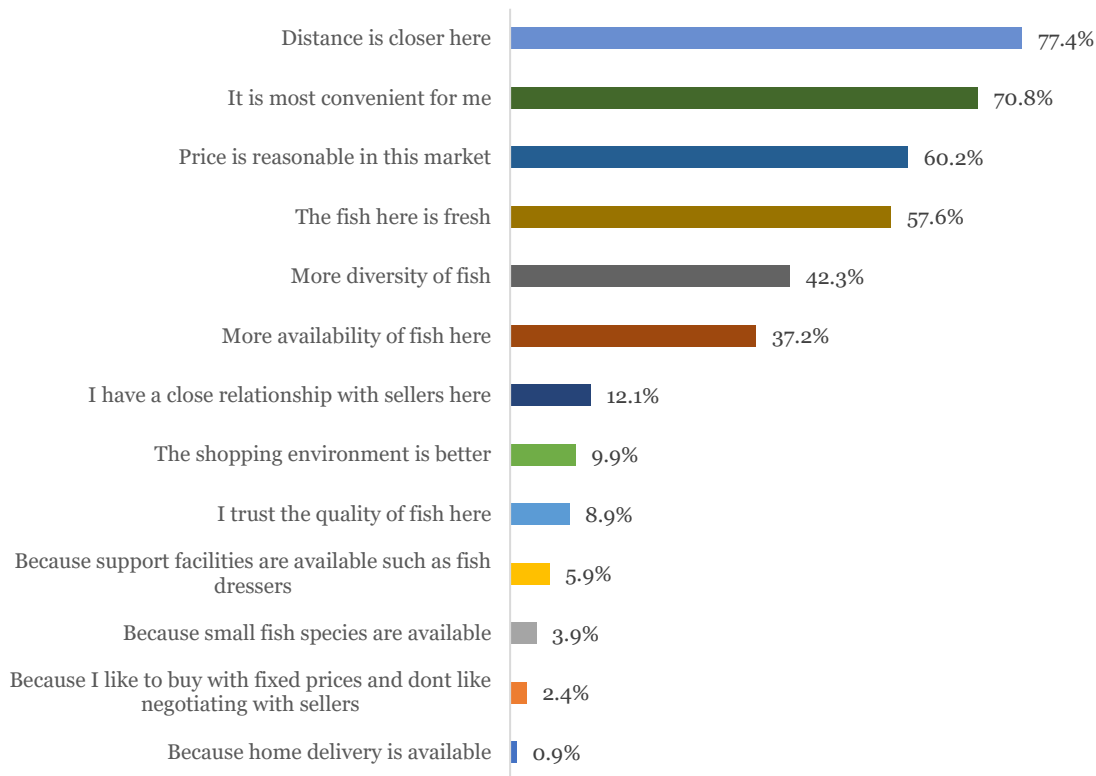


Figure 19 Factors Affecting Marketplace Selection

Distance and convenience are most the important factors for the choice of marketplace to consumers. This is consistent with the finding that the most commonly used marketplace is the local markets within the vicinity of the household for most respondents. This is to be expected as consumers try to prepare and cook or refrigerate fish as quickly as possible since it is a highly perishable product and, as covered in the past chapter, almost none of the local marketplaces offer optimal preservation facilities. Freshness is a major factor and so is the price, which perhaps resulted in many people purchasing from *arats*/ regional markets for fresh catch and price savings.

A visit to the *arat* or wholesale market is an infrequent occasion due to the distance factor for most but it can offer consumers better prices and, more importantly, access to fresher fish and a more diverse choice.

It should be noted that although only 6% people cited the availability of support services such as fish dressing facilities as a key factor when choosing their preferred marketplace, when explicitly prompted, around 81% of respondents say that it is important for them to have.

An interesting observation in the market is that big species of fish are usually sold whole. In a few cases, specifically in urban markets of Rajshahi and Rangpur, it was observed that a single large fish can be pre-cut and sold to multiple buyers, but this is the exception rather than the norm. In most cases, consumers would not purchase any portion of fish if it was not cut and dressed in front of the buyers.

### Case Study – Small Fish

Mahbuba from Dhaka is 35-year-old housewife who lives with her husband and in-laws. Her household income is between BDT 41,501 – 90,000 (USD 494.06 - 1071.43). Often her husband does the grocery shopping, but recently she has started to visit Jatrabari *arat* herself to buy the daily essentials. She doesn't believe the quality of fish in supershops are good, rather she buys it from the local market which is a walking distance from her house. According to her, 50% of her purchases (in terms of volume) comes from the local market, 30% from regional markets or *arats* and the remaining 20% from hawkers.

Her in-laws prefer to eat small fish as they believe it has higher nutritional value and tastes better than the bigger fish. Bashpata and Ilish are bought regularly in her household, the latter is bought more during *Pahela Baisakh*. In fact, during her last purchase she had bought a large 3.5 KG Pangas fish costing BDT 510 (USD 6.07) and three pieces of Ilish fish totaling 1 KG at a price of BDT 1,200 (USD 14.29).

Her most aspirational fish are Boal and Magur, and she happens to purchase them often as her husband is a big fan of them. She and her husband like to eat chicken more than fish. She trusts the quality of hygiene and nutrition of chicken more than fish, though she appreciates the variety of fish that is available.

Fish is a part of their daily meal, as her in-laws like to have fish for their lunch. Apart from *Pahela Baisakh*, they don't have a special occasion to purchase fish. Processed fish is consumed only in negligible amounts; over the past year, the family had purchased half a KG of Chepa Shutki at a price of BDT 700 (USD 8.33).

## 4.4 Demand drivers and typical deterrents

### *Freshness of fish is the dominant factor of consideration overall*

**Top Decision Making Factors Considered When Purchasing Fish**  
(N = 1064)

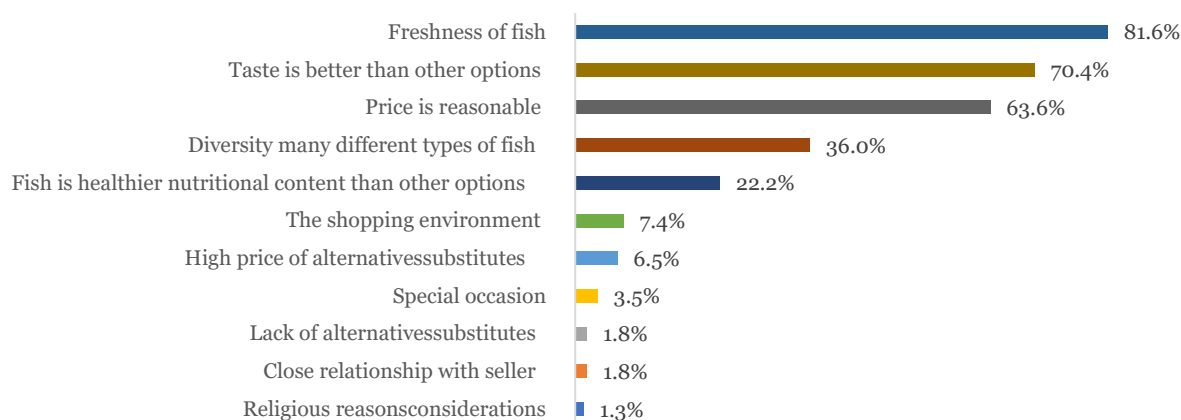


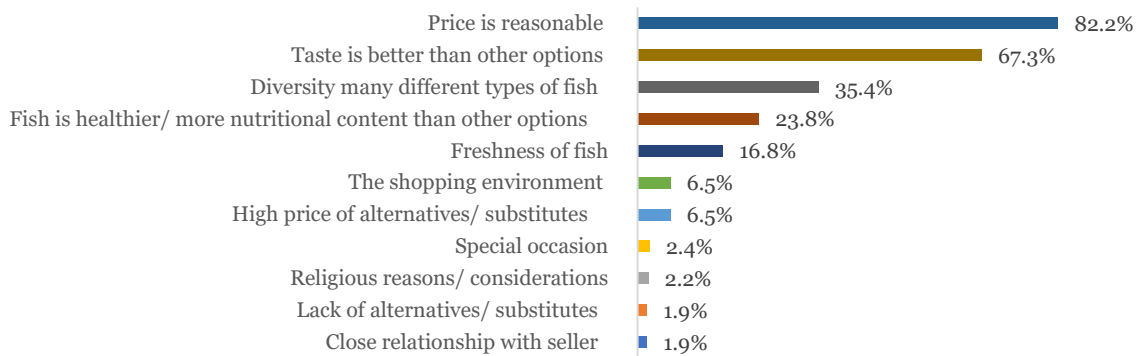
Figure 20 Decision-making Factors Considered When Purchasing Fish



When respondents were asked to select their top 3 factors considered when purchasing fish, the top factors mostly relate to the freshness, taste, price, diversity and nutritional content of fish. Shopping environment is not a top-most factor for consideration, and fish purchase was not found to be driven by the availability or prices of substitutes.

**Price is the dominant factor of consideration for Low Income Households**

**Top Decision Making Factors Considered When Purchasing Fish for Low Income Household Respondents (N = 370)**



Unsurprisingly, for respondents from low-income households, price is the greatest determining factor, with 82% of respondents citing it. Taste and diversity of fish are the next most important factors. However, freshness of fish, which is the biggest driving factor overall, was only the fifth most important factor suggesting that income households are prepared to sacrifice freshness if the price and the taste are right.

**Live fish purchase frequency positively related to household income**

Most respondents across all income classes purchased live fish<sup>37</sup> on a regular basis. However, there is a clear relationship between household income class and how frequently they had purchased live fish. High-income households purchased live fish most frequently, with 40% of high-income respondents purchasing live fish once a week and 31% of them purchasing live fish twice a month. By contrast, 40% of low-income households bought live fish once a month and 13% did not buy live fish on a regular basis.

**Live Fish Purchase Frequency (N = 556)**

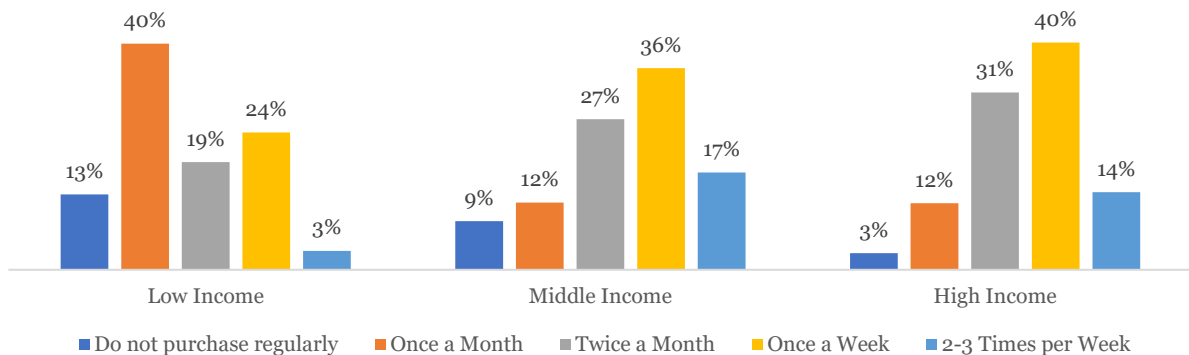


Figure 21 Live Fish Purchase Frequency by Income Classes

<sup>37</sup> This study has adopted a wider definition of live fish, encompassing all fish species that are or have the potential to be marketed in live form to consumers including *Jiyol* (air-breathing) fish such as Koi or Shing as well as non-*Jiyol* fish.

### Non-air breathing species are increasingly sold live

Instead of traditional Jiyol live fish species, the most popular live fish purchased (as reported) by consumers were Pangas (9% of regular live fish consumers) and Rui (7% of live fish consumers). Koi and Shing were the third and fourth most popular live fish types.

**Most Popular Live Fish Types (N = 505)**

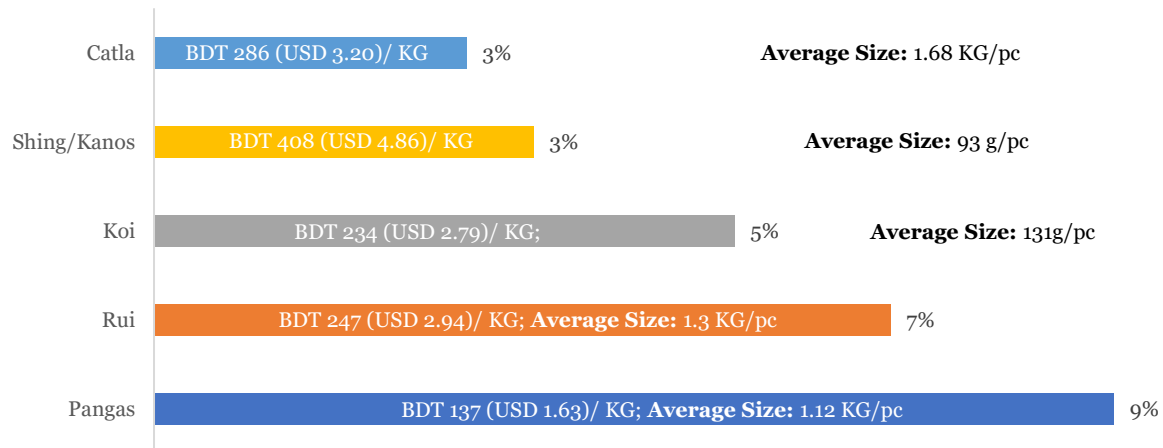


Figure 22 Most Popular Live Fish Species

The price for the most of these top-most purchased live fish did not deviate by more than 10% of their average price (for both fresh and live fish). But the average size of the live fish was found to be noticeably higher than their fresh fish counterparts.

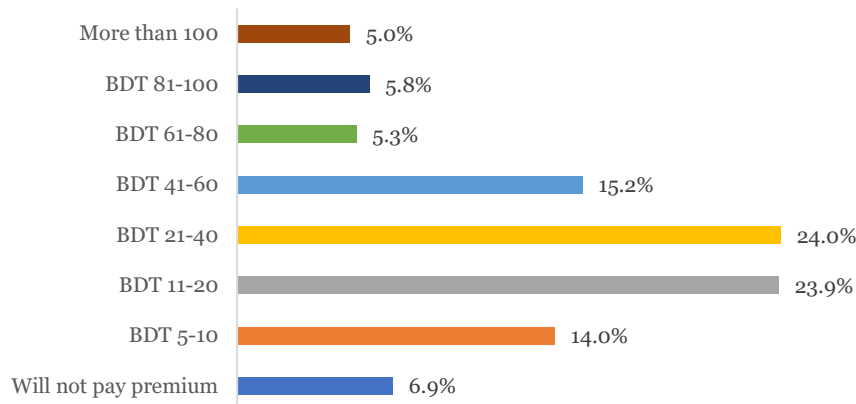
Breaking down by income classes, it can be seen Low income households purchased more of Pangas and Koi live fish as they were cheapest. Rui and Catla live fish are more popular among middle and high-income households. Interestingly, Shing, which is a relatively high-priced live fish was purchased most by low-income and high-income households but not middle-income households.

[Annex 17](#) includes breakdown of live fish purchases across household income categories while [Annex 16](#) displays a breakdown of live fish purchase across regions.

### Consumers are willing to pay a premium for live fish purchase

Consumers were found to be very open to the idea of paying a premium when purchasing live fish; only around 7% of respondents say they will not pay a premium for live fish purchase as opposed to buying it fresh. 24% of respondents are willing to pay 11-20 BDT (0.13 – 0.24 USD) premium per BDT 100 (USD 1.18), and another 24% are prepared to pay BDT 21-40 (0.25 – 0.47 USD) premium per BDT 100 on the purchase of live fish over fresh fish.

**Premium in BDT Consumers are Willing to Pay for Live Fish (per KG if each KG of fresh fish was priced at BDT 100) (N = 1064)**



*Figure 23 Willingness to Pay Premium for Live Fish*

A small proportion (5%) of the total respondents are even willing to pay premium of more than BDT 100 per BDT 100 of live fish as compared to non-live fish (i.e. more than double the price to have live fish); more than two-thirds of these respondents belonged to the high-income category.

Other than tasting better than preserved fish, a key driver for demand of live fish is the perception among consumers that preserved fish are sometimes preserved with the use of chemicals, which can be harmful or carcinogenic for health.

This would suggest that if the transport of live fish can be optimized, it could be feasible to sell live fish at an additional premium of 20-30% without affecting demand.

***Small fish are popular but there are factors deterring purchase***

46% of consumers responded that they purchase small fish<sup>38</sup> often and 40% answered that they purchase it once in a while. Only 14% responded that they do not purchase small fish species at all.

The key motivator for purchasing small fish has been the perception that small fish species are tastier and have higher nutritional or protein content. Another key reason driving small fish purchase is the perception that the likelihood of small fish being farmed is lower than that for bigger fish species (26%) – signaling some level of doubt in the consumers’ mind about the quality of cultured fish in general. Due to this, the market for cultured small fish may be constrained.

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<sup>38</sup> Small fish, in this study, refers to the relatively smaller species of fish. In technical terms, small fish has been defined to encompass fish species that are smaller than 50g on average per piece of fish (i.e. more than 20 fish in one kilogram of fish).

### Reasons for Purchasing Small Species of Fish (N = 907)

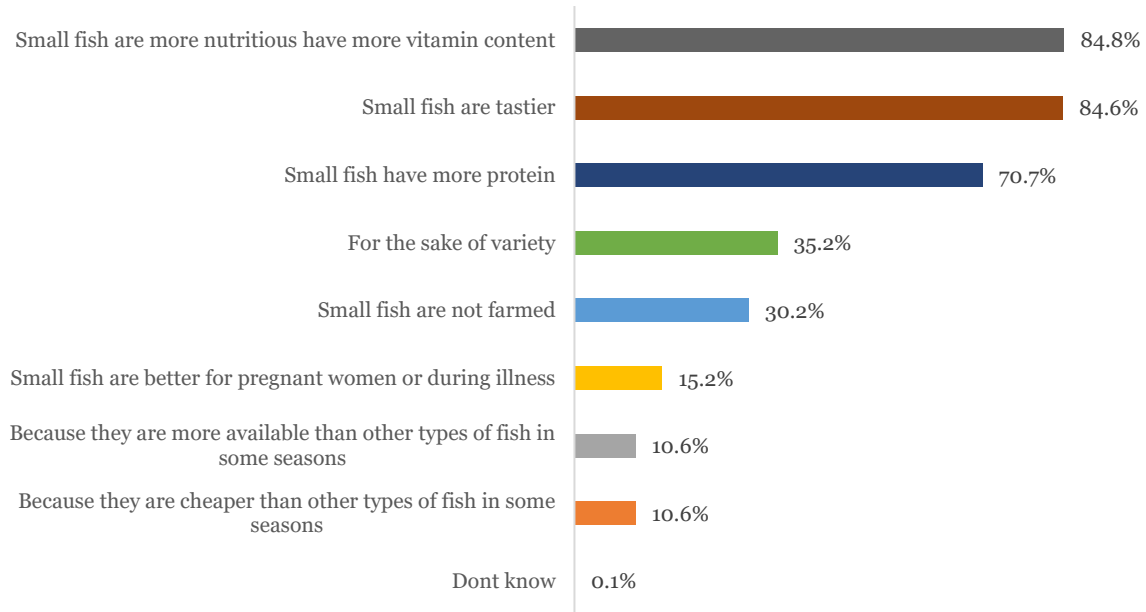


Figure 24 Why Consumers Purchase Small Fish

Among customers who limit their purchase of small fish, the biggest deterrent has been the difficulty in dressing and preparing small fish, and the fact that they have too many bones make them unappetizing to children in families. Prices and availability were also among other deterrents to the purchase of small fish. The preference for small fish due to the perception they are not farmed arises from consumers' concern that cultured fish are not completely safe to eat due to the presence of harmful chemicals.

### Deterrents for Small Fish Purchase (N = 568)

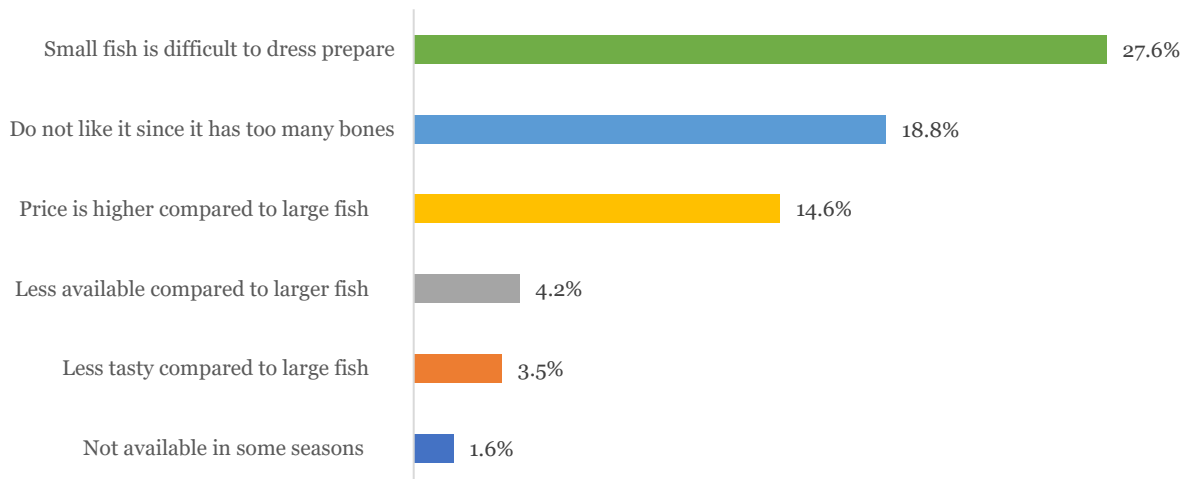


Figure 25 Deterrents for Small Fish Purchase

### ***Ilish the most widely reported fish in shortage***

Analysis reveals that among the Top 10 species of fish reported to be in short supply at one point or another by respondents, eight of the species were captured *deshi* fish species (the exception being Pabda and Tengra). Ilish was the fish most commonly cited fish with supply shortages, followed by *Panchmishali* (Mixed), Mola and Gura Chingri.

Among the cultured fish species, shortages were faced most often for Tengra, Pabda and Golda fish.

These findings are not surprising as Ilish is considered the national fish of Bangladesh and has been gaining consistently in prominence among consumers over the last few decades. It is now a regular practice for households to prepare Ilish dishes during festivals (especially during *Pahela Baisakh*, the Bengali New Year) and to welcome guests with during special occasions. In these times, Ilish prices have been known to skyrocket causing a shortage in such periods.

#### **Captured Fish Shortages**

SL	Fish Type	No.	Percentage
1	Ilish	120	11.3%
2	<i>Panchmishali</i> (Mixed)	36	3.4%
3	Mola	34	3.2%
4	Gura Chingri	31	2.9%
5	Rupchada	29	2.7%

#### **Cultured Fish Shortages**

Sl.	Fish Type	No.	Percentage
1	Pabda	24	2.3%
2	Tengra	21	2.0%
3	Golda	16	1.5%
4	Magur	15	1.4%
5	Boal	13	1.2%

Table 7 Fish Types Most Frequently Suffering Supply Shortage

A list of the Top 10 captured and cultured fish species that were reportedly in short supply according to respondents are in Annexes [5](#) and [6](#)

### ***Fish the most widely preferred source of protein***

In term of value for money, 48% of consumers preferred meat while 45% preferred fish. This is unanticipated the prices of most fish types had fallen in Phase 2 of the study compared to Phase 1 (See [Chapter 5](#)).

On all other counts (taste, variety, availability, freshness, nutritional value, food safety & hygiene, and religious factors), fish was found to be the most preferred protein source when consumers had a choice between meat and other forms of protein. Meat comes out as the biggest competitor among consumers when it comes to freshness and food safety/hygiene. In terms of variety and diversity, fish is easily perceived as the best option for consumers. However, it should be noted that since the study was conducted in fish markets, the consumer preferences are likely to be skewed in favor of fish and unlikely to represent the population at large.

**Preference of different sources of protein based on various factors**  
(N = 1064)

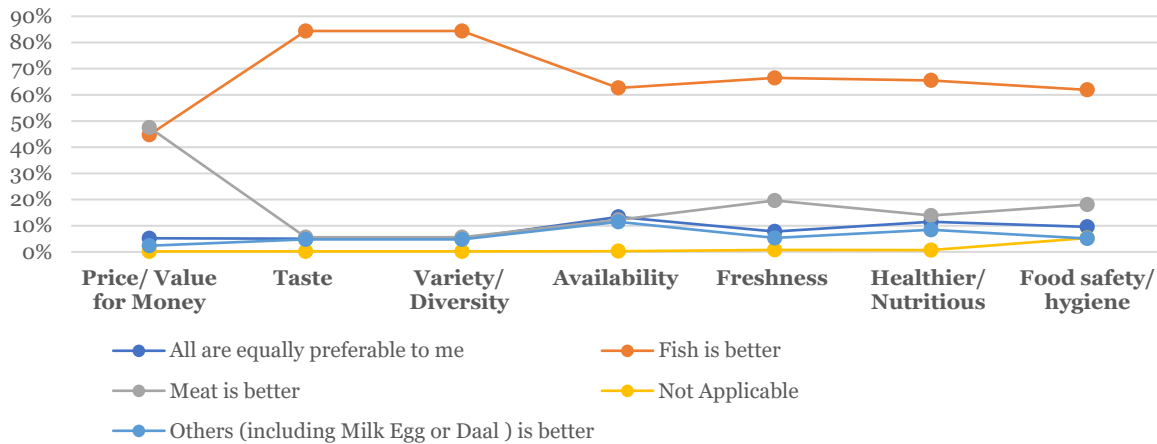


Figure 26 Comparison of alternative protein sources across multiple factors

### Freshwater fish perceived as being better than saltwater fish

Preference/ Factors	Taste	Price	Freshness	Nutritious Content
Both are same	9%	8%	14%	19%
Freshwater fish is better	45%	66%	64%	41%
Not Applicable	1%	1%	1%	2%
Saltwater fish is better	45%	26%	21%	39%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 8 Perception of Saltwater vs Freshwater Fish

An equal portion of respondents (45%) perceive freshwater fish and saltwater fish to be tastier than the other.

When it comes to price and freshness, freshwater fish is widely regarded as better. 39% of all respondents believe saltwater fish as being more nutritious, compared to 46% who think freshwater fish is better in this respect.

In terms of price, only a quarter of respondents believe saltwater fish is better in terms of value and further analysis reveals that these respondents are from Dhaka. This is interesting to note as some of the top-most expensive fishes are saltwater ones (see below).

Similarly, 14% of respondents say freshwater and saltwater fish are equally fresh, with most responding so being from Dhaka. This would indicate that perception of prices and freshness of saltwater fish versus freshwater fish are similar for consumers in Dhaka.

### Prices of 5 Most Expensive and 5 Least Expensive Fish Species (prices per KG in BDT)

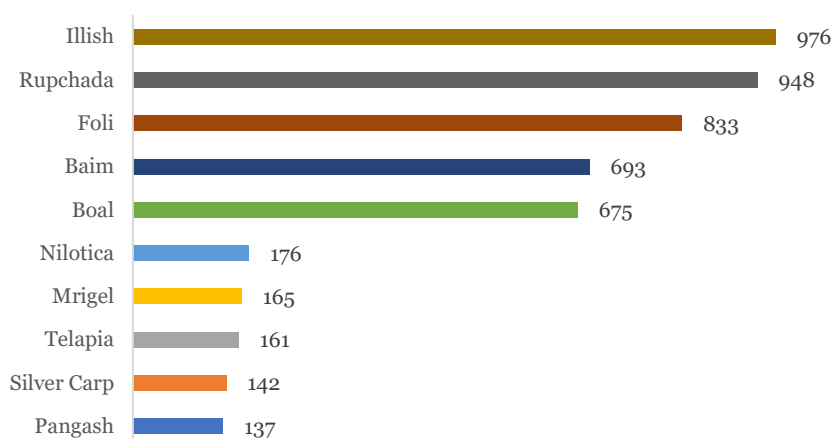


Figure 27 Most and Least Expensive Types of Fish

### Captured fish most preferred in all aspects other than price

There is a clear preference by consumers towards captured fish in terms of taste, freshness and nutritional content. This perception is not just held by rural respondents who consume more *deshi* fish, but also among a large number of respondents in Dhaka. 73% of respondents think the price of cultured fish is more agreeable and this perception is most widely held by respondents in Dhaka but not so widely held by respondents in the Northwestern zone.

Preference/ Factors	Taste	Price	Freshness	Nutritious Content
Both are same	2%	5%	14%	15%
Captured fish is better	94%	21%	70%	76%
Cultured fish is better	3%	73%	16%	8%
Not Applicable	0%	1%	1%	2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 9 Perception of Cultured vs Captured Fish

## 4.5 Analysis of Fish Type Preferences and Aspirations

### a) Fish Type Purchases

In this study, the respondents were asked to list their current or most recent fish purchase. If the respondents were in a market when the survey was conducted, they were asked about their current purchase, which refers to the fish they had just purchased. If the survey was conducted outside of the market then the purchase refers to the most recent purchase.

### Rui and Ilish rule the perch

Nationwide, Rui is the most regularly purchased fish variety, and this can have a high potential seeing how it is a key produce of the Rajshahi division. Carps, catfish and other varieties of low-value fish are the most widely consumed across the board, particularly in Rajshahi and Rangpur divisions. *Panchmishali* (mixed) in Rangpur are the exceptions to this trend.

A wider variety of fish can be found in the Top 5 list for Dhaka region – particularly Golda Chingri – which reflects the greater availability of fish and higher purchasing power of the region.

**Overall** n = 1064

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	245	23%	1,163	233	2.77
2	Ilish	136	13%	774	976	11.62
3	Pangas	124	12%	1,181	137	1.63
4	Catla	102	10%	1,626	261	3.11
5	Tilapia	98	9%	348	348	4.15

**Dhaka** n = 392

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	114	29%	1,495	236	2.81
2	Ilish	78	20%	761	1,135	13.51
3	Tilapia	54	14%	392	156	1.85
4	Pangas	46	12%	1,371	163	1.94
5	Golda	40	10%	117	698	8.31

**Rajshahi Division** n = 328

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	96	29%	856	229	2.72
2	Silver carp	64	20%	927	134	1.59
3	Catla	50	15%	1,728	268	3.19
4	Pangas	47	14%	1,114	123	1.47
5	Ilish	39	12%	753	741	8.82

**Rangpur Division** n = 344

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	35	10%	898	234	2.78
2	Pangas	31	9%	985	117	1.40
3	Puti	31	9%	-	189	2.25
4	Panchmishali (Mixed)	22	6%	1,000	464	5.52
5	Ilish	19	6%	861	808	9.61

Table 10 Top Fish Species purchased in each region according to price and weight

### **Tilapia, Rui, Silver Carp and Pangas most widely consumed by low income households**

Among low income households, regardless of the region, Rui, Tilapia and Pangas were the top purchases. The prices of these species are wallet-friendly, ranging from BDT 140 to 227 (USD 1.66 to 2.70) and are close to or just above the prices for its nearest protein alternative which is the broiler chicken. Since many low-income households have both working parents, it is more convenient for such households to purchase larger low value fish for ease of preparation.

The outliers to this trend are Ilish fish in Dhaka and Puti fish outside Dhaka. Cultured Puti production has increased greatly and its prices were relatively more affordable. Consumers picked it as a way to



mix up their fish diet and imbibe more Vitamin A content. The high ranking of Ilish in the purchases of lower income households can be attributed to the large volume of Ilish purchases recorded during the second phase surveys, when it was peak Ilish season and Ilish prices were at the lowest throughout the year.

Despite the shared popularity of Rui, the sizes of Rui consumed by low-income households outside of Dhaka were more than 55% lower among those from inside Dhaka (783g outside Dhaka versus 1,217g for those from Dhaka). There was not such a big difference in the sizes of Tilapia and Pangas among low income respondents in Dhaka and outside Dhaka.

### *Rui, Ilish, Catla and Pangas most popular among the middle-income households*

Rui, Ilish, Catla and Pangas were consistently among the top-most purchased fish inside and outside Dhaka. In terms of regional differences, Gura Chingri, Tilapia and Pangas were consumed more inside Dhaka. Silver Carp and Catla were consumed more outside Dhaka and so were local varieties of *Panchmishali* (Mixed) *deshi* fish.

Furthermore, there is a large difference in the sizes of Rui fish consumed, with size of Rui at over 1.34 KG on average being purchased in Dhaka, compared to the average Rui size of 907 g outside of Dhaka. Pangas showed a similar difference in size between Dhaka and Northwestern region, however for Catla the reverse trend was observed with middle income households outside Dhaka consuming much larger Catla than their Dhaka counterparts.

### *Purchases patterns of high-income respondents are markedly different*

In Dhaka, high income households consume Rui like other income classified households, but the size of Rui in this case is much larger at over 1.73 KG on average. Ilish, Golda and Shing fish are much more widely consumed among high class.

**Dhaka Low Income** n = **80**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Tlapia	21	26%	233	146	1.73
2	Rui	17	21%	1,217	241	2.87
3	Pangas	10	13%	945	212	2.52
4	Ilish	6	8%	469	420	5.00

**Dhaka Middle Income** n = **173**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Rui	47	27%	1,336	224	2.66
2	Ilish	28	16%	661	1,423	16.94
3	Pangas	24	14%	1,518	159	1.89
4	Tilapia	20	12%	535	157	1.87
5	Gura Chingri	19	11%	104	504	6.00

**Dhaka High Income**

 n = **139**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Rui	50	36%	1,735	247	2.94
2	Ilish	44	32%	862	1,045	12.45
3	Golda	25	18%	100	681	8.10
4	Shing/Kanos	18	13%	362	558	6.64
5	Koi	16	12%	99	290	3.45
6	Catla	16	12%	2,059	271	3.23

**Overall Low Income**

 n = **370**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Pangas	60	16%	1,032	140	1.67
2	Rui	54	15%	890	227	2.70
3	Tilapia	50	14%	246	160	1.91
4	Silver Carp	44	12%	805	135	1.61
5	Puti	24	6%	50	182	2.17

**Overall Middle Income**

 n = **529**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Rui	137	26%	1,053	231	2.75
2	Ilish	69	13%	743	1,032	12.29
3	Catla	58	11%	1,613	266	3.17
4	Pangas	52	10%	1,290	133	1.59
5	Silver carp	44	8%	1,125	149	1.77

**Overall High Income**

 n = **165**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Rui	54	33%	1,726	244	2.90
2	Ilish	52	32%	861	1,006	11.97
3	Golda	25	15%	100	681	8.10
4	Catla	21	13%	2,210	274	3.26
5	Shing/Kanos	19	12%	362	550	6.54

**Outside Dhaka Low Income** n = **290**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Pangas	50	17%	1,050	126	1.50
2	Silver carp	40	14%	783	136	1.62
3	Rui	37	13%	735	221	2.63
4	Tilapia	29	10%	255	170	2.03
5	Puti	20	7%	-	168	1.99

**Outside Dhaka Middle Income** n = **356**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Rui	90	25%	907	235	2.80
2	Panchmishali (Mixed)	67	19%	111	459	5.47
3	Ilish	41	12%	802	765	9.11
4	Catla	40	11%	1,711	273	3.26
5	Silver carp	37	10%	1,102	134	1.59

**Outside Dhaka High Income** n = **26**

SL	Fish Type	No.	Percentage	Avg. Size	Avg. Price	
					BDT	USD
1	Ilish	8	31%	855	797	9.49
2	Catla	5	19%	2,813	282	3.35
3	Rui	4	15%	1,500	210	2.50
4	Mrigel	3	12%	813	206	2.45

Table 11 Top Fish Species purchased in each income category according to price and weight.

### Gender has minimal impact on fish preference/purchase decision

No major differences in fish purchase could be definitively attributed between male and female respondents due to the skewness of the data towards male respondents.

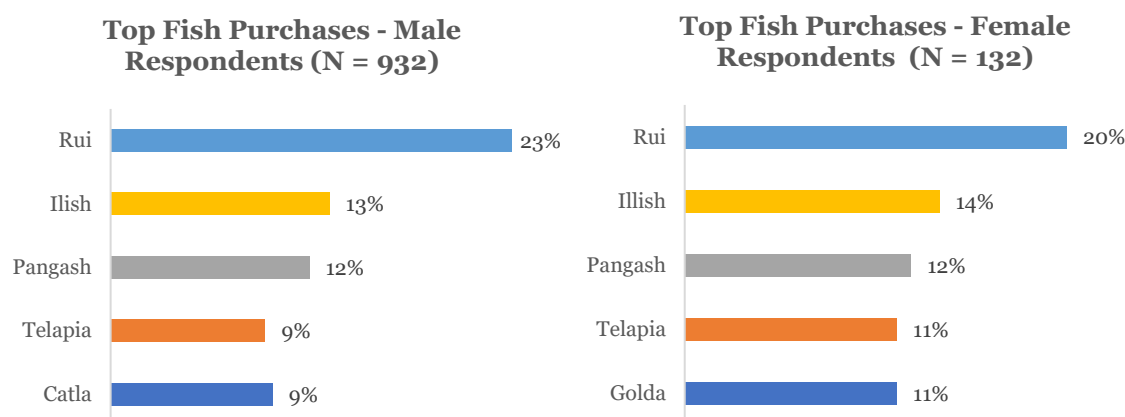


Table 12 Top Fish Purchases among Male and Female Respondents

However, when comparing the top-most purchased fish segregating across genders, it was observed that they are fairly similar. Catla is relatively more popular among men than women, and that Golda was relatively more popular among women than men.

Full breakdown of fish purchases across genders can be found in [Annex 7](#).

### Regional breakdown suggests Rajshahi division most diverse

Further segregation of fish purchase according to region reveals that fish purchases in Dhaka are some of the most homogenous with the Top 5 species of fish reportedly bought by 95% of respondents in their most recent purchase. Respondents across Rangpur division demonstrated a much more diverse purchase habit with the Top 5 fish types being bought by a lower percentage of respondents, but purchase habits in Rangpur, Gaibandha districts and Dinajpur were largely homogeneous.

Some of the more salient differences observed across various regions include:

- *Panchmishali* (mixed) fish was consumed more in all districts of Rangpur division
- Silver carp was widely consumed across Rajshahi division but not very popular in Dhaka or Rangpur division
- Tilapia was relatively popular in Rangpur among districts in Rangpur division
- Koi was relatively popular in Gaibandha among districts in Rangpur division
- Ilish was consumed relatively less in Pabna and Dinajpur than in any other region

**Overall** n = 1064

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	245	23%	1,163	233	2.77
2	Ilish	136	13%	774	976	11.62
3	Pangas	124	12%	1,181	137	1.63
4	Catla	102	10%	1,626	261	3.11
5	Tilapia	98	9%	348	348	4.15

**Rajshahi Division** n = 328

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	96	29%	856	229	2.72
2	Silver carp	64	20%	927	134	1.59
3	Catla	50	15%	1,728	268	3.19
4	Pangas	47	14%	1,114	123	1.47
5	Ilish	39	12%	753	741	8.82

**Dhaka** n = 392

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	114	29%	1,495	236	2.81
2	Ilish	78	20%	761	1,135	13.51
3	Tilapia	54	14%	392	156	1.85
4	Pangas	46	12%	1,371	163	1.94
5	Golda	40	10%	117	698	8.31

**Rangpur Division** n = 344

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	35	10%	898	234	2.78
2	Pangas	31	9%	985	117	1.40
3	Puti	31	9%	-	189	2.25
4	<i>Panchmishali (Mixed)</i>	22	6%	1,000	464	5.52
5	Ilish	19	6%	861	808	9.61

Table 13 Detailed Breakdown of Type, Size and Pricing of Most Purchased Fish across Region

**Rangpur** n = 130

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	13	10%	953	228	2.72
2	Puti	13	10%	-	232	2.77
3	Pangas	10	8%	1,045	119	1.41
4	Tilapia	8	6%	953	228	2.72
5	<i>Panchmishali (Mixed)</i>	7	5%	-	851	10.14
6	Ilish	7	5%	817	866	10.32
7	Bata	7	5%	130	140	1.67

**Dinajpur** n = 101

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	11	11%	805	231	2.75
2	Pangas	9	9%	954	113	1.35
3	Puti	7	7%	-	171	2.04
4	<i>Panchmishali (Mixed)</i>	7	7%	-	317	3.78
5	Ilish	7	7%	914	794	9.46

**Rajshahi** n = 106

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	79	75%	823	232	2.76
2	Silver carp	51	48%	918	136	1.62
3	Catla	42	40%	1,730	272	3.24
4	Koi	26	25%	96	242	2.88
5	Ilish	20	19%	720	756	9.01

**Bogra** n = 113

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	15	13%	895	759	9.04
2	Rui	12	11%	836	208	2.47
3	Pangas	8	7%	1,025	106	1.26
4	Silver carp	5	4%	1,120	149	1.78
5	<i>Panchmishali (Mixed)</i>	4	4%	-	220	2.62
6	Tilapia	4	4%	373	123	1.46

Gaibandha

n = 113

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	12	11%	958	119	1.42
2	Puti	11	10%	-	149	1.77
3	Rui	11	10%	927	244	2.90
4	<i>Panchmishali (Mixed)</i>	8	7%	1,000	253	3.01
5	Koi	6	5%	144	192	2.28

Pabna

n = 109

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Silver carp	8	7%	860	108	1.28
2	Catla	6	6%	2,063	251	2.99
3	Rui	5	5%	1,410	233	2.78
4	Pangas	5	5%	1,613	132	1.57
5	<i>Panchmishali (Mixed)</i>	5	5%	-	200	2.38

Table 14 Detailed Breakdown of Type, Size and Pricing of Most Purchased Fish across Regions (continued)

### Mola, Puti and Gura Chingri among most aspired small fish species

When asked specifically about which small fish<sup>39</sup> species they usually purchase, consumers were found to prefer *Panchmishali* (Mixed), Mola and Gura Chingri most commonly. Small fish species such as Mola and Kechki are well known for their Vitamin A content that helps to improve vision, and both are among the most-aspired species of small fish. Only Tengra among the most-aspired smaller fish species is commercially farmed, but it is not clear whether respondents were referring to the cultured or captured variety. This clear preference for the captured varieties is also consistent with the perception among respondents that small fish are less likely to be farmed, at least in comparison to big fish species.

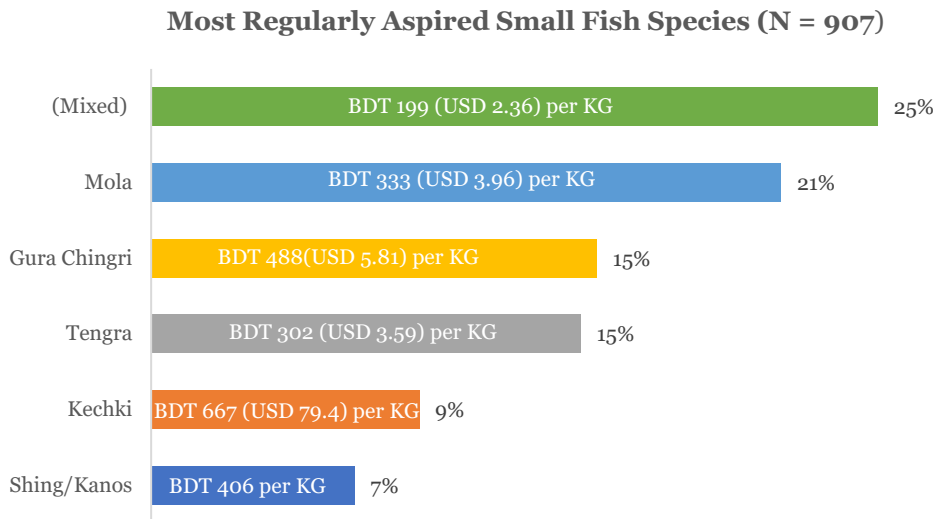


Figure 28 Most Regularly Purchased Small Fish Types

### Analysis Across Age Groups

When cross-analyzing fish types according to age groups, no major deviations were noticed. A more complete breakdown of fish purchases across the different age groups can be found in [Annex 8](#).

In general, consumers in the age group above 60 were found to consume larger volumes of low value fish, particularly Tilapia and Pangas and Silver Carp. By contrast the relatively more expensive Gura Chingri was also consumed relatively more by the 60 and above age group shoppers. Pangas was found to be much more popular among the 15-21 age group.

High value fish such as Ilish and Rui were the most popular among the 41 - 50 year age group.

<sup>39</sup> Small fish, in this study, refers to the relatively smaller species of fish. In technical terms, small fish has been defined to encompass fish species that are smaller than 50g on average per piece of fish (i.e. more than 20 fish in one kilogram of fish).



### Consumption of Fish Types over Different Age Groups (N = 1,051)

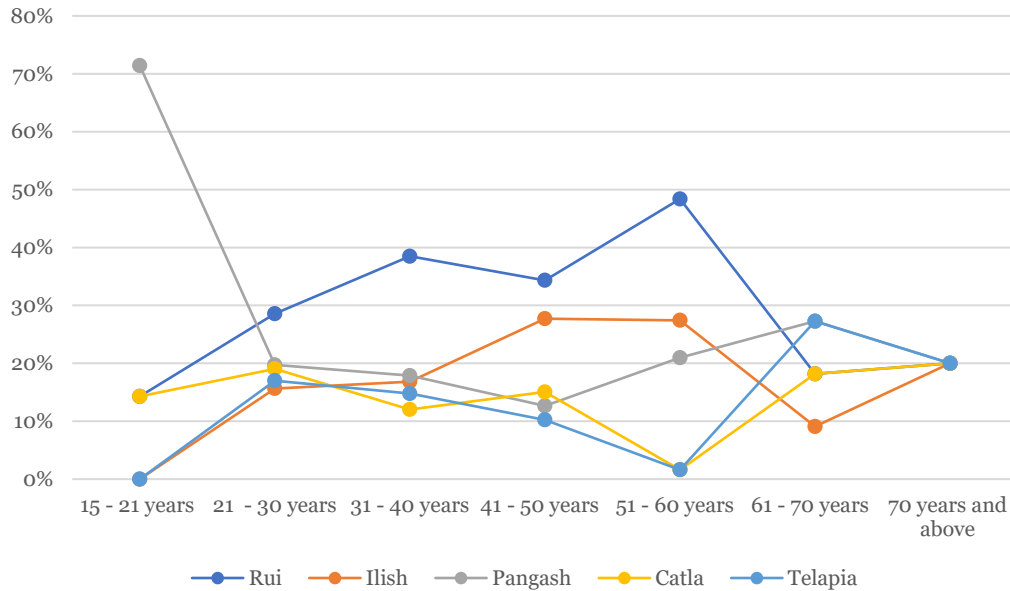


Figure 29 Top-most purchased fish types according to each age group

### b) Fish Purchase Aspirations

During the survey respondents were also prompted to list their major fish aspiration (defined as fish they would purchase most frequently, in a scenario where they had no budgetary restrictions)

#### Overall Aspirations

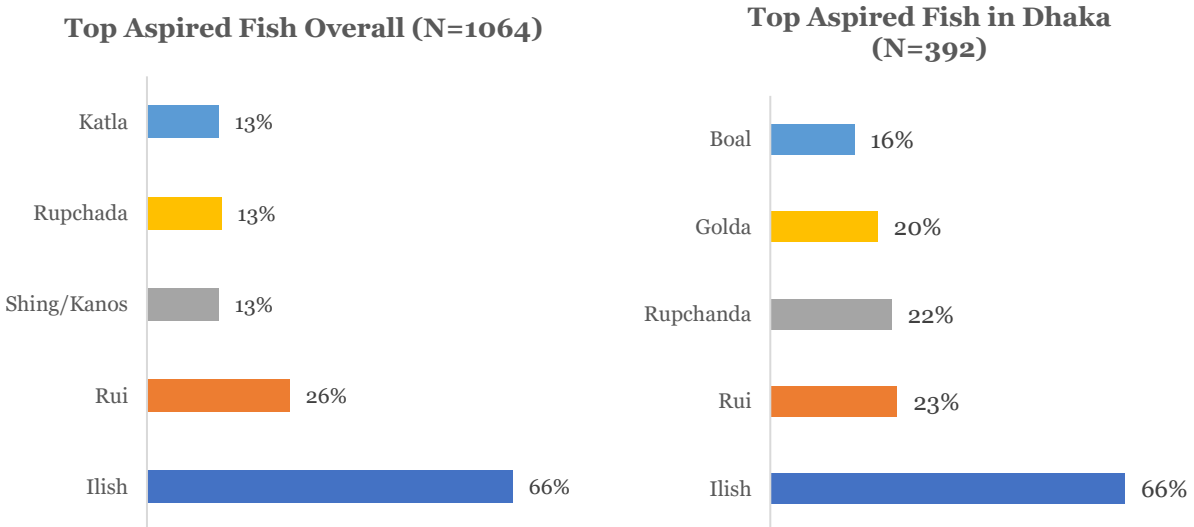


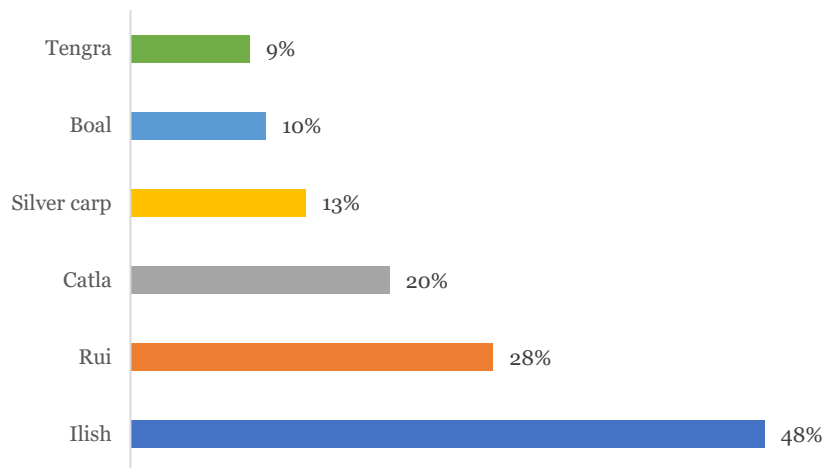
Table 15 Top Fish Aspirations Overall and in Dhaka

Nationwide and across all divisions surveyed, Ilish and Rui are the most aspired fish varieties. Regional variations include a higher preference of the marine species Rupchada and Golda fish in Dhaka. In Rajshahi

division, surprisingly, the lower-priced Catla and Silver Carp species were the third and fourth most commonly desired fish types. In Rangpur, the smaller fishes Gura Chingri and Shing rounded up the top 5 most aspired fish species. This suggests Rangpur can be the division most responsive to small fish species supply.

### Rajshahi Division

**Top Aspired Fish in Rajshahi Division (N=328)**



*Table 16 Top Fish Aspirations in Rajshahi Division*

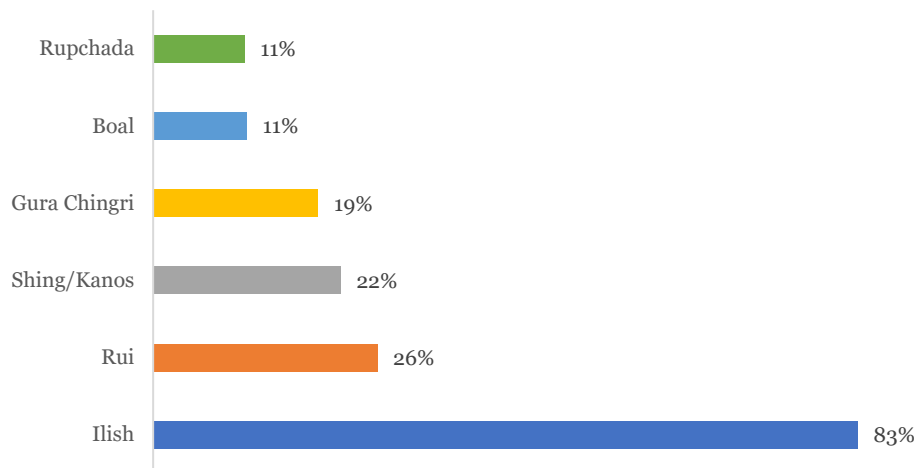
In districts across Rashahi division, carps (Rui, Catla and Silver Carp) made up at least two of the Top 5 most –aspired fish species. The fact that carps are among the most cultivated and affordable fishes has not impacted their status as a fish to aspire for. The relatively higher ranking of Rupchada in Rajshahi district is an anomaly being the only marine fish species other than Ilish aspired for by locals. This could be attributed to a higher penetration of the marine fish in Rajshahi by virtue of being a regional metropolitan which has aided its popularity in the region compared to other northwestern districts. The fact that incomes in Rajshahi district are higher than other districts within division makes it feasible for the fish to be imported from coastal regions despite the higher price. The higher ranking of Rupchada in the list of aspired fishes in Dhaka region may also be attributed to a the comparatively higher income population and the seasoned palates among respondents for marine fish.

Respondents in Bogra aspire more for the traditional and somewhat rarer *deshi* fish species such as Ayre in addition to low-value ones such as Silver Carp. In Pabna, the smaller *deshi* fish Tengra is among the top aspired.

The complete breakdown of fish aspirations segregated at the district level can be found it [Annex 9](#).

## Rangpur Division

**Top Aspired Fish in Rangpur Division (N=344)**



*Table 17 Top Fish Aspirations in Rangpur Division*

The top most-aspired fish species were mostly homogenous across all the districts of Rangpur division, with Ilish, Rui, Shing and Gura Chingri among the five top most-aspired fish species in all districts. In addition, Boal was aspired by 21% of respondents in Gaibandha, while Golda fish was aspired by 14% of respondents in Dinajpur, and 15% of respondents in Rangpur aspired Rupchada fish.

The complete breakdown of fish aspirations segregated at the district level can be found in [Annex 8](#).

### ***Gura Chingri the standout aspiration among low income households***

The aspirations of low-income households are similar across regions, with Ilish and Rui and being the top 4 most-aspired fish types. The desire for Ilish and Rui is consistent across income classes but the standout among low income households outside of Dhaka is the preference for Gura Chingri. The reason for this particular preference of Gura Chingri was found to be the widespread sale of Gura Chingri in small portions known as *bhaga* (a portion size that varies between 150 grams to 300 grams), which allowed for purchase in smaller quantities of this relatively expensive fish.

### ***Middle Income households exhibit the most variety in fish aspirations***

Middle income households exhibit the most homogeneity in their fish aspirations. Ilish, Rui, Shing and Catla form four of the top-most aspired fish across middle income households. Boal was the fifth most aspired fish species in Dhaka and overall.

### ***High income household aspirations largely mirror their actual purchases***

Higher income households exhibit the most variety in their fish aspirations. High income households in Dhaka prefer Golda, Rupchada and Boal, along with the universal preference for Rui and Ilish. Catla was the third most-aspired fish among high income households outside of Dhaka.

**Overall Lower Income** n = **370**

SL	Fish Type	No.	Percentage
1	Ilish	253	68%
2	Rui	106	29%
3	Catla	50	14%
4	Rupchada	49	13%
5	Shing/Kanos	45	12%

**Dhaka Lower Income** n = **80**

SL	Fish Type	No.	Percentage
1	Ilish	67	84%
2	Rupchada	27	34%
3	Golda	16	20%
4	Rui	13	16%
5	Baim	10	13%

**Outside Dhaka Lower Income** n = **290**

SL	Fish Type	No.	Percentage
1	Ilish	186	64%
2	Rui	93	32%
3	Catla	46	16%
4	Shing/Kanos	38	13%
5	Gura Chingri	35	12%

**Overall Middle Income** n = **529**

SL	Fish Type	No.	Percentage
1	Ilish	348	66%
2	Rui	134	25%
3	Shing/Kanos	82	16%
4	Catla	75	14%
5	Boal	72	14%

**Dhaka Middle Income** n = **173**

SL	Fish Type	No.	Percentage
1	Ilish	101	58%
2	Rui	52	30%
3	Shing/Kanos	26	15%
4	Catla	26	15%

**Outside Dhaka Middle Income** n = **356**

SL	Fish Type	No.	Percentage
1	Ilish	247	69%
2	Rui	82	23%
3	Shing/Kanos	56	16%
4	Catla	49	14%
5	Boal	43	12%

**Overall Upper Income** n = **165**

SL	Fish Type	No.	Percentage
1	Ilish	94	57%
2	Golda	36	22%
3	Rupchada	35	21%
4	Rui	33	20%
5	Boal	28	17%

**Dhaka Upper Income** n = **139**

SL	Fish Type	No.	Percentage
1	Ilish	83	60%
2	Golda	36	26%
3	Rupchada	35	25%
4	Rui	26	19%
5	Boal	25	18%

**Outside Dhaka Higher Income** n = **26**

SL	Fish Type	No.	Percentage
1	Ilish	11	42%
2	Rui	7	27%
3	Catla	6	23%

Table 18 Fish Aspirations across Income Categories

\*There were only two respondents outside of Dhaka belonging to the upper income category, hence there is not enough response to provide a representation of this particular demographic.

### c) Processed Fish Items

*Shutki and salted fish the only notable processed fish items*

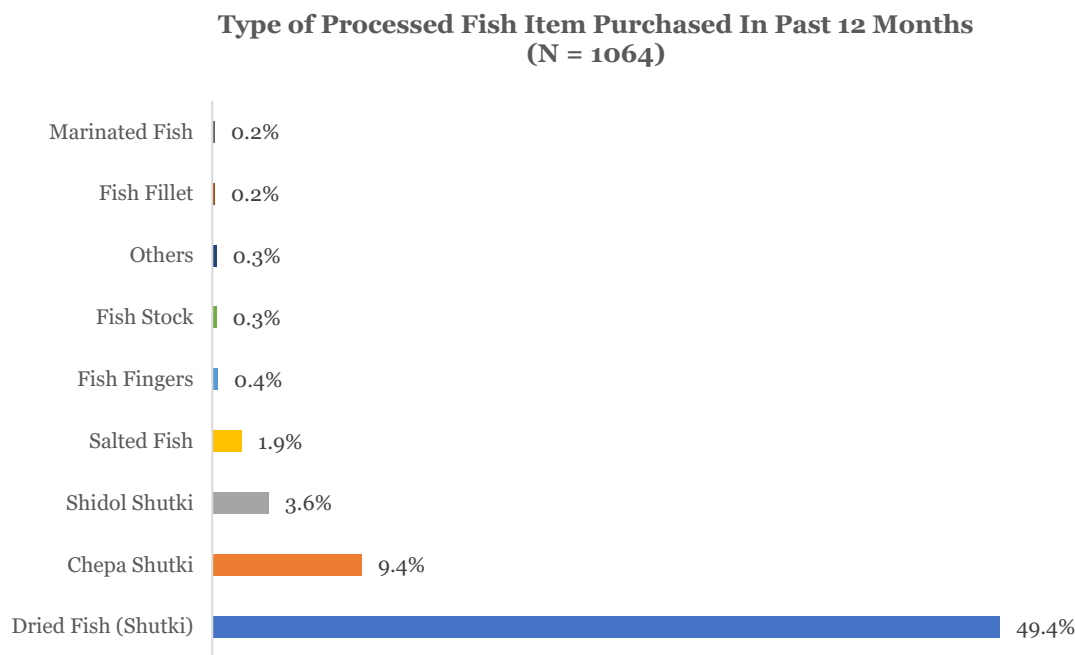


Figure 30 Type of Processed Fish Item Purchased by Respondents

*Shutki, chepa shutki, shidol shutki* and salted fish were found to be the most popular types of processed fish items. Breaking down these numbers further, it was found that *Chepa shutki* - a version of *shutki* made with Puti fish - is almost exclusively consumed in Dhaka. *Shidol shutki* - a mix of *shutki* and taro, a vegetable - is almost exclusively consumed in the Northwestern Regions and Salted Fish is equally popular in Dhaka as well as the Northwestern Regions. It can be seen here that the demand for processed fish items outside of *shutki* remain very low, owing mainly to a lack of awareness of these products and uncertainty of how to imbibe these products into traditional recipes.

Fish fingers, fish fillet and marinated fish had been consumed in Dhaka only and follow-up calls with respondents suggested that supermarkets are key gateways to learning of and trying out processed and ultra-processed fish items (with the exception of *shutki*). Supermarkets have the refrigeration facilities required for preserving fish fillet items and also attracts the necessary customer base for purchasing such products. However, the interest in consuming these modern fish items was considerably lower during the second phase of survey.

Cross-analysis with monthly household income revealed that *shutki* is most popular among the BDT 12,001-22,500 (USD 142.86 – USD 267.86) income groups. *Chepa shutki* and salted fish was popular among the BDT 90,000 to BDT 150,000 (USD 1,071.43 – USD 1785.71) household income categories. *Shidol shutki* was most popular among the BDT 14,201 to BDT 22,500 (USD 142.86 – USD 267.86) income groups. Finally, in keeping with the middle and high-income avatar of the up-market processed fish consumer, the very small number of respondents who bought Marinated Fish, Fish Sauce, Fish Fillet and Fish Fingers belonged exclusively to the BDT 90,000 -150,000 (USD 1,071.43 – USD 1785.71) income group. Frozen fish was purchased in negligible amounts across middle and high-income household categories.

A segregation of processed fish consumers according to region and income class are in [Annex 10](#).

None of the wet markets under this study were found to contain processed fish items other than *shutki*. The list of markets in our study which were found to contain and not contain *shutki* are in [Annex 3](#).

A list of the commonly found fish-based and processed fish items found in supermarkets can be found in [Annex 18](#).

### Case Study – *Shutki*

The *Saidpur Shutki Bondor* was established around 1975 and is one of the largest wholesale *shutki* (dried fish) in the country. The market has roughly 65 *faria*<sup>40</sup> and 14 *aratdars*. The high season for *shutki* spans from October to February, and the off-peak season begins in March and ends in September.

According to Milton, a *Shutki aratdar* from Saidpur, the wholesale market is one of the largest destinations for *shutki* made from Puti fish (also known as *Chepa Shutki*) in Bangladesh and *Chepa shutki* from here is even exported to India from. Daily sales in Milton's *arath* ranges between BDT 100,000 (USD 1,190) to BDT 150,000 (USD 1,786) during off-peak season and in the high season this can go up to BDT 250,000 (USD 2,976).

Incoming *shutki* mainly originate from the coastal regions of Bangladesh. Coastal *shutki* make up about 80% of all *shutki* being exchanged in the market, while around 20% of the *shutki* are from freshwater fish. Of this, around a 25% (i.e. around 5% of total sales) are coming from North Bengal, region almost all from the *beels* in Natore and Pabna regions. *Shutki* from coastal regions come from several areas including Chittagong, Cox's Bazar, Khulna, Patuakhali and Barisal. *Shutki* from Khulna comes in for only 3 months of the year. Freshwater fish *shutki* also originate from Mymensingh, Kishoreganj and the *haor* and *baor* areas of Sylhet division. Milton says *Shingra* and *Madhnagar* in Natore district are some prominent sources of freshwater *shutki* in North Bengal. He says a very small portion of *shutki* is also imported from India, Myanmar, Pakistan, Dubai and Oman – but these were not available during in the visit.

The *aratdars* for *shutki* play a crucial role because they often provide *dadan* to their suppliers. When providing loans to *Faria*, they get 50% of the payment in advance and the remaining 50% is repaid gradually. Nowadays, some NGOs such as BRAC and *Sonali Sonchay* also provide loans to the *faria*. However, despite the scale of the market and its local economic contribution, there is a lack of cold storage facilities for *shutki*, and often fish have to be sent to cold storage in Jamalpur or Mymensingh.

*Shutki* is commercially important for the local low-income communities for a few reasons. *Shutki* is available for sale in lower quantities – as low as BDT 10 (USD 0.12) or BDT 20 (USD 0.24) portions are sold along the pavement around the corner from the *arath*. Secondly, *shutki* does not require refrigeration so it is more friendly for preservation and occasional use when needed. Finally at the producer level, some fishermen in more isolated regions such as the *beel* regions find that it is better to dry their catch into *shutki* and then sell them because it takes a long time for them to transport the fish to major markets and hence their fish is not fresh by the time they get there.

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<sup>40</sup> *Faria*, used in this context, is a term used in the *Saidpur Shutki Bondor* to refer to the retail sellers of *shutki*.



## Chapter 5: The Effects of Seasonality

### Key Takeaways

- Prices of most fish were observed to increase during Phase 2 (September 2019 – October 2019) of the study compared to Phase 1 (June 2019)
- Consumers across all income classes consumed much higher portions of Ilish, the price of which was at its annual low during Phase 2. It is thought that the higher availability and purchase of Ilish had a downward pressure on the prices of other species of fish.

Seasonality in fish purchases is affected both by seasonal changes (certain types of fishes are naturally more available in some seasons than others), as well as socio-cultural events such as Eid and *Pahela Baisakh*.

As a general rule, surveys with consumers and interviews with value chain actors suggest that the production and consumption of cultured fish drops during the dry season, and at the same time the catch of *deshi* fish increases. Conversely, *deshi* fish supply declines during the rainy season in contrast to an increase in the availability of cultured fish.

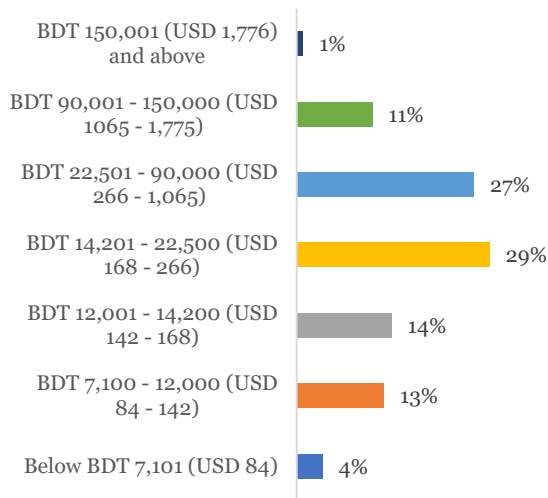
The study was split into two; the first phase in June and another in September with a space of 3 months in order to help gauge the effects of seasonality in market dynamics (price and availability), consumer habits and purchase behavior. The following section lists some of the most prominent changes observed between phases 1 and 2 of this study:

### 5.1 Consumer Demographics

#### *Changes in Household Income Composition Across Phases*

Consumer dynamics were largely similar between phases one and two of the study with a similar location, gender and education level breakdown among respondents. However, there was a notable difference in the income breakdown of respondents between Phase 1 and Phase 2.

**PHASE 1 - Monthly Household Income of Respondents (N = 507)**



**PHASE 2 - Monthly Household Income of Respondents (N = 557)**

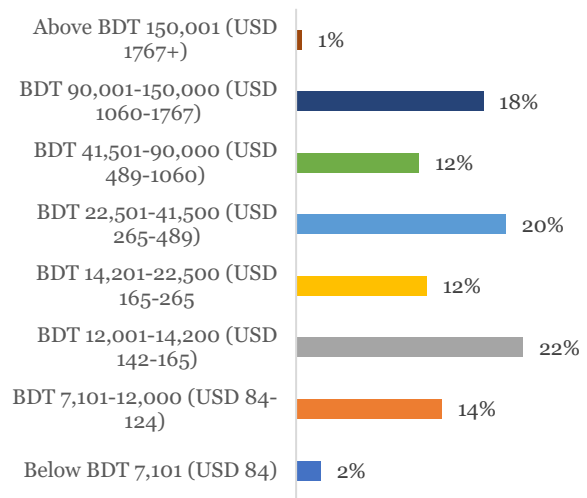


Figure 31 Comparison of Monthly Household Income from Phase 1 and 2

In Phase 2, there was a smaller representation of the lowest household income rung (Below BDT 7,101) at the cost of a larger representation of the BDT 12,001-14,200 income category and the BDT 90,001-150,000 category. However, in the second phase, there was a much smaller representation of the middle-income households (Monthly income between BDT 22,500 and BDT 90,000) and the lower middle-income households (Monthly income between BDT 14,200 and BDT 22,500).

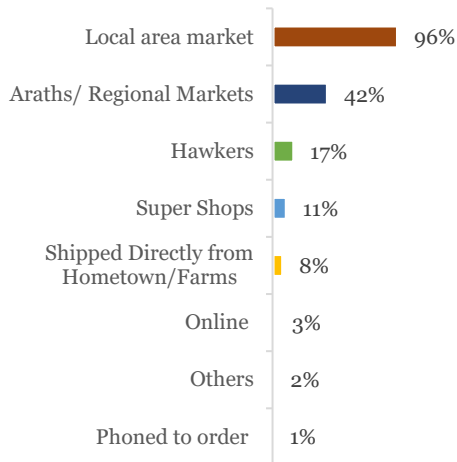
## 5.2 Purchase Behavior

### Lower Proportion of purchases from Supershops and Online

A similar pattern was observed in customers' preferences for different types of marketplaces, with local area markets, regional markets/ *arats* and hawkers being the most preferred choices of marketplace. The preference rate for regional markets/ *arats* and hawkers were considerable higher in Phase 2 of the study, while the preference rates for supershops and online purchases had declined substantially in Phase 2. This can be attributed partly to the higher proportion of lower and middle-income households in the sample during Phase 2 compared to Phase 1.



### PHASE 1 - Type of Marketplaces for Fish Purchase (N = 507)



### PHASE 2 - Type of Marketplaces for Fish Purchase (N = 557)

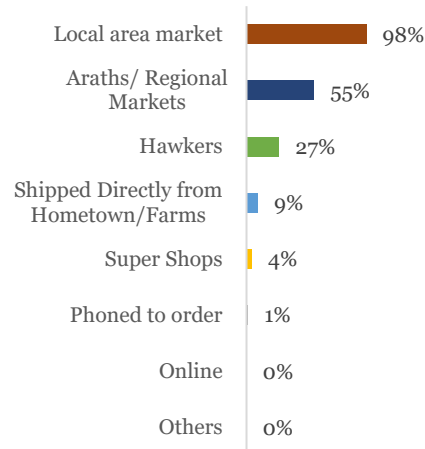
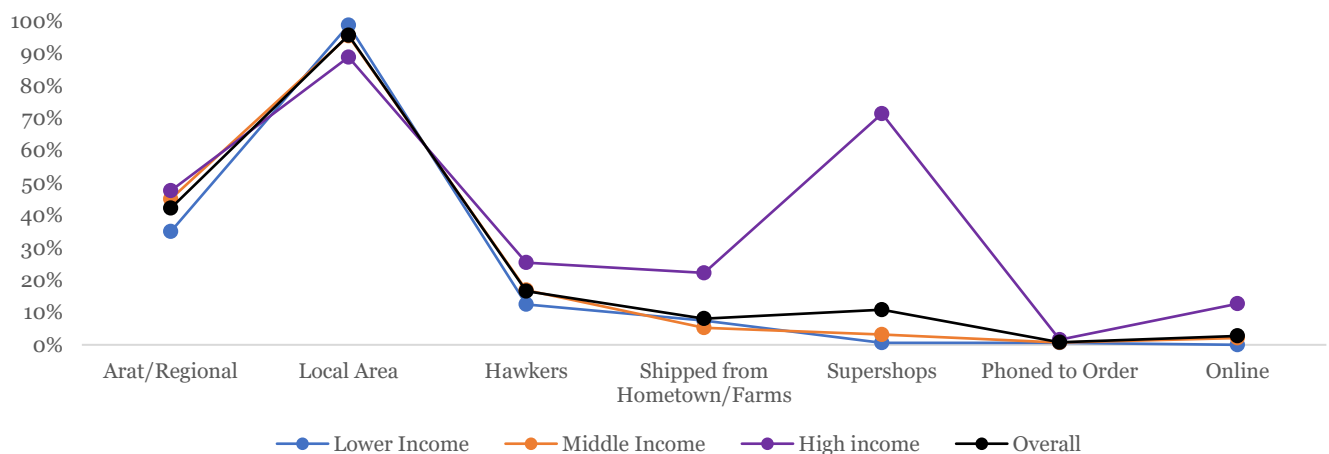


Figure 32 Comparison of Type of Market Place to Purchase Fish From Between Phase 1 and 2

Breaking down the preference of marketplace further according to income categories, a largely similar trend can be observed. Consistent with the overall trend, the preference for supershops and online purchases had declined notably, even for the high-income households. This is an unexpected finding and access to sales data from supershops and online retailers can help to identify if this is a national trend or an anomaly due to the sample composition under this study.

One of the reasons behind this was found to be dissatisfaction among consumers about the quality of fish sourced from online among surveyed respondents<sup>41</sup>. However, given that the e-Commerce market as a whole is expected to almost double between 2019 and 2023<sup>42</sup>, there remains considerable scope to improve supply side infrastructure and customer fulfilment and ensure long-term growth for this sector.

### PHASE 1 - Choice of Marketplace according to Income Category



<sup>41</sup> Source: LightCastle phone interviews with consumers

<sup>42</sup> Statista, quoted in The Daily Star (December 17, 2019), *E-commerce sales to reach \$3b in 4 years*, Accessed at: <https://www.thedailystar.net/business/news/e-commerce-sales-reach-3b-4-years-1841428>

### PHASE 2 - Choice of Marketplace according to Income Category



Figure 33 Comparison of Choice of Marketplace by Income Class Between Phase 1 and 2

### Similar Trend in Breakdown of Food Spending Across Income Categories for Both Phases

When it comes to their share of income spent on different categories of food, similar trends were observed for staple foods across income classes. However, an interesting phenomenon was observed for vegetable and fruit purchases since it was found that the proportion of spending on vegetables and fruits declined as in the high-income categories, which is in contrast to the Phase 1 findings. The availability of seasonal vegetables with the imminent winter season may be a reason for this decline.

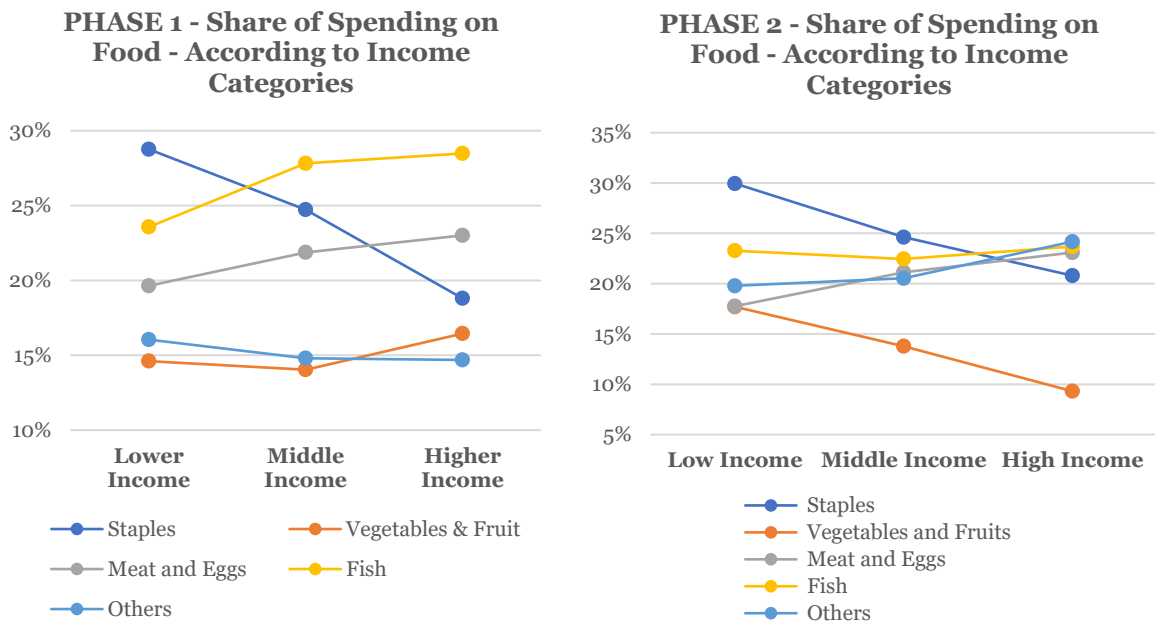


Figure 34 Comparison of Share of Spending on Food by Income Class between Phase 1 and 2

### Festive seasons can affect demand both ways

While consumption of fish usually increases with the advent of socio-cultural occasions or festivals such as Pahela Baisakh, it is not always that consumption goes up – for example, consumer footfall in markets and spending of fish actually drops slightly during Ramadan as revealed by a rapid market survey involving a small number of phone interviews with fish consumers during Ramadan. It was also found that consumers typically purchase more expensive varieties of fish during Ramadan such as Pabda, Gura Chingri, Mixed (*Panchmishali*), making up for the lower purchase volumes due to lower daily food consumption overall. Follow-up phone surveys with respondents suggested that their change in preference towards these new fish types is due to a change in taste during Ramadan that accompanies changed dietary habits.

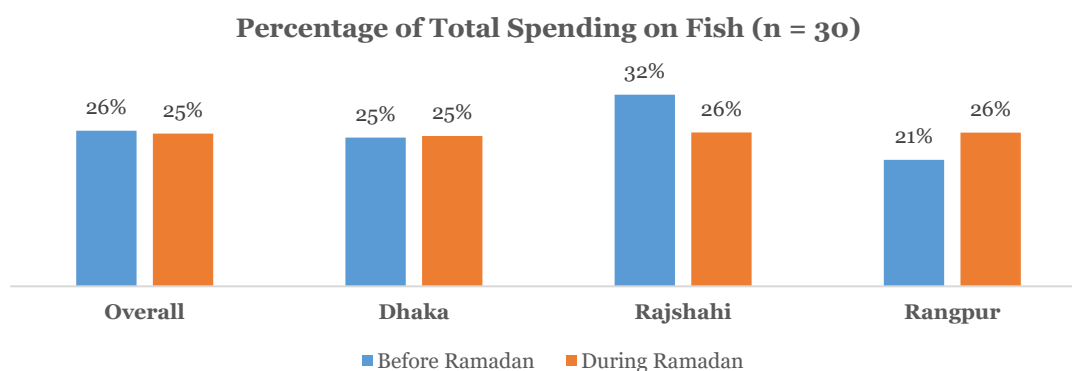


Figure 35 Effects of Seasonality (during Ramadan) on Total Spending on Fish

## 5.3 Market Pricing

It can be observed that the prices of most major fish types had declined in during the second phase of the study the only exceptions being *Panchmishali* (Mixed), Gura Chingri and Kechki. Mrigel had only a minor change in price during the period. The price of *Panchmishali* was found to be almost double in Phase 2 of the study.

Major Fish Species	PHASE 1	PHASE 2	Change in Size (in Grams)	PHASE 1		PHASE 2		Percentage Change in Price
	Average Size in Grams	Average Size in Grams		Average Price per KG		Average Price per KG		
				In BDT	In USD	In BDT	In USD	
1. Rui	1,193	1,122	-71	238	2.81	226	2.69	-5%
2. Catla	1,631	1,619	-12	267	3.15	254	3.02	-5%
3. Pangas	1,173	1,187	14	143	1.69	132	1.57	-8%
4. Koi	94	124	30	248	2.93	247	2.94	0%
5. Silver Carp	918	1021	103	143	1.69	140	1.67	-2%
6. Ilish	835	740	-95	1,248	14.74	836	9.95	-33%
7. Tilapia	397	309	-88	180	2.13	145	1.73	-19%
8. Shing/Kanos	372	83	-289	498	5.88	399	4.75	-20%
9. Gura Chingri	-	-		459	5.42	583	6.94	27%
10. Golda	121	104	-17	713	8.42	668	7.95	-6%
11. Pabda	192	167	-25	458	5.41	433	5.15	-5%

Major Fish Species	PHASE 1	PHASE 2	Change in Size (in Grams)	PHASE 1		PHASE 2		Percentage Change in Price
	Average Size in Grams	Average Size in Grams		Average Price per KG		Average Price per KG		
				In BDT	In USD	In BDT	In USD	
12. Panchmishali (Mixed)	-	-		401	4.74	363	4.32	-9%
13. Bata	94	140	46	209	2.47	153	1.82	-27%
14. Mrigel	794	931	137	164	1.94	167	1.99	2%
15. Tengra	45	30	-15	425	5.02	407	4.85	-4%
16. Puti	-	-	-	315	3.72	179	2.13	-43%
17. Shol	1,012	654	-358	571	6.74	311	3.70	-46%
18. Karfu	1,017	815	-202	178	2.1	174	2.07	-2%
19. Kechki	-	-		558	6.59	589	7.01	6%
20. Taki	115	218	103	454	5.36	212	2.52	-53%
21. Kalibaas	1,398	826	-572	246	2.91	197	2.35	-20%

\* Phase 1 refers to June 2019 and Phase 2 refers to September-October period

Table 19 Pricing of Major Fish Species across Survey Phases

The most prominent drop in prices were for the live fish species of Taki and Shol which had decreased in prices by 53% and 46% respectively. Price of Koi, however, remained stagnant over the period. Other prominent price drops among the different fish types were for Puti (43%), Ilish (33%), Bata (31%), Tilapia (21%), Shing (20%) and Kalibaas (20%). Other major carp species including Rui, Catla, Silver Carp and Karfu had relatively minor price drops at 5%, 5%, 2% and 2% respectively.

Since the second phase of surveys was conducted during a peak of the Ilish catch season, supplies of Ilish were higher and prices were considerably lower, and since it is the most aspired fish overall (see previous [Chapter](#)) and one of the most purchased fish across all income classes in Phase 2, it is estimated that the glut of Ilish had a downside pressure on the prices of other fish types.

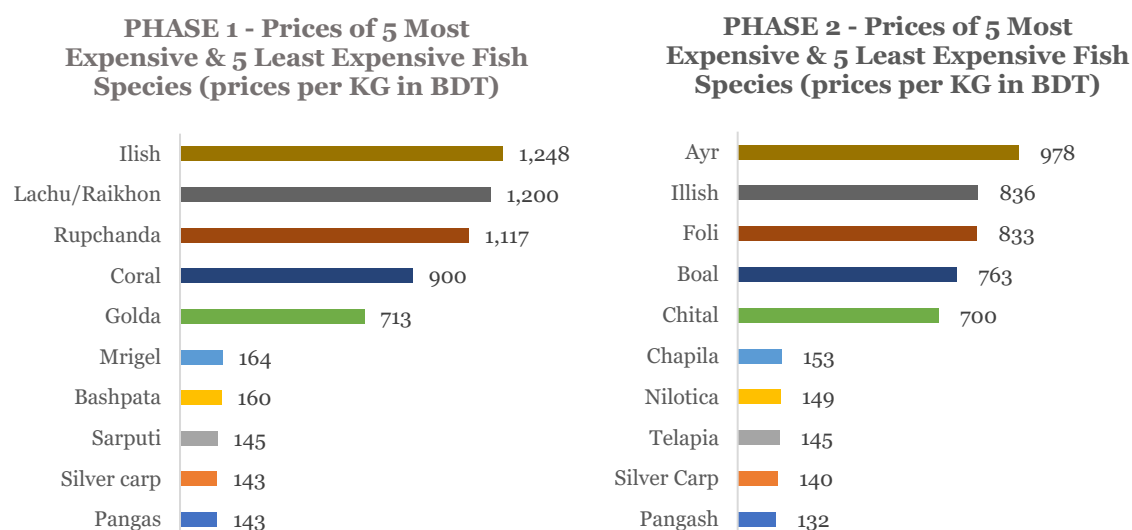


Figure 36 Comparison of 5 Most and Least Expensive Fish Between Phase 1 and 2

In Phase 2, Ayr was found to be the most expensive fish and Pangas the least expensive. The average price of the top 5 most expensive fish fell from BDT 1,035 in Phase to BDT 822, which is a drop of 20.6%, and is reflective of the overall reduction in fish prices between the two phases.

**Slight Decline in Willingness to Pay Premium in Phase 2 compared to Phase 1**

Compared to Phase 1, a much lower percentage of consumers were willing to pay over twice (more than 100% premium) for the purchase of live fish. Otherwise, there are similar willingness to pay across different levels of premiums among consumers. However, there is an increase in the percentage of consumers who have no willingness to pay a premium for live fish. This is thought to be due to the lower prices of fish overall in the market. In both phases, the range of 21-40% premium was the most popular choice.

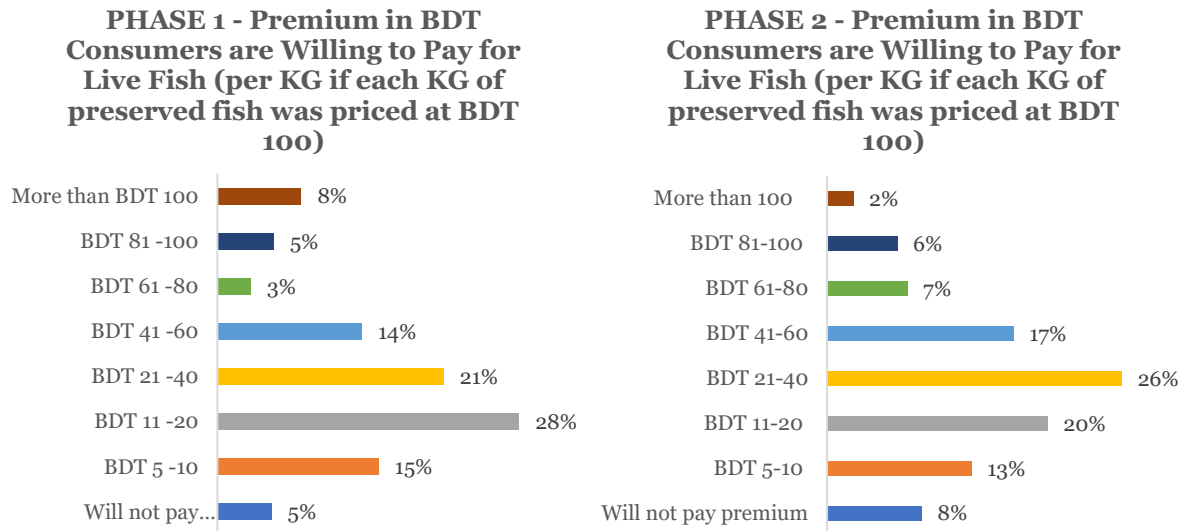


Figure 37 Comparison of Willingness to Pay Premium for Live Fish Between Phase 1 and 2

The prices of live fish at purchase was not tracked during Phase 1 surveys, hence comparison is not possible with Phase 2 datasets.

## 5.4 Fish Purchases and Aspirations

### *Mola and Panchmishali (Mixed) Remain the Most Aspired Small Fish*

In both Phases Mola and Panchmishali (Mixed) were the most aspired small fish species, and they interchanged positions between the two phases. However, in the second Phase, Tengra was the third-most-aspired small fish, overtaking Gura Chingri and Kechki. The rising preference for Tengra may be attributed partly to the widespread aquaculture of Puti fish, which may have resulted in reducing its desirability.

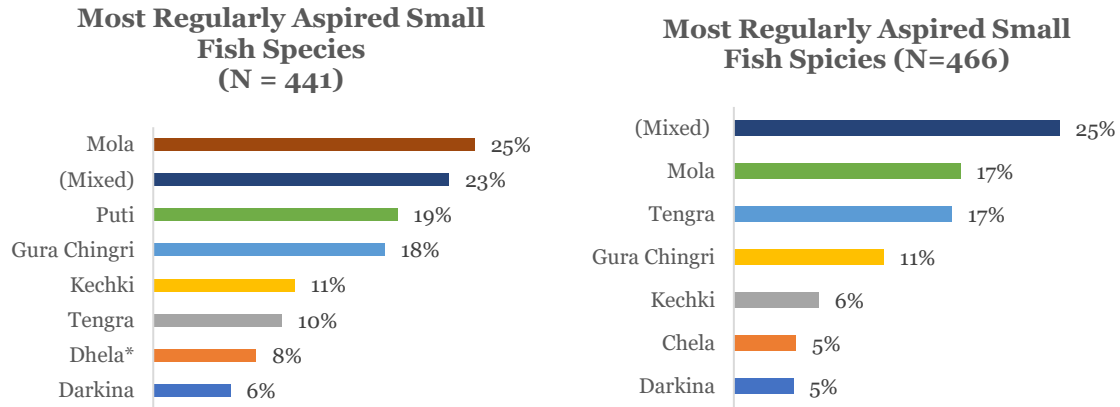


Figure 38 Comparison of Aspired Small Fish Between Phase 1 and 2

**Phase 1**

**Overall Low Income**

n =

**160**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	32	20%	883	228	2.69
2	Silver Carp	22	14%	726	144	1.70
3	Tilapia	21	13%	239	187	2.21
4	Pangas	19	12%	992	142	1.68
5	Catla	14	9%	1,042	173	2.05
6	Bata	14	9%	117	168	1.99

**Phase 2**

**Overall Low Income**

n =

**210**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	41	20%	1,052	139	1.65
2	Tilapia	29	14%	251	140	1.65
3	Rui	22	10%	900	226	2.67
4	Silver Carp	22	10%	887	127	1.50
5	Puti	20	10%	100	154	1.81

**Phase 1**

**Overall Middle Income**

n =

**284**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	84	30%	1,121	233	2.75
2	Catla	39	14%	1,679	278	3.28
3	Pangas	28	10%	1,261	143	1.69
4	Koi	26	9%	92	248	2.93
5	Silver Carp	26	9%	1,080	143	1.69

**Phase 2**

**Overall Middle Income**

n =

**245**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	53	22%	945	228	2.69
2	Ilish	50	20%	764	909	10.74
3	Pangas	24	10%	1,329	122	1.44
4	<i>Panchmishali (Mixed)</i>	23	9%	455	456	5.39
5	Puti	20	8%	28	211	2.49

**Phase 1**
**Overall High Income**

n =

**63**
**Phase 2**
**Overall High Income**

n =

**102**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	24	38%	1,854	268	3.17
2	Ilish	23	37%	970	1,214	14.33
3	Golda	19	30%	99	690	8.15
4	Shing	14	22%	437	574	6.78
5	Koi	11	17%	107	274	3.23

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	30	29%	1,617	224	2.64
2	Ilish	29	28%	772	829	9.79
3	Catla	17	17%	1,981	275	3.25
4	Bagda	11	11%	93	451	5.33
5	Pangas	9	9%	1,411	130	1.54
6	Boal	9	9%	2,322	830	9.80

*Table 20 Comparison of Fish Purchased Overall by Income Classes Between Phase 1 and 2*

In Phase 2, lower income households in general purchased more of Pangas and Tilapia in greater amounts, and it is estimated that a drop in price per KG along with larger average sizes drove this habit. Middle income households purchased greater volumes of Ilish during Phase 2, which is characteristic of the season but also purchased more of Puti and *Pacnchmishali* (Mixed) varieties displacing Catla, Koi and Silver Carp. High Income households were observed to purchase more of the Pangas and Boal species during Phase 2 of the study displacing the live fish varieties Shing and Koi.



**Phase 1**
**Dhaka Low Income**

n =

**25**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	8	32%	1,525	240	2.83
2	Tilapia	8	32%	210	156	1.84
3	Pangas	4	16%	1,063	174	2.06
4	Catla	4	16%	1,420	269	3.18
5	Puti	3	12%	-	300	3.54

**Phase 2**
**Dhaka Low Income**

n =

**55**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Tilapia	13	24%	248	139	1.64
2	Rui	9	16%	141	182	2.15
3	Ilish	6	11%	469	420	4.96
4	Pangas	6	11%	867	237	2.80
5	Poa	5	9%	141	11	0.13

**Phase 1**
**Dhaka Middle Income**

n =

**109**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	37	34%	1,429	228	2.69
2	Gura Chingri	17	16%	-	509	6.01
3	Catla	16	15%	1,423	255	3.01
4	Pangas	14	13%	1,429	171	2.02
5	Golda	13	12%	155	746	8.81
6	Koi	13	12%	90	239	2.83

**Phase 2**
**Dhaka Middle Income**

n =

**64**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	18	28%	649	1,219	14.40
2	Rui	10	16%	1,003	207	2.44
3	Pangas	10	16%	1,643	141	1.67
4	Koi	5	8%	103	324	3.83
5	Puti	5	8%	28	183	2.16

**Phase 1**
**Dhaka High Income**

n =

**61**
**Phase 2**
**Dhaka High Income**

n =

**78**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	24	39%	1,854	268	3.17
2	Ilish	23	38%	970	1,214	14.33
3	Golda	19	31%	99	690	8.15
4	Shing	14	23%	437	574	6.78
5	Koi	11	18%	107	274	3.23

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	26	33%	1,626	226	2.67
2	Ilish	21	27%	744	842	9.94
3	Catla	13	17%	1,958	275	3.24
4	Bagda	11	14%	93	451	5.33
5	Pangas	9	12%	1,411	130	1.54

*Table 21 Comparison of Fish Purchased in Dhaka by Income Classes Between Phase 1 and 2*

Among low-income households in Dhaka, Poa is a new fish among the top 5. Interviews with customers suggest that they prefer Poa due to its distinctive taste compared to other fish. Gura Chingri, on the other hand, was no longer as popular among Dhaka middle income households and this is thought to be a due to seasonal effect on supply. For high income households in Dhaka, one low-income fish Koi was displaced by another, Pangas in Phase 2.

**Phase 1**
**Outside Dhaka Low Income**

n = **135**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	24	18%	669	223	2.64
2	Silver Carp	21	16%	743	144	1.70
3	Pangas	15	11%	973	134	1.58
4	Bata	14	10%	117	168	1.99
5	Tilapia	13	10%	256	207	2.44

**Phase 2**
**Outside Dhaka Low Income**

n = **155**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	35	23%	1,088	123	1.45
2	Puti	19	12%	-	155	1.83
3	Silver carp	19	12%	829	127	1.50
4	Tilapia	16	10%	254	141	1.66
5	Rui	13	8%	867	215	2.54

**Phase 1**
**Outside Dhaka Middle Income**

n = **175**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	47	27%	885	237	2.80
2	Silver Carp	23	13%	1,121	133	1.58
3	Catla	23	13%	1,857	294	3.47
4	<i>Panchmishali</i> (Mixed)	17	10%	-	409	4.83
5	Pangas	14	8%	1,093	115	1.36

**Phase 2**
**Outside Dhaka Middle Income**

n = **181**

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	43	24%	931	233	2.75
2	Catla	17	18%	1,501	246	2.91
3	Puti	15	10%	-	221	2.61
4	Ilish	32	9%	833	735	8.68
5	<i>Panchmishali</i> (Mixed)	19	8%	1,000	505	5.96

**Phase 1**

**Outside Dhaka High Income**

n = 2

**Phase 2**

**Outside Dhaka High Income**

n = 24

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Catla	1	50%	5,000	300	3.54
2	Black Carp	1	50%	4,000	350	4.13

SL	Fish Type	Number of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	8	33%	855	797	9.41
2	Catla	4	17%	2,083	277	3.27
3	Rui	4	17%	1,500	210	2.48
4	Boal	2	8%	1,150	525	6.20

*Table 22 Comparison of Fish Purchased Outside Dhaka by Income Class Between Phase 1 and 2*

Silver Carp consumption was popular outside Dhaka for low income consumers across both phases. For low-income consumers outside of Dhaka, Puti was displaced by Bata in Phase 2. Middle income consumers, too, outside Dhaka were seen to consume noticeably more Puti fish during Phase 2 suggesting either peak season for captured Puti or cultured Puti increasing its reach among the northwestern districts. A relatively higher representation of high-income respondents outside Dhaka in Phase 2 reveal high consumption of relatively more expensive fish types Boal and Ilish, along with the mid-range fish of Catla and Rui.

**Shing, Golda and Boal more popular in 2nd Phase**

In terms of the most aspired fish overall across both phases of the study, Ilish and Rui remain the top-most aspired fish. However, among the Top 5, Shing, Boal and Golda had displaced Rupchada, Katla and Pabda in Phase 2.

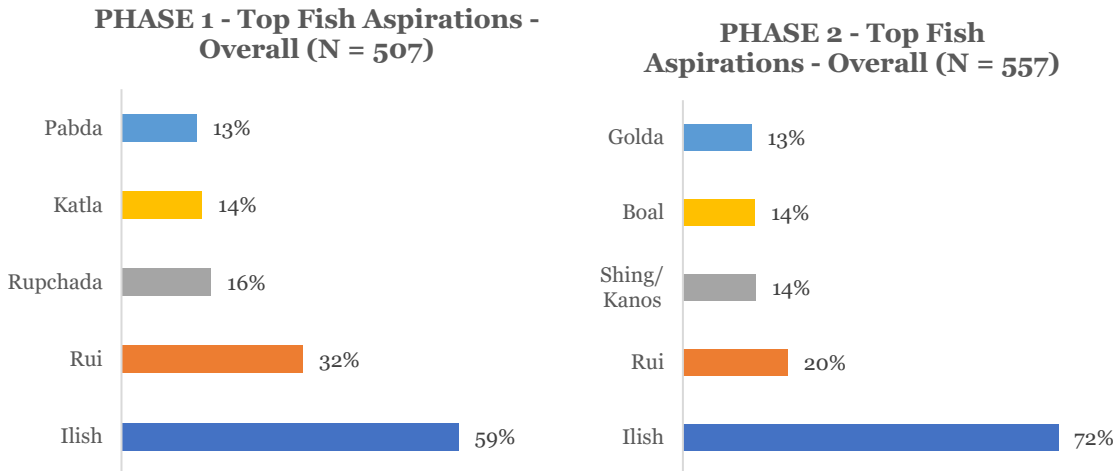


Figure 39 Comparison of Top Aspired Fish Overall Between Phase 1 and 2

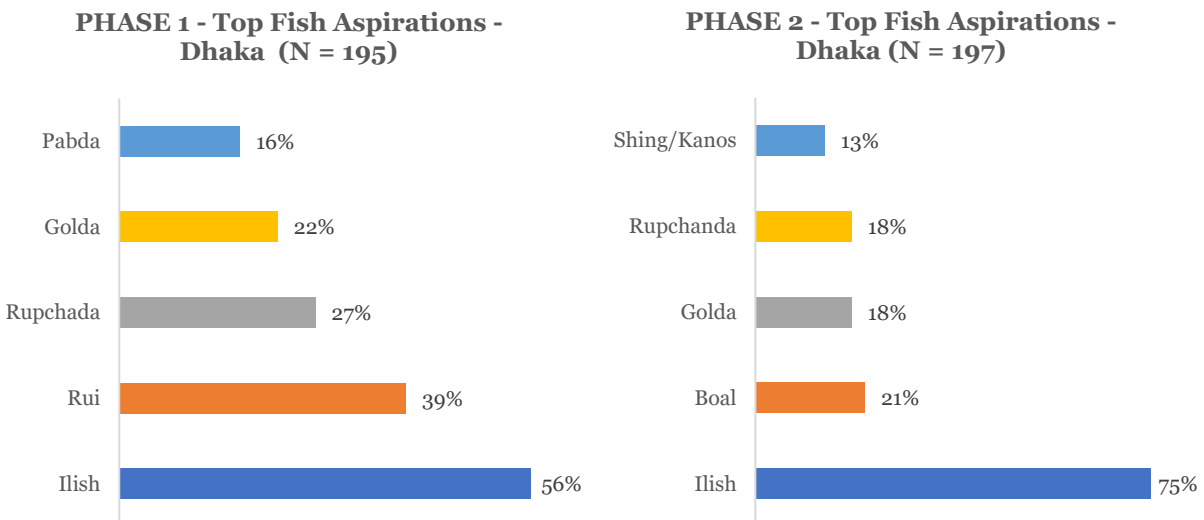


Figure 40 Comparison of Top Aspired Fish in Dhaka Between Phase 1 and 2

In Dhaka, Ilish strengthens its preference among top fish types with preference among 75% of consumers. However, Rui was not found to be among the top-most aspired fish and Boal and Shing fish became aspirational to consumers surveyed in the second Phase.

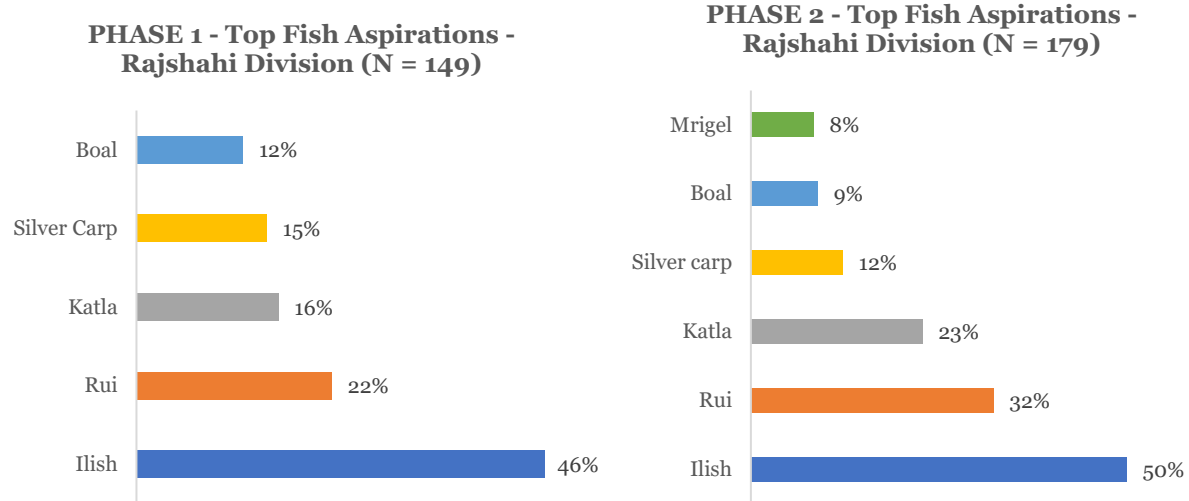


Figure 41 Comparison of Top Aspired Fish in Rajshahi Division Between Phase 1 and 2

For consumers in Rajshahi division, the selection of the top-most aspired fish remained largely the same, with the aspirations of the selected fish except for Silver Carp strengthening among the consumers base.

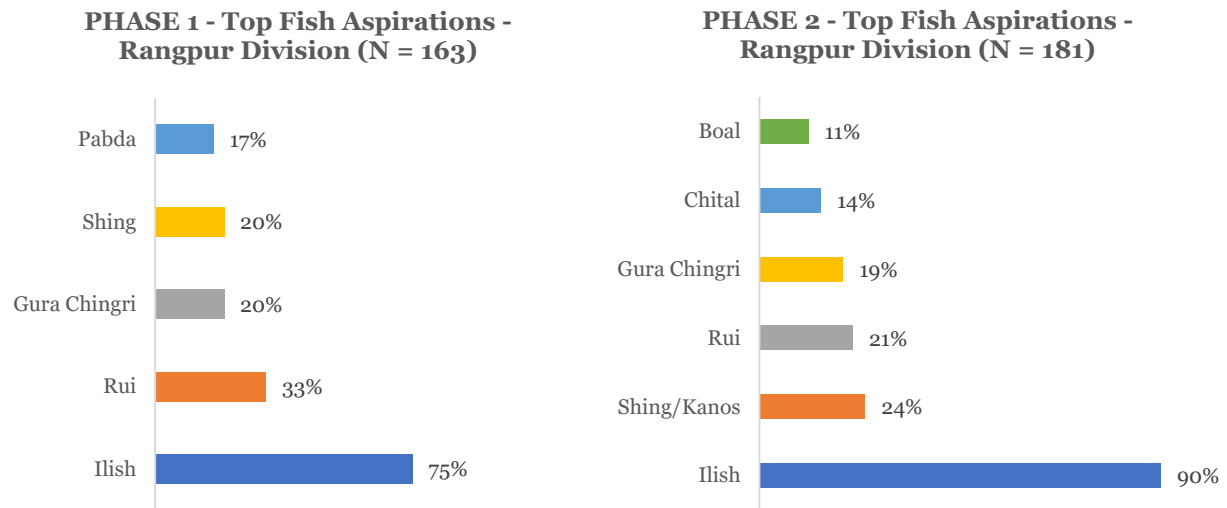


Figure 42 Comparison of Top Aspired Fish in Rangpur Division Between Phase 1 and 2

In Rangpur, Ilish remained the most-aspired fish accounting for 90% of consumers' top aspiration. Rui declined considerably, dropping from 33% of consumers' aspiration to only 21% of consumer' aspiration in Phase 2. Chital became the fifth most aspired fish over Pabda in Phase 2.

## Purchase by Region

### Phase 1

Overall n = 507

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	140	28%	1,193	238	2.81
2	Pangas	50	10%	1,173	143	1.68
3	Silver Carp	48	9%	918	143	1.69
4	Catla	57	11%	1,631	267	3.15
5	Koi	48	9%	94	248	2.92

### Phase 2

Overall n = 557

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	105	19%	1,122	226	2.69
2	Ilish	94	17%	740	836	9.96
3	Pangas	74	13%	1,187	132	1.58
4	Tilapia	55	10%	309	309	3.67
5	Catla	45	8%	1,619	254	3.03

### Phase 1

Dhaka n = 195

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	69	35%	1,590	243	2.88
2	Ilish	34	17%	869	1,348	15.92
3	Golda	32	16%	121	713	8.42
4	Koi	26	13%	96	261	3.09
5	Shing	26	13%	510	533	6.30

### Phase 2

Dhaka n = 197

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	45	23%	670	941	11.20
2	Rui	45	23%	1,351	225	2.68
3	Tilapia	30	15%	317	147	1.74
4	Pangas	25	13%	1,373	160	1.91
5	Catla	16	8%	1,834	256	3.05

Table 23 Comparison of Fish Purchase in Overall and Dhaka Division Between Phase 1 and 2

When comparing across regions, it was observed that overall Ilish fish was bought more in Phase 2. Across all regions, there was an increase of purchase of 3% for Pangas Fish, while purchase of Catla fish fell by 3%. In Dhaka, it was observed that there was an increase of 6% for the purchase of Ilish fish. The purchase of Rui fish fell by 12% when compared to Phase 1.

**Phase 1**
**Rajshahi Division**

 n = **149**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	25	17%	715	207	2.44
2	Silver Carp	23	15%	836	129	1.52
3	Pangas	16	11%	1,094	128	1.51
4	Catla	15	10%	1,543	229	2.71
5	Mrigel	11	7%	639	145	1.71

**Phase 2**
**Rajshahi Division**

 n = **183**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	30	16%	770	700	8.33
2	Rui	25	14%	1,004	218	2.60
3	Silver carp	20	11%	895	124	1.47
4	Pangas	18	10%	1,333	120	1.43
5	Catla	16	9%	1,887	258	3.07

**Phase 1**
**Rangpur Division**

 n = **163**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	46	28%	865	246	2.91
2	Silver Carp	21	13%	1,056	149	1.76
3	Catla	19	12%	1,783	307	3.62
4	<i>Panchmishali (Mixed)</i>	19	12%	-	411	4.85
5	Bata	15	9%	93	208	2.46

**Phase 2**
**Rangpur Division**

 n = **181**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	31	17%	985	117	1.40
2	Puti	31	17%	-	189	2.25
3	Rui	35	19%	898	234	2.78
4	<i>Panchmishali (Mixed)</i>	22	12%	1,000	1,000	11.90
5	Ilish	19	10%	861	808	9.61

*Table 24 Comparison of Fish Purchase in Rajshahi and Rangpur Division Between Phase 1 and 2*

A decrease of 3% can be seen for the purchase of Rui fish in Rajshahi Division when compared to Phase 1. Ilish fish is the top most bought fish in this region, in Phase 1 it was not in the top 5 most bought. In Rangpur division there a decrease of 9% for Rui fish has been observed.



**Phase 1**  
**Rajshahi District** n = **48**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	17	35%	772	217	2.56
2	Catla	7	15%	1,186	221	2.61
3	Silver Carp	5	10%	474	163	1.92
4	Mola	3	6%	-	475	5.61

**Phase 2**  
**Rajshahi District** n = **63**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	11	17%	731	662	7.88
2	Catla	8	13%	2,029	272	3.23
3	Rui	8	13%	945	224	2.66
4	Silver carp	7	11%	755	124	1.47
5	Mrigel	7	11%	608	154	1.84

**Phase 1**  
**Pabna District** n = **52**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Silver Carp	13	25%	773	117	1.39
2	Mrigel	5	10%	634	122	1.44
3	Catla	5	10%	1,950	239	2.82
4	Pangas	5	10%	1,020	158	1.86
5	Bata	4	8%	90	135	1.60

**Phase 2**  
**Pabna District** n = **60**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Silver carp	8	13%	860	108	1.28
2	Catla	6	10%	2,063	251	2.99
3	Rui	5	8%	1,410	233	2.78
4	Pangas	5	8%	1,613	132	1.57
5	Panchmishali (Mixed)	5	8%	-	200	2.38

Table 25 Comparison of Fish Purchase in Rajshahi District and Pabna District Between Phase 1 and 2

A decrease of 22% can be observed in the purchase of Rui fish in Rajshahi District when compared to Phase 1. In Pabna Silver Carp was the top-most bought fish, however in Phase 2 there was a decrease of 12%. In both phases Silver Carp was the least expensive fish.

**Phase 1**
**Bogra District**

n =

**49**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	9	18%	1,100	105	1.24
2	Tilapia	6	12%	232	171	2.02
3	Rui	5	10%	667	180	2.13
4	Silver Carp	5	10%	1,360	126	1.49
5	Mrigel	4	8%	465	147	1.73
6	Koi	4	8%	100	177	2.09

**Phase 2**
**Bogra District**

n =

**49**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Ilish	15	31%	895	759	9.04
2	Rui	12	24%	836	208	2.47
3	Pangas	8	16%	1,025	106	1.26
4	Silver carp	5	10%	1,120	149	1.78
5	<i>Panchmishali (Mixed)</i>	4	8%	-	220	2.62
6	Tilapia	4	8%	373	123	1.46

**Phase 1**
**Rangpur District**

n =

**67**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	20	30%	855	271	3.20
2	Silver Carp	11	16%	1,174	153	1.81
3	Bata	9	13%	117	180	2.13
4	<i>Panchmishali (Mixed)</i>	7	10%	-	455	5.38
5	Koi	7	10%	77	241	2.85
6	Catla	7	10%	2,224	305	3.60

**Phase 2**
**Rangpur District**

n =

**67**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	13	19%	953	228	2.72
2	Puti	13	19%	-	232	2.77
3	Pangas	10	15%	1,045	119	1.41
4	Tilapia	8	12%	953	228	2.72
5	<i>Panchmishali (Mixed)</i>	7	10%	-	851	10.14
6	Ilish	7	10%	817	866	10.32
7	Bata	7	10%	130	140	1.67

*Table 26 Comparison of Fish Purchase in Bogra and Rangpur District Between Phase 1 and 2*

In Bogra district an increase of 12% was observed in the purchase of Rui fish. There was also a decrease of 4% for the purchase of Tilapia fish in this region. A decrease of 11% can be observed in the purchase of Rui fish in Rangpur district, however it is still the most bought fish in this region.

**Phase 1**
**Dinajpur District**

n =

**53**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	11	21%	707	214	2.53
2	Tilapia	6	11%	358	170	2.01
3	Mixed	6	11%	-	373	4.41
4	Koi	6	11%	95	277	3.27

**Phase 2**
**Dinajpur District**

n =

**58**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	9	16%	954	113	1.35
2	Puti	7	12%	-	171	2.04
3	Rui	11	19%	805	231	2.75
4	<i>Panchmishali (Mixed)</i>	7	12%	-	317	3.78

**Phase 1**
**Gaibandha**

n =

**43**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Rui	15	35%	996	237	2.80
2	Shing/Kanos	7	16%	74	429	5.06
3	Catla	7	16%	1,329	333	3.93
4	Mixed	6	14%	-	397	4.68
5	Silver carp	5	12%	700	137	1.62
6	Pabda	5	12%	375	444	5.24

**Phase 2**
**Gaibandha**

n =

**60**

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg. Price per KG	
					in BDT	in USD
1	Pangas	12	20%	958	119	1.42
2	Koi	6	10%	144	192	2.28
3	Puti	11	18%	-	149	1.77
4	Rui	11	18%	927	244	2.90
5	<i>Panchmishali (Mixed)</i>	8	13%	1,000	253	3.01

Table 27 Comparison of Fish Purchase in Dinajpur and Gaibandha Between Phase 1 and 2

In Phase 2, three new fish species entered the top five overall list - Ilish, Tilapia and Catla. The most expensive fish among them was Ilish at BDT 836 (USD 9.96). In Dhaka Ilish and Rui take top spot. Ilish was again the most expensive fish at BDT 941 (USD 11.20) and the least expensive was Tilapia at BDT 147 (USD 1.74). In general respondent from Dhaka bought fish at a higher price per KG than respondents in other division.

**Slight Rise in the Consumption of Traditional Processed Fish Items**

In Phase 2, there was a slight rise in the consumption of traditional types of processed fish items, most notably *shutki*, *chepa shutki*, *shidol shutki* and salted fish. But on the other hand, modern processed fish items such as fish fillet, frozen fish and fish fingers were not found to be purchased by any notable number of consumers.

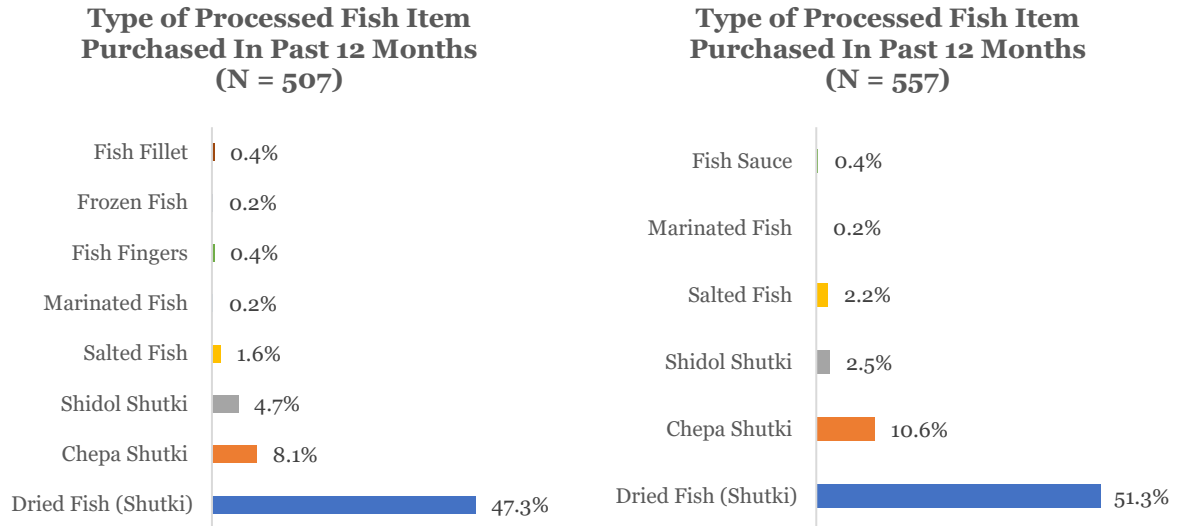


Figure 43 Comparison of Type of Purchased Fish Between Phase 1 and 2



## Chapter 6: Customer Segmentation

### Key Takeaways

- Urban High-Income segments form the largest share of purchasers in both relative volume and relative value despite their smaller overall populations
- The urban segments were the most diverse in terms of gender with higher female : male splits. However, Urban-Middle Income segment households had a relatively lower female : male ratios as these households tended to follow a more traditional and rigid roles of family members in the households

### 6.1 Customer Segments Identified

After analyzing the data collected, a combination of demographic, economic, behavioral as well as psychographic segmentation methods were used to identify the major patterns among fish buyers and from there deciphered major customer segments (or profiles).

After initial analysis, it was determined that income is the main factor that dictates the purchasing habits when it comes to fish. While other factors such as location, the composition of the family and others play a role in shaping fish purchase habits, income is held to be the primary factor.

Using this assumption, the following five distinct customer segments were derived across a rural-urban continuum<sup>43</sup> and across income classes:

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<sup>43</sup> For the districts Rajshahi, Rangpur, Bogra, Pabna and Dinajpur, respondents from city centers in the District HQs have been classified as urban, and those from town centers in Upazila HQs are classified as semi-urban. Respondents from city center markets in Gaibandha district HQ has been classified as semi-urban. All respondents from Dhaka surveys have been classified as urban. Surveys taken from respondents from all other locations have been classified as rural.

### Urban High-Income Segment

These is the most affluent segment comprising of households with a combined income of over BDT 90,000 (USD 1,071.43) per month. With an age between 30 – 50, the shopper in the family is progressing in their career and are likely married. The shopper is well educated and holds a university degree. They live in urban metropolitan centers such as Dhaka, Rajshahi and Bogra.

Two thirds of the fish purchasers in this segment purchase fish from supermarkets, although not necessarily on a regular basis. On average, 11% of their fish purchases by volume from supermarkets. A very small proportion have also started to experiment with online purchases. They usually carry out their fish purchases on a weekly or bi-weekly basis, and everyone has a refrigerator so that preservation is not a concern.

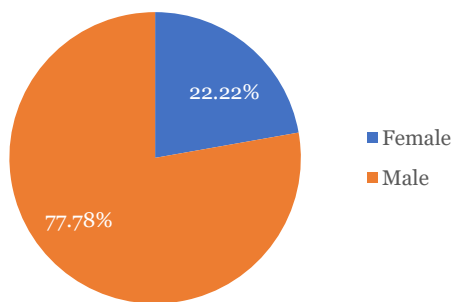
The most frequent purchases among this segment, ranked in order, are Rui, Ilish, Golad, Catla, Koi and Tilapia. If price and availability were not an issue, they would buy mostly Ilish, Rupchada, Golda, Rui and Boal fish.

Fish forms an integral part of the diet as 70% of them have at least one fish meal per day on average. They constitute 15% of the sample size under the study, and female shoppers comprise the highest proportion of shoppers across any other segment at 21%.

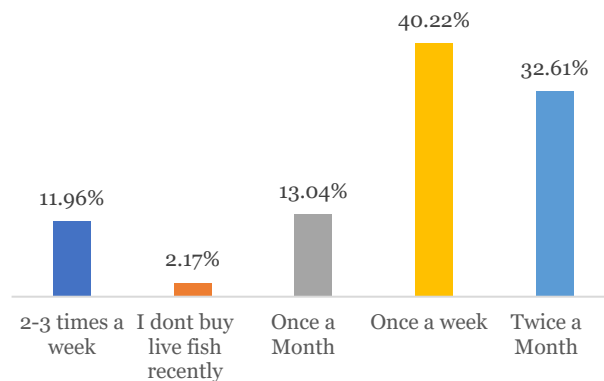
As across all the other segments, *shutki* is the most popular form of processed fish with around one-third of respondents having bought *shutki* in the past year. Even amongst this high-income segment, modern processed fish items such as fish fingers, fish sauce, marinated fish and fish stock have not gained much traction with less than 10% planning to buy each of these products in the near future.

On average they spend around BDT 517 per KG of fish. Wallet size for fish spending is BDT 1,937 per week, out of BDT 7,140 spend on food in total.

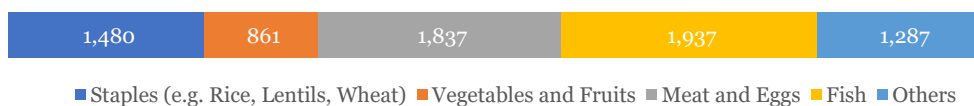
**Gender of Respondents - Urban High Income (N = 153)**



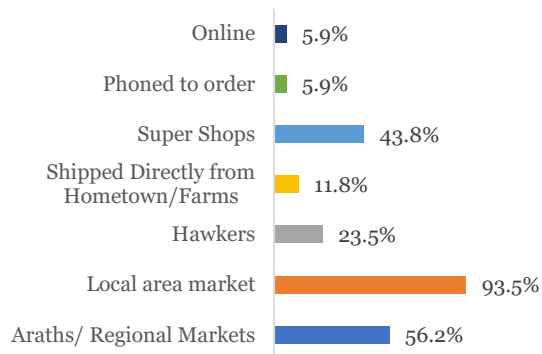
**Live Fish Purchase Frequency (N = 153)**



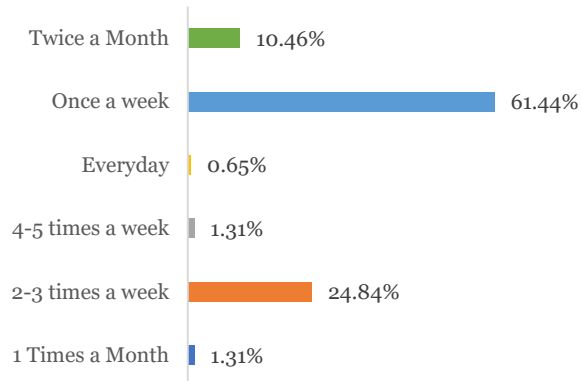
**Weekly Spending on Food (N = 153)**



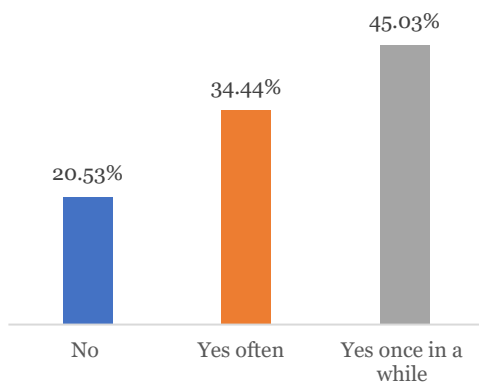
### Preferred Shopping Locations for Fish (N = 153)



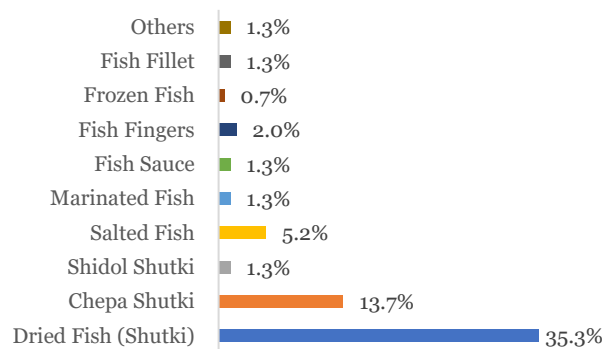
### Fish Purchase Frequency (N = 153)



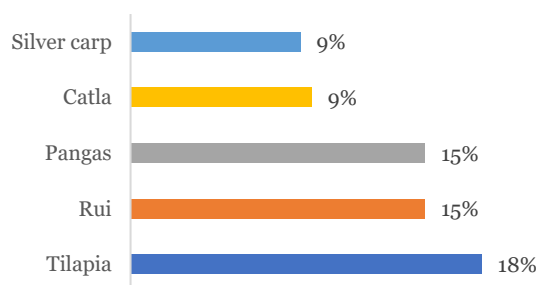
### Small Fish Purchases (N = 153)



### Processed Fish Consumed in the Past Year? (N = 153)



### Top Purchased Fish Types (N = 153)



### Top Aspired Fish Types (N = 153)

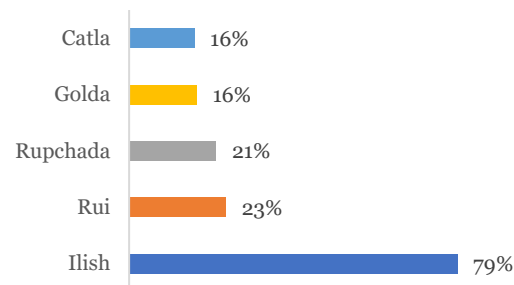


Figure 44 Statistics for Urban High-Income Segment

### Case Study - Urban High-Income Household

Ms. Priyanka is a 24-year-old who lives with her parent in Green Road of Dhaka. In her household, they prefer to consume a lot of fish, as her mother loves to prepare a variety of fish-based items. Given the proximity, she usually goes to grocery shopping with her mother in Kawran Bazar. She does buy fish from supershops from time to time but has not yet tried out any online stores.

With a monthly household income of BDT 90,001 - 150,000 (USD 1,071.43 – 1,785.71), her family falls squarely in the urban high-income category. During her last visit to Karwan Bazar, she was buying, she had bought a one-KG Rui fish priced at BDT 180. According to her, her family generally don't mind what type of fish they have. However, her most aspirational fish are Ilish, Golda and Rupchada. They usually have between 7-12 meals containing fish per week, and at least one meal daily. She believes fish offers greater variety and is good for health, but when it comes to freshness she prefers meat.

Small fish is not consumed in the house on a regular basis. But occasionally when her nephew comes to visit them, she and her sister like to feed him small fish for the nutrition. In such cases, Kechki, Tengra and Puti are the top choices among small fish.

During *Pohela Boishakh* they purchase few kilograms of Illish to celebrate the occasion. Her mother makes cutlet during that time. They don't purchase any processed fish except *shutki*, though she had tried out some fish fingers from a local supermarket in the last 12 months and is willing to give it another go as she had enjoyed the experience.

### Rural Middle-Income Segment

The rural middle-income segment forms only 5% of the sample population. This segment is defined as families with household incomes between BDT 14,200 to BDT 90,000 with families residing in rural locations in the northwestern districts.

This shopper has a large family size encompassing 6 members in total, which makes it likely that it is an extended family including parents. In 90% of cases this shopper does not have a university degree.

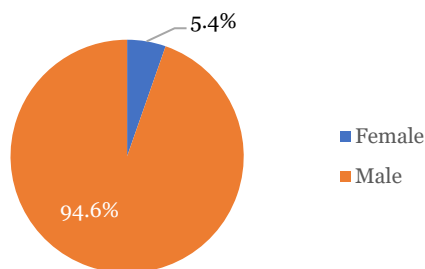
They shop very frequently for fish, with 75% purchasing fish at least twice a week. Around half of the families in this segment consume fish in less than 6 meals per week, so they don't even have a daily fish meal on average. They are likely to have meals comprising of chicken, lentils or vegetable more often than with fish.

Among this segment, the most commonly bought fish are Ilish, Rui, Catla, Tilapia and Pangas, and their most aspired for fish include Ilish, Rui, Boal, Shing and Rupchada.

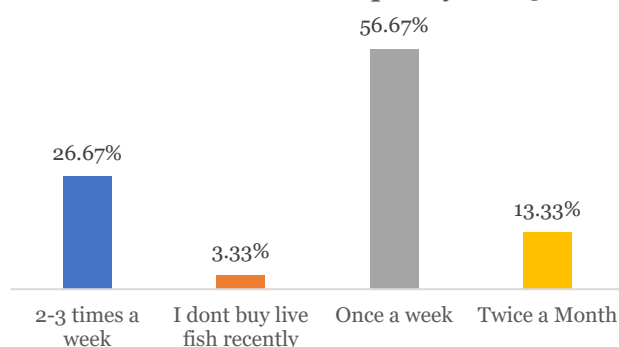
Shutki is their most preferred form of dried fish, with 50% of them having purchased *shutki* in the past year.

On average they spend around BDT 296 per KG of fish. Wallet size for fish spending is BDT 786 per week, out of BDT 3,104 spend on food in total.

Gender of Respondents - Rural Middle Income (N = 56)

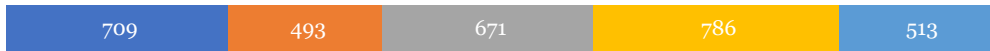


Live Fish Purchase Frequency (N = 56)



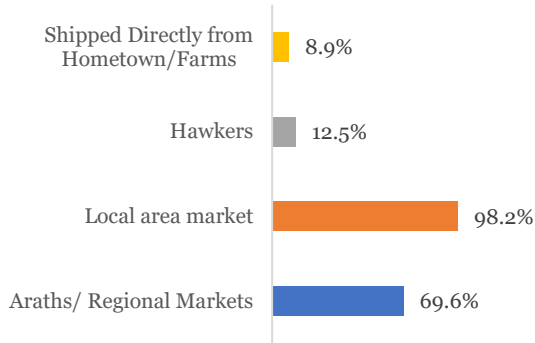


### Weekly Spending on Food (N = 56)

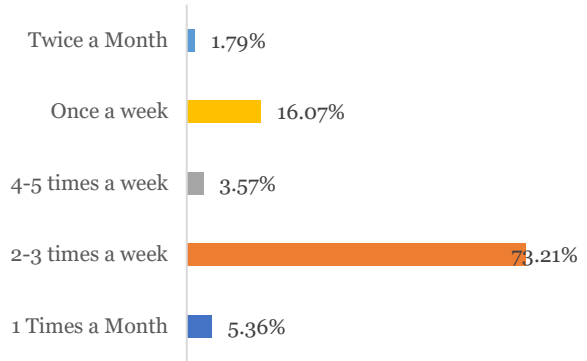


■ Staples (e.g. Rice, Lentils, Wheat) ■ Vegetables and Fruits ■ Meat and Eggs ■ Fish ■ Others

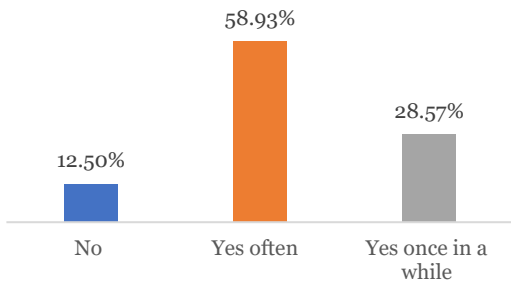
### Preferred Shopping Locations for Fish (N = 56)



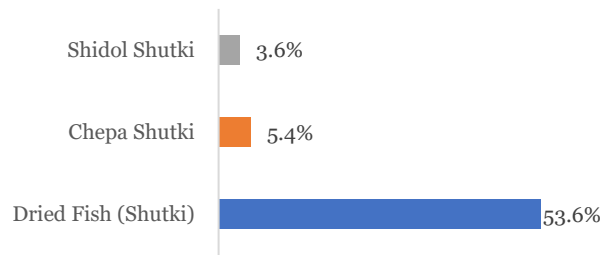
### Fish Purchase Frequency (N = 56)



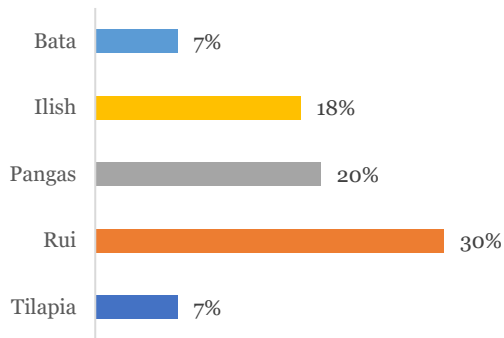
### Small Fish Purchases (N = 56)



### Processed Fish Consumed in the Past Year? (N = 56)



### Top Purchased Fish Types (N = 56)



### Top Purchased Fish Types (N = 56)

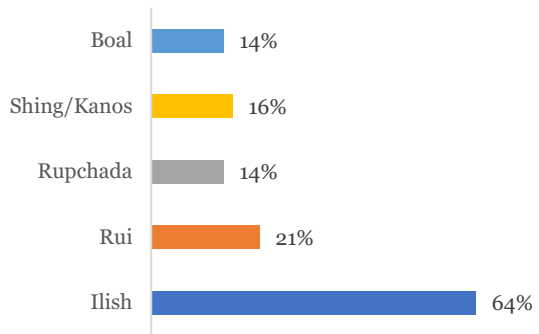


Figure 45 Statistics for Rural Middle-Income Segment

### **Case Study - Rural Middle-Income Household**

Ms. Anjuman is a middle-aged housewife from Bogra. Her household consists of herself, her husband, a son, two daughters and her father. The combined monthly household income is in the range of BDT 14,200 – 22,500 (USD 169.05 – 267.86). In her family, both she and her husband do the family grocery shopping.

She purchases fish from Dhaper Hat because it is closer to her home and only occasionally buys fish large wholesale markets. Cutting and dressing facilities are not important to her as she usually prepares them at home. Her purchase of fish is dictated mainly by price, and according to her, seasonality does not affect her purchasing habits.

When she was surveyed buying fish from Dhaper Hat, she had purchased a kilogram of Bata fish at a price of 130 Taka. She had purchased this fish because it tastes good and is like by both herself and her child. If she could afford it, she would buy Grass Carp, Boal and Bagda more often as they are liked by everyone in her family. Each week she spends roughly BDT 3,700 and her spending on fish is slightly higher (BDT 1,000 weekly) than her spending on meat and eggs (BDT 900 weekly).

When it comes to taste, she prefers saltwater/brackish water fish, but price of freshwater fish is friendlier for someone with her income. On average, her family has 3 meals a week on fish. She purchases fish twice a month on average and her average purchase consists between 2KG and 5KG of fish. She buys both small and large species of fish on a regular basis. While she herself prefers small fish and tries to have them regularly because of its high vitamin content and preferred taste, her child/children prefer fish with less bones.

### **Urban Middle-Income Segment**

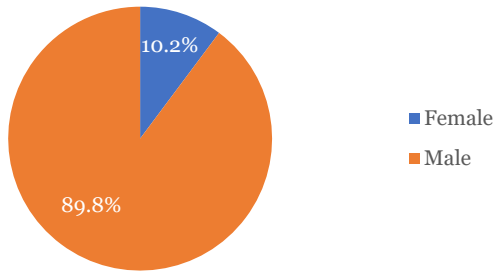
The urban and semi-urban middle-segment forms 27% of the sample population. This segment has been defined to constitute urban and semi-urban families having a combined monthly income of BDT 22,501 to 90,000. It is the largest and most diverse segment in this study, comprising of middle-income families spanning all the way from shoppers in Dhaka city to upazila headquarters level in Gaibandha.

The shopper is typically someone who has a college or university degree. The shopper is likely to be between the ages of 30-50, and has a large family size encompassing 6 members in total, which makes it likely that it is an extended family including parents. Only 10% of the shoppers in this segment are female.

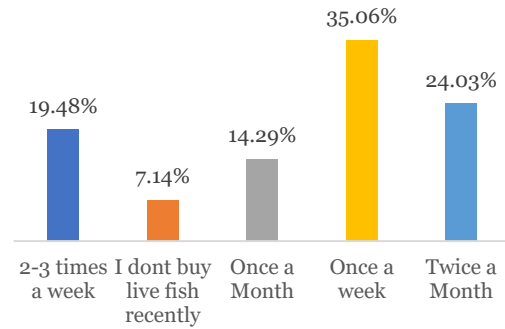
The most common purchases made by this segment include Ilish and Rui followed by Tilapia, Catla and Pangas. When it comes to live fish, the most commonly purchased are Rui, Koi and Shing. Aspirational fish to them are Ilish, Rui, Boal, Catla and Shing.

On average they spend around BDT 325 per KG of fish. Wallet size for fish spending is BDT 1,078 per week, out of BDT 4,294 spend on food in total.

**Gender of Respondents - Urban Middle Income Households (N = 284)**



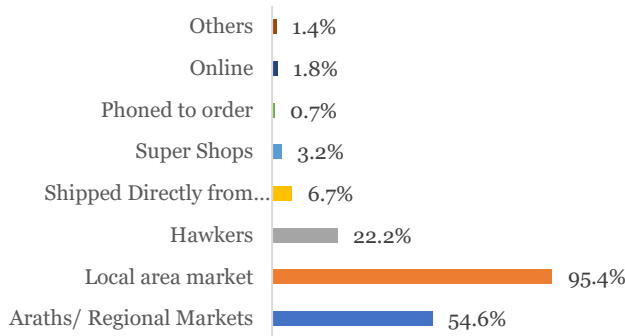
**Live Fish Purchase Frequency (N = 284)**



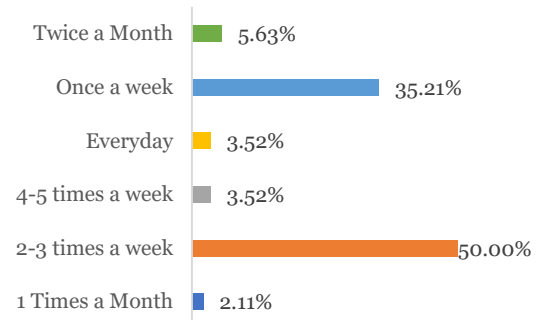
**Weekly Spending on Food (N = 284)**



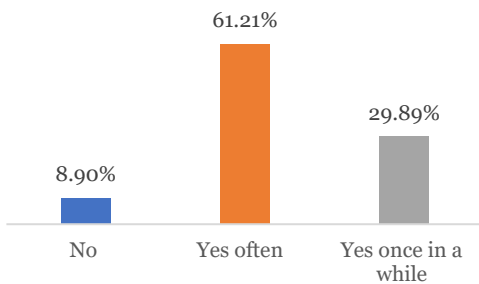
**Preferred Shopping Locations for Fish (N = 284)**



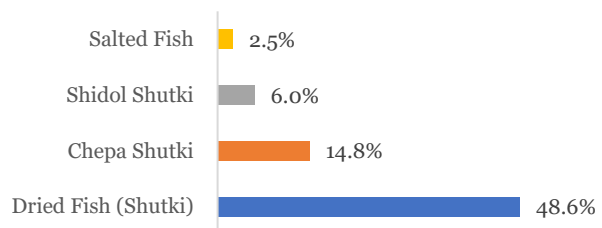
**Fish Purchase Frequency (N = 284)**



**Small Fish Purchases (N = 281)**



**Processed Fish Consumed in the Past Year? (N = 284)**



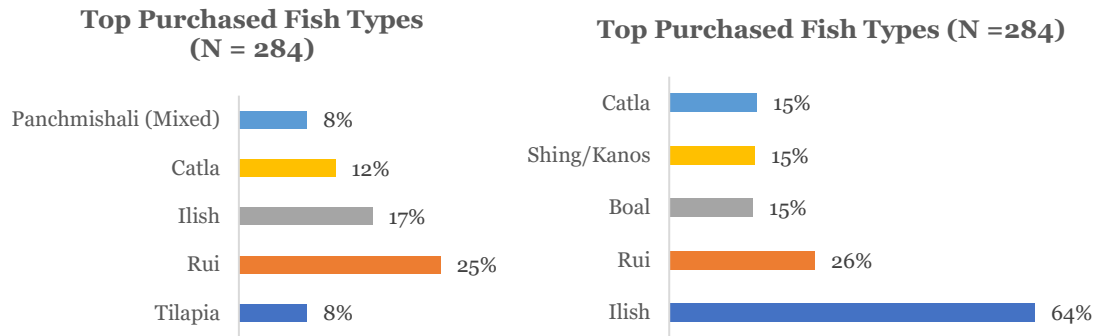


Figure 46 Statistics for Urban Middle-Income Segment

### Case Study - Urban Middle-Income Household

Ms. Mahbuba from Dhaka is 35-year-old housewife who lives with her husband and in-laws. Her household income is BDT 41,501 – 90,000 (USD 494.06 - 1071.43). Often her husband does the grocery shopping, but recently she has started to visit Jatrabari arat herself to buy the daily essentials. She doesn't believe the quality of fish in supershops are good, she rather buys it from the local market which is a walking distance from her house. According to her, 50% of her purchases (in terms of volume) comes from the local market, 30% from regional markets or *arats* and the remaining 20% from hawkers.

Her in-laws prefer to eat small fish as they believe it has higher nutritional value and tastes better than the bigger fish. Bashpata and Ilish are bought regularly in her household, the latter is bought more during *Pahela Baisakh*. In fact, during her last purchase she had bought a large 3.5 KG Pangas fish costing BDT 510 (USD 6.07) and three pieces of Ilish fish totaling 1 KG at a price of BDT 1,200 (USD 14.29).

Her most aspirational fish are Boal and Magur, and she happens to purchase them often as her husband is a big fan of them. She and her husband like to eat chicken more than fish. She trusts the quality of hygiene and nutrition of chicken more than fish, though she appreciates the variety of fish that is available.

Fish is a part of their daily meal, as her in-laws like to have fish for their lunch. Apart from *Pahela Baisakh*, they don't have a special occasion to purchase fish. Processed fish is consumed only in negligible amounts; over the past year, the family had purchased half a KG of Chepa Shutki at a price of BDT 700 (USD 8.33).

### Urban Low-Income Segment

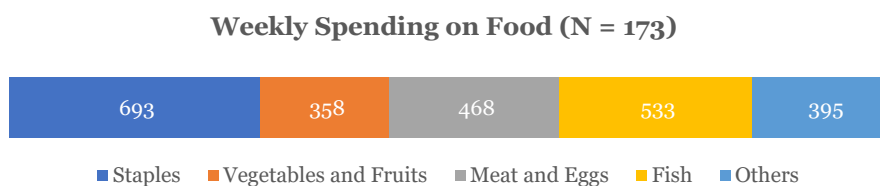
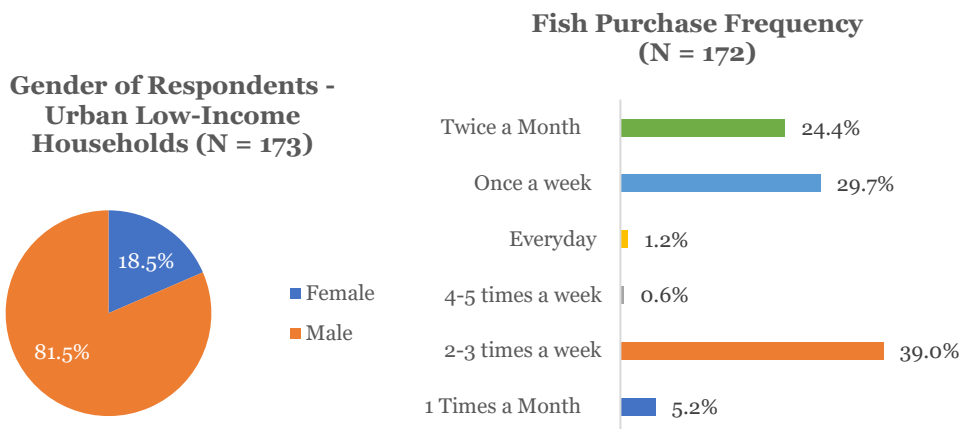
This urban low-income segment forms around 17% of the total sample population. This segment includes urban families with a combined monthly income of up to BDT 14,200. The shopper in this family is not likely to have a higher education degree, with 70% holding up to secondary school (prior to higher secondary school) qualification.

The urban low-income segment purchases much smaller quantity of fish with each purchase, typically less than 2 KG for each purchase. A large majority (83%) of their purchase volume come from the local market, and the remaining mostly from large regional wholesale markets or arats.

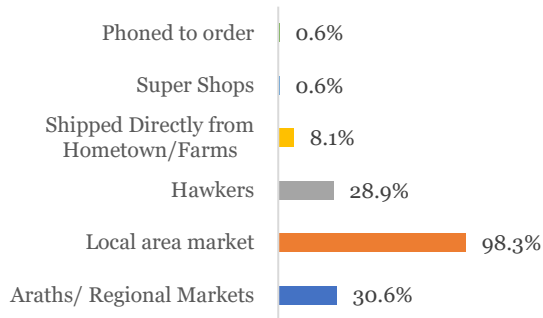
Around 50% of this segment purchase fish on a weekly, fortnightly or monthly basis even through most do not have a refrigerator to help preserve their fish purchases. This lower frequency is due to higher purchases of other alternatives such as lentils and eggs rather than fish and meat. As a consequence, around 50% of them only have 4-6 meals per week containing fish, meaning less than one meal including fish on average per day.

Their top-most purchased fish, ranked according to purchase frequency, are Tilapia, Rui, Pangas, Catla and Silver Carp. Most prominent aspirational fish are Ilish, Rui, and Rupchada. *Shutki* is the most popular processed fish type with over 40% of respondents having bought *shutki* in the past year.

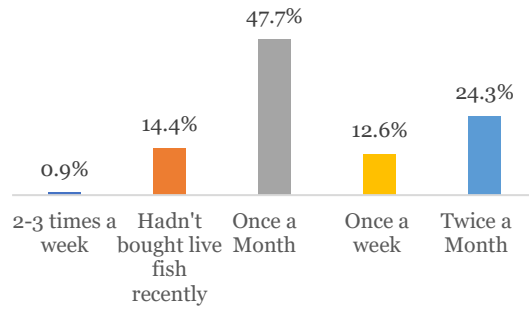
On average they spend around BDT 222 per KG of fish. Wallet size for fish spending is BDT 533 per week, out of BDT 2,215 spend on food in total.



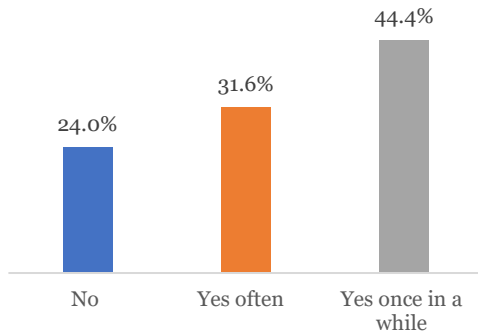
### Preferred Shopping Locations for Fish (N = 173)



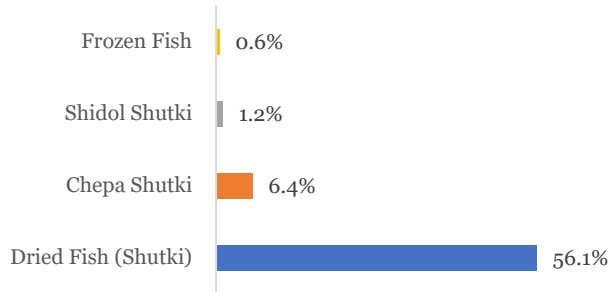
### Live Fish Purchase Frequency (N = 173)



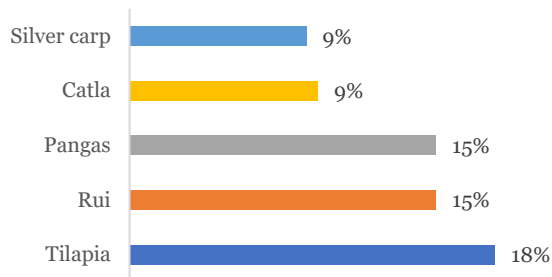
### Small Fish Purchases (N = 171)



### Processed Fish Consumed in the Past Year? (N = 173)



### Top Purchased Fish Types (N = 173)



### Top Aspired Fish Types (N = 173)

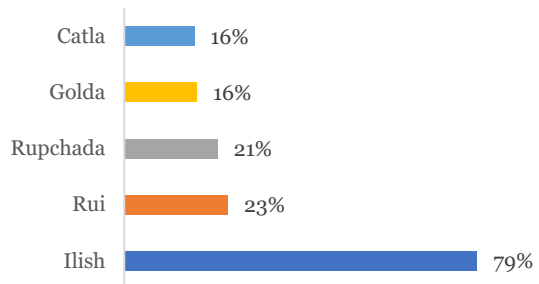


Figure 47 Statistics for Urban Low-Income Segment

### Rural Low-Income Segment

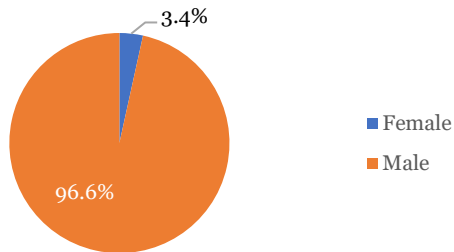
The rural low-income segment forms 6% of the total sample population under this study. This segment covers rural families with combined household incomes below 14,200 BDT per month.

The shopper in these families are predominantly male and usually have primary school education or in many cases, have no formal education at all. They purchase fish 2-3 times a week, and in each visit to the marketplace, they buy less than 2 KG of fish. The rural income segment, like their urban counterparts, are not likely to have a refrigerator to preserve fish.

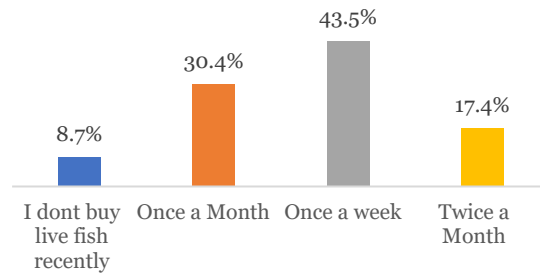
Given their lower incomes, Pangas, Puti (cultured variety) and Silver Carp are their most frequent purchases. If price and availability were not a constraint, they would aspire to purchase Ilish, Rui and Gura Chingri. *Shutki* is the only notable form of processed fish consumed with approximately half of the population in this segment having purchased *shutki*, but they are usually in smaller portions than in any other segments and during field visits to Rangpur region, low-income rural residents were observed purchasing *shutki* in micro-quantities – for example 30g for BDT 20.

On average they spend around BDT 200 per KG of fish. Wallet size for fish spending is BDT 464 per week, out of BDT 2,067 spend on food in total.

**Gender of Respondents - Rural Low Income Households (N = 58)**



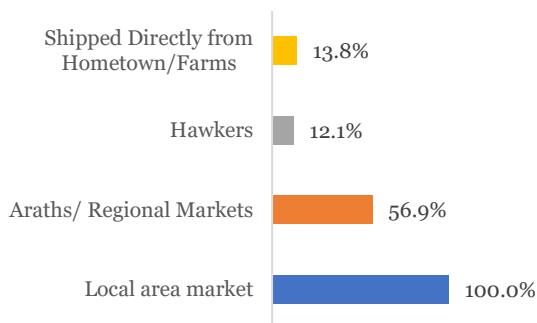
**Live Fish Purchase Frequency (N = 58)**



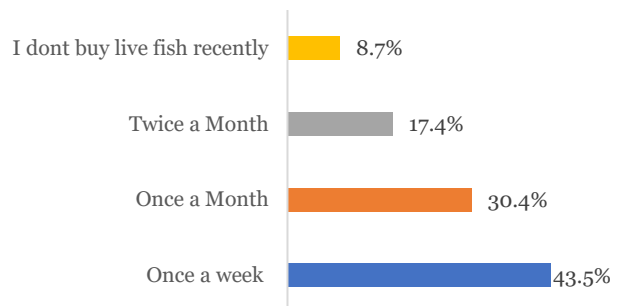
**Weekly Spending on Food (N = 58)**



**Preferred Shopping Locations for Fish (N = 58)**



**Live Fish Purchase Frequency (N = 58)**



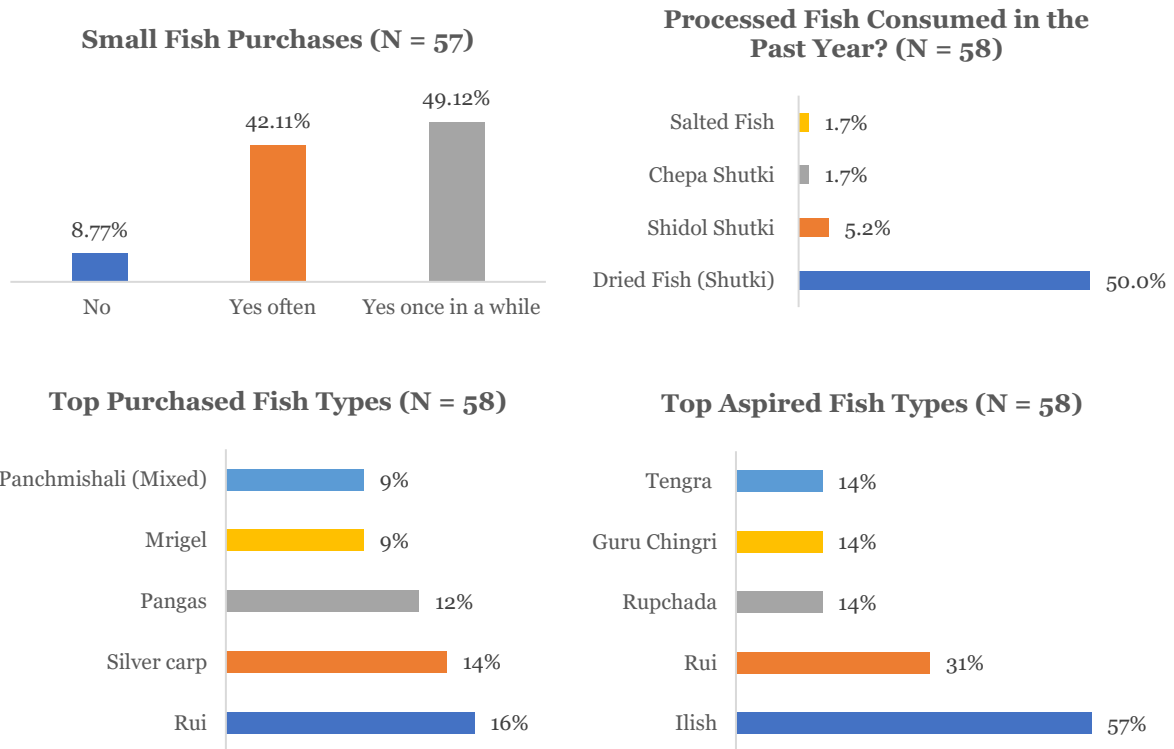


Figure 48 Statistics for Rural Low-Income Segment

### Case Study - Rural Low-Income Household

Kallol is a middle-aged husband and father of one from Rajshahi. He only has primary school education. His family consists of his wife, both parents and his son. His household income is between BDT 12,001 and 14,200 (USD 142.86 – 169.05). He was surveyed when purchasing fish from the local Rajbari Bazar, which is his favourite place to shop for fish as it is close to his home and more convenient. His weekly purchase on meat and eggs (BDT 600; USD 7.14) are higher than his spending on fish (BDT 400; USD 4.76). He does occasionally buy fish from wholesale markets and hawkers. Sometimes, he even purchases fish from near the pond and river side instead of local market. Cutting and dressing facilities are not particularly important to him as his wife does all the preparation at home.

In his most recent purchase, he had bought one Rui fish weighing 500 grams at a price of BDT 100. Rui is a family favourite, and he had purchased it for his parents. Price and freshness of fish are his main considerations when buying fish and this particular Rui fish, though not live, had seemed very fresh.

He purchases fish quite often at 4-5 times a week and his family has on average between 4-6 meals a week consisting of fish. He prefers freshwater fish to saltwater fish and his most aspired fish are Rui, Poa and Pangash. His fish purchase varies from season to season and he purchases more fish during the rainy season (July- August) and during cultural occasions (Pahela Baisakh) or religious occasions (Puja).

He prefers all kinds of small fish, in particular Pabda, Poa, Panchmishali (Mixed) and Dhela. He feels small fish are high in vitamin content and have better taste. But his enthusiasm for small fish is not shared by his children as they prefer fish with less bones. Over the past year, he had not purchased any kinds of processed fish.



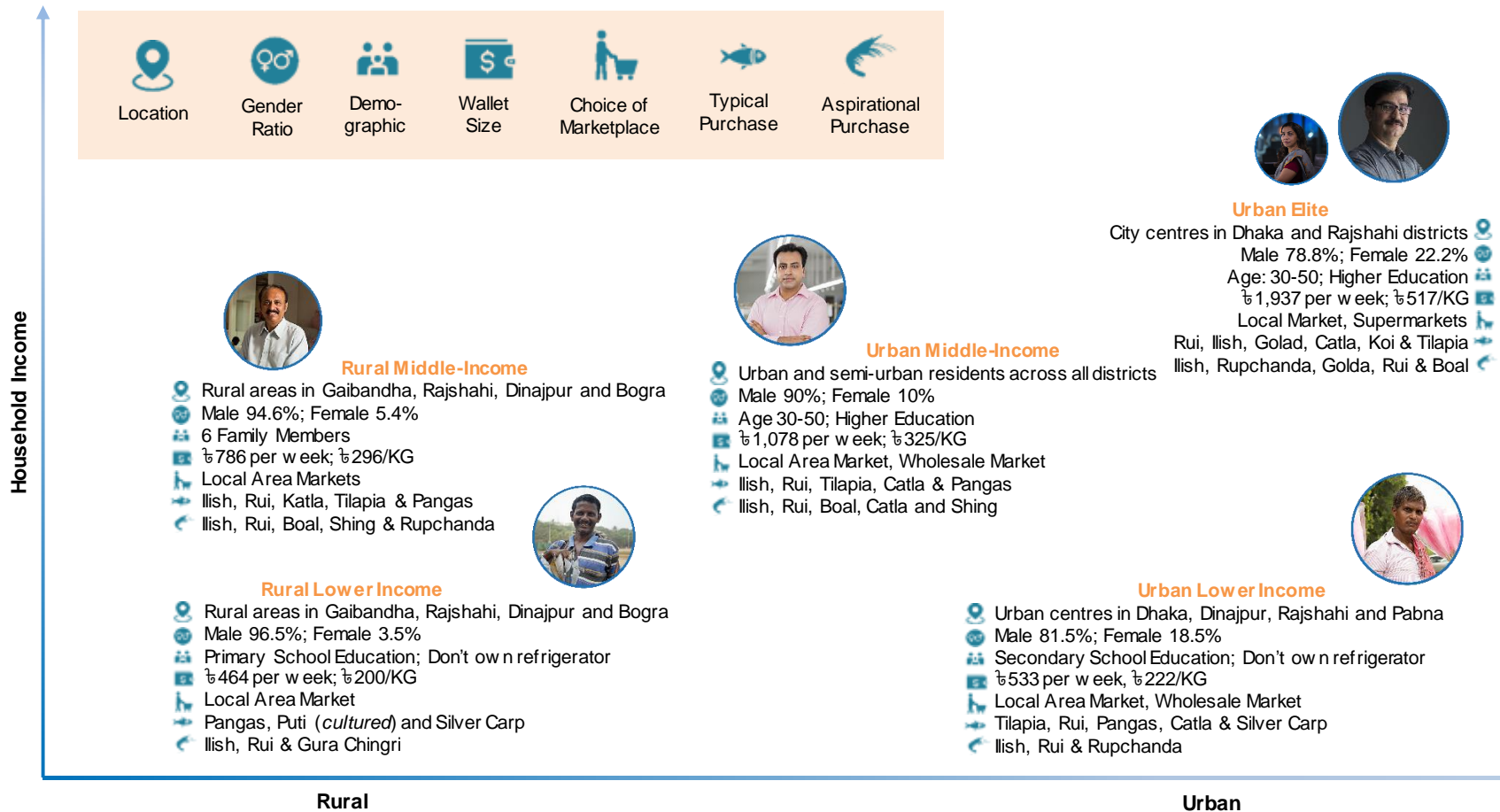


Figure 49 Mapping of Customer Segments across Income and Rural-Urban Dimensions

**Disclaimer:** These segmentations are based on the people who regularly visit and buy fish and fish products from wet fish markets and supermarkets and have been surveyed for the study. Hence, these segmentations do not represent the population at large, particularly those who do not consume fish or consume little fish.

## 6.2 Volume-Value Analysis

To understand the relative importance of the various segments when it comes to market share, it is useful to compare and analyze the volume and value of fish consumption across the different consumer segments.

Customer Segments	Value (Median Wallet Size in BDT)	Percentage of Sample Population	Value Wise market Share (%)	Volume (Market Share %)
Urban Elite	BDT 1987 per week	14%	44%	30%
Urban Middle Income	BDT 1,078 per week	27%	29%	31%
Urban Low Income	BDT 533 per week	16%	7%	11%
Rural Middle Income	BDT 786 per week	5%	4%	4%
Rural Low Income	BDT 464 pe week	5%	2%	3%
<b>Totals</b>		<b>68%*</b>	<b>85%</b>	<b>79%</b>

\* The five identified customer segments together define 68% of the total study populations. The remaining 32% did not fit precisely into any of the five major segments.

### *Urban Elites dominate in terms of value*

Although urban elites only form 14% of the study's total population, they account for 44% of the total spending on fish, and 30% of the purchase volumes. This is to be expected with their larger wallet size of BDT 1,987 per week and average spending of BDT 517/KG of fish.



# Chapter 7: Market Projections

The domestic fish market is expected to continue its growth, driven by the rapidly growing middle and affluent class in tandem with rising aquaculture production. This is likely to be helped by favorable macroeconomic situation with a growing population and sustained economic growth in the mid to long-term.

## 7.1 Demand Side Considerations

To derive the estimates of national and local fish consumption figures, annual population growth figures (BETWEEN 1998-2018) and Compound Annual GNI Growth rates (BETWEEN 1973 – 2018) from World Bank figures have been utilized. Using these, national population figures and GNI until 2024 have been projected.

<b>CAGR (GNI Growth)</b>	6.1%
<b>CAGR (Population)</b>	1.4%

	2019	2020	2021	2022	2023	2024
<b>Total Population</b>	170,202,502	172,585,337	175,001,532	177,451,553	179,935,875	182,454,977
<b>Per Capita Income (GNI) in USD</b>	1,508	1,600	1,698	1,801	1,911	2,028

Making use of projected national population across five income groups from the Boston Consulting Group<sup>44</sup> study on the Middle and Affluent class population in Bangladesh, the national population figures were then divided by the total population and number of households as per the Household and Income and Expenditure (HIES) Survey of 2016 to derive the projected number of households over time:

<sup>44</sup> Boston Consulting Group (2015). Bangladesh: The Surging Consumer Market Nobody Saw Coming. Available at: <https://www.bcg.com/publications/2015/bangladesh-the-surging-consumer-market-nobody-saw-coming.aspx>

Households	2019	2020	2021	2022	2023	2024
BOP (Upto BDT 14,200)	12,215,992	12,387,016	12,141,753	11,887,195	12,053,616	10,912,827
LI (BDT 14,200 - 22,500)		23,948,231		24,198,933	23,676,745	24,444,733
Emerging Middle (BDT 22,500 - 41,500)	24,024,785		23,864,825			
Established Middle (BDT 41,500 - 90,000)	2,035,999	2,064,503	2,093,406	2,547,256	2,582,918	3,055,592
Affluent (BDT 90,000 and above)	1,221,599	1,238,702	1,674,725	1,698,171	2,152,431	2,182,565
	1,221,599	1,651,602	2,093,406	2,122,713	2,582,918	3,055,592

From the consumer surveys, it was possible to derive the weekly purchase volume and the weighted average price per KG across the different household categories:

Households	Average Fish Purchase Volume per Week (in grams)	Weighted average price per KG of fish purchased (in BDT)
BOP (Upto BDT 14,200)	1,801	206
Aspirant (BDT 14,200 - 22,500)	2,711	282
Emerging Middle (BDT 22,500 - 41,500)	3,398	300
Established Middle (BDT 41,500 - 90,000)	4,030	378
Affluent (BDT 90,000 and above)	4,635	542

However, since the surveys were conducted specifically on fish purchasers from selected markets, this is not representative of the true population, as it excludes the population who do not consume fish on a regular basis. To adjust the average weekly consumption figures, a quotient value was assumed to represent the population who do not consume fish on a regular basis across the various income classes. The highest quotient of 40% has been assumed for the lowest income bracket households since they consist of the extreme poor who do not have the financial means for purchasing fish on a regular basis. A lower quotient of 30% and 25% has been assumed across the middle-income households to represent the share of the population who consume alternatives such as meat instead of fish. The lowest quotient of 20% has been applied to the highest income class, as they are not likely to have any financial restrictions in consuming fish and are also likely to opt for healthier protein options such as fish over red meats, given that most in this income category fall in the middle-aged category. It should also be noted that the volume per week is based on survey data and not necessarily generalizable nationally.

Using this quotient, the adjusted average fish purchase volume per week has been obtained to provide a better representation of the true population.

Households	Average Fish Purchase Volume per Week (in grams)	Non-Consuming Population Quotient	Adjusted Average Fish Purchase Volume per Week (in grams)
BOP (Upto BDT 14,200)	1,801	40%	1,441
Aspirant (BDT 14,200 - 22,500)	2,711	25%	2,357
Emerging Middle (BDT 22,500 - 41,500)	3,398	30%	2,955
Established Middle (BDT 41,500 - 90,000)	4,030	25%	3,504
Affluent (BDT 90,000 and above)	4,635	20%	4,213

The quotient values have been adjusted such that the average consumption of fish per household is 2,008 grams which is slightly lower but consistent with the findings from the government's HIES 2016 survey, based on an observed CAGR of 3.99% in fish consumption between 2010 and 2016.

	2016	2017	2018	2019	2020	2021	2022	2023	2024
Monthly Consumption of Fish (in Grams)	62.6	65.1	67.7	70.4	73.2	76.1	79.2	82.3	85.6

## 7.2 Supply Side Considerations

As the most authoritative source on fish production statistics, this report has made use of historical data from the Statistical Yearbook of fisheries. The production data of the major fish species are listed below:

Sl. No.	Species/Group	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	<b>Major Carp</b>	509,995	535,492	547,652	617,761	692,597	753,572	777,005	731,662	728,695	755,074	750,880	811,588	846,397
2	<b>Other Carp</b>	9,303	9,821	9,339	11,155	64,359	55,021	60,356	54,130	80,138	80,997	80,647	100,730	111,373
3	<b>Exotic Carp</b>	257,739	292,961	333,452	305,938	376,006	265,375	299,494	402,490	389,642	363,737	357,933	409,801	454,078
4	<b>Pangas (Cat Fish)</b>									371,068	406,818	504,674	510,097	453,383
5	<b>Other Cat Fish</b>	34,104	58,588	85,869	117,856	208,972	221,965	288,887	360,722	81,536	64,537	65,130	66,646	68,850
6	<b>Snake Head</b>	101,309	102,686	110,460	122,093	113,989	117,577	89,351	53,305	60,282	69,305	70,106	72,991	73,358
7	<b>Live Fish</b>	60,292	58,158	75,286	77,113	101,368	94,000	95,063	102,651	115,185	133,512	136,113	127,120	144,007
8	<b>Tilapia</b>									298,062	347,801	377,346	370,017	381,215
9	<b>Other Inland fish</b>	634,829	643,160	643,876	646,085	575,620	710,853	763,668	835,457	524,488	542,711	568,446	598,923	554,558
10	<b>Hilsha</b>	277,123	279,189	290,000	298,921	313,753	339,845	346,512	351,223	385,140	387,211	394,951	496,417	517,198
11	<b>Shrimp/Prawn</b>	211,010	221,131	223,095	244,972	186,418	239,460	252,523	228,769	223,788	230,244	234,188	246,774	247,304
12	<b>Crab</b>											13,160	14,421	11,787
13	<b>Sarpunti</b>													91,792
14	<b>Sardine</b>							20,187	29,636	27,590	32,835	44,386	48,704	41,486
15	<b>Bombay Duck</b>	39,331	36,009	36,980	58,263	58,464	60,750	62,817	71,745	51,673	53,950	58,545	69,230	75,085
16	<b>Indian Salmon</b>	1,018	969	1,040	7,733	7,733	4,521	3,030	2,445	1,960	1,020	895	775	487
16	<b>Pomfret</b>	12,023	13,061	16,728	46,643	50,245	40,478	39,537	29,693	23,355	11,437	10,593	10,686	11,899
18	<b>Jew Fish</b>	32,538	35,214	33,803	38,414	35,514	36,639	37,929	30,600	36,170	31,826	31,894	33,768	35,427
19	<b>Sea Cat Fish</b>	18,151	18,131	20,534	16,515	16,722	17,193	19,700	8,594	9,719	9,476	8,695	8,424	9,455
20	<b>Shark/ Skate / Ray</b>	4,448	4,790	4,767	3,933	4,794	4,205	3,865	5,017	5,648	5,093	4,622	4,495	3,974
21	<b>Other Marine Fish</b>	125,332	130,651	130,415	87,975	92,644	100,233	101,858	112,115	133,976	156,661	165,120	132,827	143,527
<b>Total</b>		<b>2,328,545</b>	<b>2,440,011</b>	<b>2,563,296</b>	<b>2,701,370</b>	<b>2,899,198</b>	<b>3,061,687</b>	<b>3,261,782</b>	<b>3,410,254</b>	<b>3,548,115</b>	<b>3,684,245</b>	<b>3,878,324</b>	<b>4,134,434</b>	<b>4,276,640</b>

For the purpose of generating projections, the above fish production data has been simplified into three categories of cultured, captured and marine, based on the following assumptions across each major fish species:

Sl. No.	Species/Group	Cultured	Captured
1	<b>Major Carp</b> (includes <i>Rui, Catla &amp; Mrigal</i> )	99%	1%
2	<b>Other Carp</b> (includes <i>Kalibaus, Bata and Ghania</i> )	95%	5%
3	<b>Exotic Carp</b> (includes <i>Silver Carp, Grass Carp, Common Carp, Mirror Carp, Big Head Carp and Black Carp</i> )	98%	2%
4	<b>Pangas</b> ( <i>Cat Fish</i> )	99%	1%
5	<b>Other Cat Fish</b> (includes <i>Boal, Ayre, Silon and Ritha</i> )	10%	90%
6	<b>Snake Head</b> (includes <i>Shol, Gajar and Taki</i> )	60%	40%
7	<b>Live Fish</b> (includes <i>Koi, Shing and Magur</i> )	80%	20%
8	<b>Tilapia</b>	99%	1%
9	Other Inland fish	20%	80%
10	Hilsha/Ilish ( <i>Tenualosa ilisha</i> )	0%	100%
11	<b>Shrimp</b> (Includes <i>Bagda and Other Coastal/ Marine Chingri</i> )/Prawn (Includes <i>Golda and Other Inland Chingri</i> )	90%	10%
12	<b>Crab</b> ( <i>Scylla Serrata &amp; Scylla Olivacea</i> )	0%	100%
13	<b>Sarpunti</b> ( <i>Puntius sarana</i> )	100%	0%
14	<b>Sardine</b> ( <i>Sardinella fimbriata</i> )	0%	100%
15	<b>Bombay Duck</b> ( <i>Harpondon nehereus</i> )	0%	100%
16	<b>Indian Salmon</b> ( <i>Polydactylus indicus</i> )	0%	100%
16	<b>Pomfret</b> ( <i>Rupchanda/ Hail/ Foli Chanda</i> )	0%	100%
18	<b>Jew Fish</b> ( <i>Poa, Lambu, Kaladatina etc.</i> )	0%	100%
19	<b>Sea Cat Fish</b> ( <i>Tachysurus spp.</i> )	0%	100%
20	<b>Shark/ Skate / Ray</b>	0%	100%
21	<b>Other Marine Fish</b>	0%	100%

Based on the above categorical estimations, the historical production data can be categorized as follows:

Species/ Group	Historical Production (in MR)													Average Annual Change
	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	
Cultured	1,195,621	1,268,216	1,342,483	1,418,423	1,568,583	1,584,001	1,658,631	1,693,369	2,284,605	2,398,614	2,525,885	2,666,120	2,806,368	7.8%
Inland Captured	601,859	631,668	664,237	700,052	732,104	849,876	942,463	1,052,941	565,901	573,098	596,159	623,890	595,216	1.2%
Marine	531,065	540,127	556,577	582,894	598,511	627,810	660,687	663,945	697,610	712,533	756,280	844,424	875,055	4.5%
<b>Total</b>	<b>2,328,545</b>	<b>2,440,011</b>	<b>2,563,296</b>	<b>2,701,370</b>	<b>2,899,198</b>	<b>3,061,687</b>	<b>3,261,782</b>	<b>3,410,254</b>	<b>3,548,115</b>	<b>3,684,245</b>	<b>3,878,324</b>	<b>4,134,434</b>	<b>4,276,640</b>	<b>5.2%</b>

Based on the average annual changes across each major category, the fish production across the following five years have been projected as follows:

Species/Group	2018-19		2019-20		2020-21		2021-22		2022-23		2023-24	
	% of Total	Production (In MT)	% of Total	Production (In MT)	% of Total	Production (In MT)	% of Total	Production (In MT)	% of Total	Production (In MT)	% of Total	Production (In MT)
Cultured	66%	2,806,368.4	67%	3,025,549.3	68%	3,261,848.5	69%	3,516,602.9	69%	3,791,253.9	70%	4,087,355.6
Inland Captured	14%	595,216.2	13%	602,210.4	13%	609,286.7	12%	616,446.3	11%	623,689.9	11%	631,018.7
Marine	20%	875,055.4	20%	914,600.0	20%	955,931.6	19%	999,131.1	19%	1,044,282.8	19%	1,091,475.0
<b>Total</b>	<b>100%</b>	<b>4,276,640</b>	<b>100%</b>	<b>4,542,360</b>	<b>100%</b>	<b>4,827,067</b>	<b>100%</b>	<b>5,132,180</b>	<b>100%</b>	<b>5,459,227</b>	<b>100%</b>	<b>5,809,849</b>

However, these projections of national production figures account for both national consumption and exports. To derive the value of exports, the historical export data has also been analyzed:

	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
<b>National Production (in MT)</b>	2,328,545	2,440,011	2,563,296	2,701,370	2,899,198	3,061,687	3,261,782	3,410,254	3,548,115	3,684,245	3,878,324	4,134,434	4,276,640
<b>Exports (in MT)</b>	68,829	73,704	75,299	72,888	77,643	96,469	92,479	84,905	77,328	83,524	75,338	68,305	68,935
<b>Exports Ratio</b>	2.96%	3.02%	2.94%	2.70%	2.68%	3.15%	2.84%	2.49%	2.18%	2.27%	1.94%	1.65%	1.61%

Based on this historical, data an export component value of **2.5%** based on average export ratio since 2005-06.

## 7.3 Harmonizing Supply and Demand for National Consumption Estimates

Discounting the export component of 2.5% it is possible to derive the annual consumption values from the projected production data. It is assumed that the production will be the limiting factor, as GNI and growth is expected to be 6.1% until 2024 against a projected fish production growth of 5.2% until 2024.

Annual Consumption (in MT)	2019	2020	2021	2022	2023	2024
BOP	1,251,045	1,328,776	1,364,993	1,401,229	1,490,522	1,416,296
Aspirant	2,460,389	2,568,968	2,682,918	2,852,502	2,927,811	3,172,503
Emerging Middle	208,508	221,463	235,344	300,263	319,398	396,563
Established Middle	125,105	132,878	188,275	200,176	266,165	283,259
Affluent	125,105	177,170	235,344	250,219	319,398	396,563
<b>Total National Consumption</b>	<b>4,170,152</b>	<b>4,429,255</b>	<b>4,706,873</b>	<b>5,004,389</b>	<b>5,323,292</b>	<b>5,665,184</b>

Based on the annual consumption and basket sizing per KG of fish purchased across all the identified income categories, the projected annual spending figures on fish can be derived:

Annual National Spending on Fish (in BDT Crores)	2019	2020	2021	2022	2023	2024
BOP	25,737	27,333	28,076	28,818	30,652	29,123
Aspirant	69,393	72,448	75,655	80,429	82,544	89,434
Emerging Middle	6,265	6,653	7,070	9,019	9,593	11,909
Established Middle	4,732	5,026	7,120	7,569	10,064	10,709
Affluent	6,786	9,610	12,764	13,570	17,319	21,502
<b>Total National Spending on Fish (in BDT Crores)</b>	<b>112,913</b>	<b>119,801</b>	<b>127,109</b>	<b>134,862</b>	<b>143,089</b>	<b>151,817</b>

## 7.4 Regional Consumption Estimates

The annual nationwide projections have been further broken down these figures based on the district tiers into their respective consumption volumes and spending, based on the population structure of the districts. Please refer to [Annex 15](#) for a breakdown of the different Tiers of cities and their household income compositions.

Annual District Consumption (in MT)	2019	2020	2021	2022	2023	2024
<b>Rajshahi Division</b>	<b>724,408</b>	<b>745,095</b>	<b>772,721</b>	<b>793,699</b>	<b>820,141</b>	<b>853,742</b>
Bogra	141,825	145,803	151,051	155,091	160,132	166,484
Chapai Nawabganj	62,500	64,309	66,747	68,580	70,908	73,884
Jaipurhat (Joypurhat)	33,643	34,617	35,930	36,916	38,169	39,771
Naogaon	95,873	98,649	102,389	105,201	108,771	113,337
Natore	62,904	64,725	67,179	69,024	71,367	74,362
Pabna	102,539	105,449	109,317	112,269	115,976	120,673
Rajshahi	108,653	111,701	115,722	118,817	122,679	127,545
Sirajganj	116,470	119,842	124,386	127,802	132,139	137,686
<b>Rangpur Division</b>	<b>594,343</b>	<b>611,422</b>	<b>634,327</b>	<b>651,639</b>	<b>673,534</b>	<b>701,439</b>
Dinajpur	102,539	105,449	109,317	112,269	115,976	120,673



Annual District Consumption (in MT)	2019	2020	2021	2022	2023	2024
Gaibandha	91,626	94,278	97,853	100,540	103,952	108,315
Kurigram	77,568	79,814	82,840	85,115	88,004	91,697
Lalmonirhat	47,128	48,492	50,330	51,713	53,468	55,712
Nilphamari	69,073	71,073	73,768	75,793	78,366	81,655
Panchagarh	37,217	38,294	39,746	40,837	42,223	43,996
Rangpur	116,839	120,154	124,562	127,926	132,150	137,502
Thakurgaon	52,353	53,868	55,911	57,446	59,396	61,889
Others						
<b>Dhaka District</b>	<b>531,563</b>	<b>546,257</b>	<b>565,447</b>	<b>580,387</b>	<b>598,875</b>	<b>622,003</b>

From the annual consumption projections, it is possible to derive the annual spending on fish consumption and daily spending on consumption of fish across the districts in the intervention regions:

Annual District Spending (in BDT Crores)	2019	2020	2021	2022	2023	2024
<b>Rajshahi Division</b>	<b>21,168</b>	<b>22,105</b>	<b>23,404</b>	<b>24,088</b>	<b>25,347</b>	<b>26,854</b>
Bogra	4,419	4,602	4,851	4,988	5,230	5,518
Chapai Nawabganj	1,735	1,817	1,931	1,989	2,099	2,231
Jaipurhat (Joypurhat)	934	978	1,039	1,070	1,130	1,201
Naogaon	2,662	2,787	2,961	3,050	3,219	3,423
Natore	1,747	1,828	1,943	2,001	2,112	2,246
Pabna	3,051	3,183	3,365	3,462	3,639	3,850
Rajshahi	3,386	3,526	3,716	3,821	4,007	4,227
Sirajganj	3,234	3,385	3,598	3,706	3,911	4,158
<b>Rangpur Division</b>	<b>16,938</b>	<b>17,708</b>	<b>18,781</b>	<b>19,337</b>	<b>20,376</b>	<b>21,623</b>
Dinajpur	3,051	3,183	3,365	3,462	3,639	3,850
Gaibandha	2,544	2,663	2,830	2,915	3,077	3,271
Kurigram	2,154	2,255	2,396	2,468	2,605	2,769
Lalmonirhat	1,309	1,370	1,456	1,499	1,582	1,682
Nilphamari	1,918	2,008	2,134	2,198	2,319	2,466
Panchagarh	1,033	1,082	1,150	1,184	1,250	1,329
Rangpur	3,476	3,627	3,834	3,945	4,146	4,387
Thakurgaon	1,454	1,522	1,617	1,666	1,758	1,869
Others	-	-	-	-	-	-
<b>Dhaka District</b>	<b>17,436</b>	<b>18,120</b>	<b>19,038</b>	<b>19,562</b>	<b>20,458</b>	<b>21,516</b>

Based on the estimates, the spending on fish across the individual districts in the Northwestern region can be calculated as follows:

Daily District Spending (in BDT Crores)	2019	2020	2021	2022	2023	2024
<b>Rajshahi Division</b>	<b>57.95</b>	<b>60.52</b>	<b>64.08</b>	<b>65.95</b>	<b>69.40</b>	<b>73.52</b>
Bogra	12.10	12.60	13.28	13.66	14.32	15.11
Chapai Nawabganj	4.75	4.97	5.29	5.44	5.75	6.11
Jaipurhat (Joypurhat)	2.56	2.68	2.85	2.93	3.09	3.29
Naogaon	7.29	7.63	8.11	8.35	8.81	9.37
Natore	4.78	5.01	5.32	5.48	5.78	6.15
Pabna	8.35	8.71	9.21	9.48	9.96	10.54
Rajshahi	9.27	9.65	10.18	10.46	10.97	11.57
Sirajganj	8.85	9.27	9.85	10.15	10.71	11.38
<b>Rangpur Division</b>	<b>46.37</b>	<b>48.48</b>	<b>51.42</b>	<b>52.94</b>	<b>55.79</b>	<b>59.20</b>
Dinajpur	8.35	8.71	9.21	9.48	9.96	10.54
Gaibandha	6.97	7.29	7.75	7.98	8.42	8.96
Kurigram	5.90	6.17	6.56	6.76	7.13	7.58
Lalmonirhat	3.58	3.75	3.99	4.11	4.33	4.61
Nilphamari	5.25	5.50	5.84	6.02	6.35	6.75
Panchagarh	2.83	2.96	3.15	3.24	3.42	3.64
Rangpur	9.52	9.93	10.50	10.80	11.35	12.01
Thakurgaon	3.98	4.17	4.43	4.56	4.81	5.12
Others						
<b>Dhaka District</b>	<b>47.74</b>	<b>49.61</b>	<b>52.12</b>	<b>53.56</b>	<b>56.01</b>	<b>58.91</b>



## Chapter 8: Recommendations

This report has made several recommendations based on the findings of the study. These can be broken down along five main themes:

- **Market Infrastructure:** For improvements in both the consumer shopping environment as well as the proper storage and
- **Backward & Supply Chain Infrastructure:** Improvements in sourcing and transportation links in the fish value chain
- **Private Sector Engagement:** Recommendations for collaborative actions with the private sector through a variety of interventions including technical assistance, R&D support, market creation and developing backward and forward linkages
- **Intermediary-level:** Recommendations for interventions targeting the producers and intermediary actors within the fish value chain
- **Consumer-level:** Creating forward linkages for fish-based food producers and processors and engaging in Social and Behavior Change Communication (SBCC) at the consumer level

The matrix below summarizes the main recommendation themes with an indication for potential impact, followed by a more detailed outline of the specific recommendations.

Color	Action
	High improvement possibility through intervention
	Moderate improvement possibility through intervention
	Low improvement possibility through intervention

Segment	Market Infrastructure	Backward & Supply Chain Infrastructure	Private Sector Engagement	Intermediary-level	Consumer-level
Survey findings		<ul style="list-style-type: none"> <li>Improvement in live fish supply chain infrastructure to take advantage of price premiums</li> </ul>		<ul style="list-style-type: none"> <li>Promote boneless fish such as carps</li> </ul>	<ul style="list-style-type: none"> <li>Raise awareness of health benefits of Marine/ Brackish water fish</li> </ul>
FGDs	<ul style="list-style-type: none"> <li>Developing Live-fish friendly market infrastructure</li> </ul>		<ul style="list-style-type: none"> <li>Input suppliers can be financiers for fish farmers</li> <li>Access to mainstream finance for intermediaries</li> </ul>	<ul style="list-style-type: none"> <li>Training on financial literacy and bookkeeping skills</li> </ul>	
KIIs		<ul style="list-style-type: none"> <li>Developing infrastructure for canned fish</li> <li>Strengthening marine fish marketing channels</li> <li>Container standardization for fish transport</li> </ul>	<ul style="list-style-type: none"> <li>Development of canned fish industry for local market and exports</li> <li>Aggregators to harmonize supply and demand</li> </ul>		<ul style="list-style-type: none"> <li>Alleviate consumers' discomfort with processed fish items, canned fish in particular</li> </ul>
Data analysis			<ul style="list-style-type: none"> <li>Processed fish items adopted by fast food chains &amp; local retailers</li> </ul>		
Secondary study		<ul style="list-style-type: none"> <li>Improvement in brood quality and feed quality</li> </ul>			

### ***Mudir Dokans and fast food outlets as gateways to processed fish items***

Convenience stores or *mudir dokan* and fast food outlets can be turned into points of sales for processed fish items. Such corner shops are already stocking ultra-processed chicken items and snacks such as chicken nuggets and sausages, so they now have the necessary storage and preservation infrastructure to do so. Processed food manufacturers such as Kazi Farms, Golden Harvest and CP Chicken have established the necessary supplier networks to market their products through *mudir dokans*. Kazi Farms and CP Chicken also have their own exclusive fast food outlets where they sell hot food items in small portions that are popular with low income and lower middle-income residents. Introducing fish-based items and snacks in their menus as a healthier option can act another kind of gateway. Ready to cook with gourmet shops such as Bengal Meat can further traction among middle and high-income residents. Another way to potentially integrate processed fish items into regular consumption is to imbibe processed fish items such as fish fillets and fish stock into traditional Bangladeshi recipes.

### ***Domestication of popular local fish species***

Although they do not have a large export potential, local fish species are hugely popular and fetch much higher prices in local markets. One way to counter the gradual depletion of certain wild species and take advantage of higher market prices is to domesticate these species. Domestication has been successful for traditional *deshi* fish such as Pabda, Tengra and Puti. Among others, further candidates for domestication according to expert interviews could be Baim, Mola and Dhela species. These domesticated species have a potential to gain considerable market traction as, unlike for meat, consumers have shown an inclination to rotate their consumption and bring variety into their diets.

### ***Promote carps and other boneless fish as family favorites***

Larger cultured fish varieties, in addition to being more affordable, are also favorites among younger family members as they contain less bones and are more convenient to consume. They are also easier to prepare and dress – hence they are ideal for urban families. Producers can take advantage of this demand for convenience by offering ready-to-cook processed fish items in small quantities for regular family consumption. Processed fish items such as fish fillets are usually imported and made from imported fish but if local alternatives based on carp species can be marketed, it will be beneficial carp producers in the Northwestern regions.

### ***Container standardization and specialized equipment can be a boon for live fish***

In markets, a variety of different containers are used to transport fish, without consideration of best practices for retaining freshness. In most cases, fish is transported not in refrigerated trucks but in cartons containing ice – which reduce the fresh life of fish. There are only a limited number of specialized vehicles and instrument to transport live fish and most actors perceive live fish transport to be expensive and challenging. However, as our study suggests, consumers are prepared to substantial premium (median of 20-30% extra) for live fish. Live fish can be a lucrative business opportunity once the challenges of transportation is solved.

### ***Strengthen supply chain link of marine fish to northwestern region***

Unlike in Dhaka, marine fish remains an exotic item to most Northwestern district residents. Demand for marine fish in this region is muted as a result of the generally higher prices compared even to Dhaka. The longer marketing chain means that the fish has to travel greater distances to reach the Northwest and hence is not usually very fresh when sold. Marine fish suppliers can leverage the existing supply chains and exploit consumer aspirations for Ilish, Rupchada and familiarity with Golda and Bagda Chingri varieties to introduce other fish varieties that are popular in Dhaka such as Vetki and Coral.

There may be latent consumer demand in the Northwestern region for marine fishes that is yet to be unlocked, but in order for this to happen, supply chains have to be optimized first to deliver fresh catch to consumers. Consumers could also be sensitized on the higher nutritional content in marine fish, such as their Omega-3 presence and associated health benefits to drive consumption among potential buyers.

### ***Canned fish can address marine fish marketing issues, but requires sensitization***

A potential solution to address the quality issues in marketing marine fish in the Northwestern regions could be canned fish. Canned fish can be delivered cost-effectively and in a reasonable state of freshness. In order for that, there are various challenges that need to be solved first. Firstly, in order for such projects to gain widespread adoption, consumers will need to be sensitized on the nutritional value of marine fish and secondly, consumers' phobia of processed fish has to be addressed (consumers perceive canned fish products to be preserved and thus unhealthy). However, the true potential of the canned fish sector is in exports. Not all fish species are suitable for canning and in Bangladesh the harvest of fish species and seafood such as Crabs, Tuna, Sardines, Mackerel are very low at the moment. The discovery of deep-sea marine resources in Bangladesh, of which an assessment is in progress, can in the future drive export of canned process fish products and add a dimension to the country's fish processing sector.

### ***Aggregators to harmonize supply and demand***

KIIs with backward value chain actors have revealed that they find it difficult to predict demand accurately and use their instincts and experience to make purchase decisions instead. They often end up purchasing too little or too much inventory which hurts their bottom line. This has highlighted the need for a demand and supply aggregator for fish in the industry. Larger actors such as supermarket franchises can afford to purchase in excess due to their customer base and strong logistical networks, but the same is not true for smaller businesses. Hence, a demand and supply aggregator can connect with both forward markets (restaurants and local shops) to accurately predict demand and with backward linkages (farms and fishermen) and to place orders accordingly. The aggregator can avail purchase prices due to bulk purchasing and economies of scale, and can pass these on in terms of lower prices to their customers. Examples of successful aggregators in other industries include Milk Vita, the dairy cooperative which is a supply side aggregator for the dairy industry.

Aggregators can also play the role of a food-safety watchdog. Since they will have a great degree of transparency in the supply chain, they will be able to regulate and maintain strong quality control criteria. Strict quality control from a large actor can also help drive reforms in the entire value chain in favor of safer and hygienic food items. In addition, being a registered supplier with such an aggregator can be seen as a seal of approval by potential buyers.

### ***Access to finance and financial literacy for intermediaries***

It was evident from interviews and focus group discussions with *arats* that they require assistance in accessing mainstream financial channels. The reason they cannot access finance effectively is due to a lack of paper trail. Because most *arats* do not maintain any deeds when providing *dadan* or credit to their buyers, they often do not have any acceptable form of records to help them recover their loans. This means that they cannot seek legal measures to recover the loans through a court of law. For this reason, banks are not willing to extend loans to fish *arats*. These intermediaries should be trained on financial literacy and bookkeeping skills so that they can access mainstream finance providers such as banks and financial institutions to cover their working capital and *dadan* disbursements.

### ***Market system intervention through input suppliers***

In a twist of the old *dadan* tradition, fish feed producers are now beginning to provide *dadan* to fish producers. In order to make a profit from this, fish producers sell feed at a higher price than they would for cash sales but as a result do not charge interest from buyers. They also benefit from retaining their customers through this credit line. Examples of such fish feed producers who are engaged in *dadan* include Mega Fish and Quality. WorldFish can jointly develop a model in partnership with the feed producers to extend such non-cash credit to fish farmers so that they are not locked in to specific *arats* through their *dadan* commitments, and have the freedom to choose the intermediaries that can provide them with the most financial return.

## Glossary of Fish Types

Sl. No.	Local Name	Scientific Name
1	Ayre	<i>Aorichthys aor</i>
2	Bagair	<i>Bagarius bagarius</i>
3	Bagda	<i>Penaeus monodon</i>
4	Baila	<i>Glossogobius giurus</i>
5	Baim	<i>Mastacembelus armatus</i>
6	Banshpata/Kajoli	<i>Devario devario</i>
7	Bata	<i>Labeo bata</i>
8	Batashi/Tinkata	<i>Neotropius atherinoides</i>
9	Black carp	<i>Mylopharyngodon piceus</i>
10	Boal	<i>Wallagu attu</i>
11	Catla	<i>Catla catla</i>
12	Chanda	<i>Chanda nama</i>
13	Chapila	<i>Gadusia chapra</i>
14	Chela	<i>Salmostoma bacila</i>
15	Chitol	<i>Notopterus chitala</i>
16	Coral	<i>Heniochus acuminatus</i>
17	Darkina	<i>Esomus danricus</i>
18	Dhela	<i>Osteobrama cotio</i>
19	Foli	<i>Notopterus notopterus</i>
20	Gajar	<i>Channa marulius</i>
21	Golda	<i>Macrobrachium rosenbergii</i>
22	Grass carp	<i>Ctenopharyngodon idellus</i>
23	Guchi	<i>Mastacembelus pancalus</i>
24	Gulsha	<i>Mystus bleekeri</i>
25	Gura Chingri	<i>Macrobrachium tenuipes</i>
26	Gutum	<i>Lepidocephalichthys guntea</i>
27	Ilish	<i>Tenualosa ilisha</i>
28	Kalibaus	<i>Labeo calbasu</i>
29	Karfu	<i>Cyprinus carpio</i>
30	Kechki	<i>Corica soborna</i>
31	Khalisha	<i>Colisa fasciatus</i>
32	Koi	<i>Anabas testudineus</i>
33	Lachu/Raikhon	<i>Aspidoparia jaya</i>
34	Magur	<i>Clarias batrachus</i>
35	Mola	<i>Amblypharyngodon mola</i>
36	Mrigel	<i>Cirrhinus mrigala</i>
37	Nilotica	<i>Oreochromis nilotica</i>
38	Pabda	<i>Ompok pabda</i>
39	Pangas	<i>Pangasianodon hypophthalmus</i>
40	Piyali/Joya	<i>Cirrhinus reba</i>
41	Poa	<i>Otolithoides pama</i>
42	Potka	<i>Tetraodon fluviatilis</i>

Sl. No.	Local Name	Scientific Name
43	Puti	<i>Puntius puntio</i>
44	Ritha	<i>Rita rita</i>
45	Rui	<i>Labeo rohita</i>
46	Rupchada	<i>Pampus chinensis</i>
47	Sarputi	<i>Puntius gonionotus</i>
48	Shing/Kanos	<i>Heteropneustes fossilis</i>
49	Shol	<i>Channa striatus</i>
50	Silver carp	<i>Hypophthalmichthys molitrix</i>
51	Taki	<i>Channa punctatus</i>
52	Tengra	<i>Mystus vittatus</i>
53	Tilapia	<i>Oreochromis mossambica</i>
54	Vetki	<i>Lates calcarifer</i>
55	Gura Chingri	<i>Macrobrachium lamiri</i>
56	Faisa	<i>Settipina Phasa</i>
57	Bighead Carp	<i>Hypophthalmichthys nobilis</i>

\* **Panchmishali (Mixed)** is a blanket term that refers to a mix of different varieties of small, deshi fish, usually locally captured



## Annexure

### Annex 1: Survey Schedule for Phase 1 Surveys

District	Surveys	No. of KIIs	Classification of KIIs	No. of Enumerators	No. of Supervisors	Duration (in Days)	Data Collection Start Date
Dhaka	210	10	Arotgars X2, Paikars X3 and Retailers X5	7	1	3	14-Jun
Rajshahi	60	10	Arotgars X2, Paikars X3 and Retailers X5	6	1	3	19-Jun
Bogra	60						20-Jun
Pabna	60						21-Jun
Rangpur	60	10	Arotgars X2, Paikars X3 and Retailers X5	6	1	3	23-Jun
Gaibandha	60						24-Jun
Dinajpur	60						25-Jun

Breakdown across Income Levels:

District	No. of Respondents					
	Income Group - A	Income Group - B	Income Group - C	Total	Urban Area	Rural Area
<b>Dhaka District</b>	95	55	60	210	DNCC and DSCC	
<b>Rangpur Division</b>						
<b>Rangpur District</b>	10	25	25	60	Rangpur CC	Mithapukur Upazila
<b>Gaibandha District</b>	5	25	30	60	Gaibandha Sadar	Sadullapur Upazila
<b>Dinajpur District</b>	5	25	30	60	Dinajpur Sadar	Parbatipur Upazila
<b>Rajshahi Division</b>						
<b>Rajshahi District</b>	10	20	30	60	Rajshahi CC	Puthia Upazila
<b>Bogura District</b>	10	20	30	60	Bogura Sadar Upazila	Dhupchachia Upazila
<b>Pabna District</b>	5	25	30	60	Pabna Sadar Upazila	Chatmahar Upazila
<b>Total</b>	<b>140</b>	<b>195</b>	<b>235</b>	<b>570</b>	<b>390</b>	<b>180</b>
<b>Percentage</b>	<b>25%</b>	<b>34%</b>	<b>41%</b>	<b>100%</b>	<b>68%</b>	<b>32%</b>

**Note:** The number of surveys approved under Phase 1 was 507, less than the initially planned 570 due to issues with data quality with the remainder.

## Annex 2: Survey Schedule for Phase 2 Surveys

District	Surveys	Number of KIIs	Classification of KIIs	No. of Enumerators	No. of Supervisors	Duration (in Days)	Data Collection Start Date
Dhaka	210	10	Aratdars X2, Paikars X3 and Retailers X4 Superstore X1	7	1	3	23-Sep
Rajshahi	60	10	Aratdars X2, Paikars X3 and Retailers X5	6	1	3	28-Sep
Bogra	60						29-Sep
Pabna	60						30-Sep
Rangpur	60	10	Aratdars X2, Paikars X3 and Retailers X5	6	1	3	02-Oct
Gaibandha	60						03-Oct
Dinajpur	60						04-Oct

Breakdown across Income Levels:

District	No. of Respondents				
	Income Group – A*	Income Group – B**	Income Group – C***	Total	Urban Area
Dhaka District	95	55	60	210	DNCC and DSCC

District	No. of Respondents					
	Income Group – A*	Income Group – B**	Income Group – C***	Total	Urban Area	Rural Area
<b>Rangpur Division</b>						
Rangpur	10	25	25	60	Rangpur CC	Mithapukur Upazila
Gaibandha	5	25	30	60	Gaibandha Sadar	Sadullapur Upazila
Dinajpur	5	25	30	60	Dinajpur Sadar	Parbatipur Upazila
<b>Rajshahi Division</b>						
Rajshahi	10	20	30	60	Rajshahi CC	Puthia Upazila
Bogra	10	20	30	60	Bogra Sadar Upazila	Dhupchachia Upazila
Pabna	5	25	30	60	Pabna Sadar Upazila	Chatmahar Upazila
<b>Total</b>	<b>140</b>	<b>195</b>	<b>235</b>	<b>570</b>	<b>390</b>	<b>180</b>
<b>Percentage</b>	<b>25%</b>	<b>34%</b>	<b>41%</b>	<b>100%</b>	<b>50%</b>	<b>50%</b>

### Annex 3: List of Markets covered under Phase 1 and Phase 2 Surveys

#	Market Name	Upazila/ Thana	District	KII/Survey	Most Common Fish Types	Fish- Based Items
1	Dupchachiya bazar	Dhupchachiya	Bogra	KII & Survey	Rui, Catla, Gura Chingri, Silver carp, Tilapia, Pangas, Bata, Ilish, Pachmishali	Shutki Only
2	Talora Bazar	Dhupchachiya	Bogra	Survey		Shutki Only
3	Dhaper Hat	Dhupchachiya	Bogra	KII & Survey	Ilish, Gura Chingri, Chanda, Guchi, Mola, Koi, Rui, Silver carp, Pangas, Catla	Shutki Only
4	Balar Hat	Mithapukur	Rangpur	Survey		None
5	Shattibari Bazar	Mithapukur	Rangpur	Survey		Shutki Only
6	Mithapukur Bazar	Mithapukur	Rangpur	Survey		Shutki Only
7	Sadullahpur Bazar	Sadullahpur	Gaibandha	KII & Survey	Rui, Catla, Puti, Pangas, Tilapia, Silver carp, Magur, koi, Shing, Shol	Shutki Only
8	Mirpur Bazar	Sadullahpur	Gaibandha	Survey		Shutki Only
9	Enaetpur Bazar	Sadullahpur	Gaibandha	Survey		Shutki Only
10	Muslim Bazar	Mirpur	Dhaka	Survey		Shutki Only
11	Town Hall	Mohammadpur	Dhaka	Survey		Shutki Only
12	Basila Bazar	Sadar	Dhaka	Survey		Shutki Only
13	Khilgao Bou Bazar	Khilgaon	Dhaka	Survey		Shutki Only
14	Dakshin Badda	Badda	Dhaka	Survey		Shutki Only
15	Kawran bazar	Sadar	Dhaka	KII & Survey	Ilish, Rui, Catla, Gura Chingri, Pabda, Boal, Pangas, Tilapia, Taki, Silver carp	Shutki Only
16	Mohakhali Bazar	Mohakhali	Dhaka	Survey		Shutki Only
17	Mirpur Arot	Mirpur	Dhaka	Survey		Shutki Only
18	Chatmohor Bazar	Chatmohor	Pabna	Survey		Shutki Only
19	Notun bazar	Chatmohor	Pabna	Survey		Shutki Only
20	Baneswar bazar	Puthiya	Rajshahi	Survey		Shutki Only
21	Puthiya bazar	Puthiya	Rajshahi	KII & Survey	Rui, Catla, Pangas, Silver carp, Tilapia, Puti, Pachmishali, Koi, Baim, Boal	Shutki Only
22	Maipara	Puthiya	Rajshahi	Survey		Shutki Only

#	Market Name		Upazila/ Thana	District	KII/Survey	Most Common Fish Types	Fish- Based Items
23	Councilor Bazar		Puthiya	Rajshahi	Survey		None
24	Rajbari Bazar		Puthiya	Rajshahi	KII & Survey	Ilish, Silver carp, Tilapia, Karfu, Tengra, Pangas, Koi, Ayre	Shutki Only
25	Tanapur		Puthiya	Rajshahi	Survey		None
26	Notun Bazar		Parbotipur	Dinajpur	Survey		Shutki Only
27	Puraton Bazar		Parbotipur	Dinajpur	KII & Survey	Sarputi, Pabda, Silver carp, Koi, Baim, Shing, Boal, Gulsha	Shutki Only
28	Bhober Bazar		Parbotipur	Dinajpur	KII & Survey	Rui, Catla, Shing, Tengra, Pabda, Mrigel, Kalibaus, Gura Chingri, Shol	None
29	Notun Bazar		Sadar	Gaibandha	KII & Survey	Shing, Magur, Boal, Rui, Catla, Silver carp, Tengra, Baim, Bata, Pangas, Tilapia	Shutki Only
30	Dariapur Bazar		Sadar	Gaibandha	Survey		Shutki Only
31	Chok Bazar		Sadar	Dinajpur	Survey		Shutki Only
32	Bahadur Bazar		Sadar	Dinajpur	Survey		Shutki Only
33	Fulbari Bazar		Sadar	Dinajpur	Survey		Shutki Only
34	Ram Nagar Bazar		Sadar	Dinajpur	Survey		None
35	Pouro Bazar		Sadar	Rangpur	KII & Survey	Rui, Catla, Pangas, Tilapia, Silver carp, Shol, Mrigel, Shing, Tengra, Magur, Gura Chingri, Ilish, Golda, Baim, Puti, Sarputi	Shutki Only
36	Station Road Bazar		Sadar	Rangpur	Survey		Shutki Only
37	CIO Bazar		Sadar	Rangpur	Survey		Shutki Only
38	Terminal Bazar		Sadar	Rangpur	KII & Survey	Rui, Koral, Tuna, Catla, Silver carp, Tilapia, Pangas, Shol, Magur, Tengra, Rupchada, Chanda, Piranha, Mrigel	Shutki Only
39	Darshana Arat	Shutki	Sadar	Rangpur	Survey		Shutki Only
40	Shaheb Bazar		Sadar	Rajshahi	Survey		Shutki Only
41	Court Bazar		Sadar	Rajshahi	Survey		None
42	Horogram Bazar		Sadar	Rajshahi	Survey		Shutki Only
43	Laxmipur Bazar		Sadar	Rajshahi	Survey		Shutki Only
44	Shalbon Bazar		Sadar	Rajshahi	Survey		None
45	Fateh Ali Bazar		Sadar	Bogra	Survey		Shutki Only
46	Chachi Bazar		Sadar	Bogra	Survey		None

#	Market Name	Upazila/ Thana	District	KII/Survey	Most Common Fish Types	Fish- Based Items
47	College Hat	Sadar	Bogra	Survey		Shutki Only
48	Maloti Bazar	Sadar	Bogra	Survey		Shutki Only
49	Bokshi Bazar	Sadar	Bogra	Survey		Shutki Only
50	Boro Bazar	Sadar	Pabna	KII & Survey	Boal, Shing, Pabda, Karfu, Rui, Catla, Pangas, Tilapia, Silver carp, Magur	Shutki Only
51	Masum Bazar	Sadar	Pabna	KII & Survey	Rui, Tengra, Magur, Shol, Taki, Catla, Pabda, Gura Chingri, Golda, Karfu	Shutki Only
52	Bangla Bazar	Sadar	Pabna	Survey		Shutki Only
53	Ononto Bazar	Sadar	Pabna	Survey		Shutki Only
54	Rajbari Bazar	Sadar	Pabna	Survey		Shutki Only
55	Puraton Bazar	Sadar	Gaibandha	KII & Survey	Pangas, Tilapia, Rui, Catla, Mrigel, Shol, Tengra, Puti, Sarputi, Silver carp	Shutki Only
56	CO Office Bazar	Dhupchachiya	Bogra	Survey		Shutki Only
57	Puraton Bazar	Dhupchachiya	Bogra	KII & Survey	Rui, Kalibaus, Pangas, Silver carp, Bata, Koi, Ilish, Catla, Gura Chingri, Nola	Shutki Only
58	Hawkers Market	Sadar	Gaibandha	Survey		Shutki Only
59	Hasikhushi Bazar	Sadar	Gaibandha	Survey		Shutki Only
60	Thana Bazar	Chatmohor	Pabna	Survey		Shutki Only
61	New Market	Rajshahi CC	Rajshahi	KII & Survey	Ilish	None
62	DNCC Gulshan 1	Gulshan	Dhaka	Survey		None
63	Jatrabari Mostho Arath	Jatrabari	Dhaka	KII & Survey	Ilish, Gura Chingri, Boal, Puti, Golda, Pachmishali, Rui, Tilapia, Pangas, Silver carp	See <a href="#">Annex 18</a>
64	Motijheel Arambagh Bazar	Motijheel	Dhaka	KII & Survey	Ilish, Rui, Catla, Tilapia, Pangas, Nola, Gura Chingri, Silver carp, Koi, Baim	Shutki Only
65	Mirpur Kacha Bazar	Mirpur 1	Dhaka	KII & Survey	Ilish, Rui, Catla, Tilapia, Pangas, Silver carp, Gura Chingri, Ayre, Boal	Shutki Only
66	Agora Gulshan	Gulshan	Dhaka	Survey		See <a href="#">Annex 18</a>
67	Shwapno Gulshan	Gulshan	Dhaka	Survey		See <a href="#">Annex 18</a>
68	Dhaka Uddan	Mohammadpur	Dhaka	Survey		Shutki Only
69	Moddhyo Badda Bazar	Badda	Dhaka	Survey		Shutki Only

#	Market Name	Upazila/ Thana	District	KII/Survey	Most Common Fish Types	Fish- Based Items
70	Tongi Bazar	Kacha Tongi	Dhaka	Survey		<i>Shutki</i> Only
71	Abdullahpur Arath	Uttara	Dhaka	KII & Survey	Ilish, Baim, Gura Chingri, Kechki, Chapila, Boal, Rui, Catla, Pangas, Tilapia	None
72	Bou Bazar	Tongi	Dhaka	Survey		<i>Shutki</i> Only
73	Niketan Bazar	Gulshan	Dhaka	Survey		None
74	Prince Bazar	Mohammadpur	Dhaka	Survey		See <a href="#">Annex 18</a>

\* All the information is based on observations from the time of visit at the marketplace.

#### Annex 4: List of Major Markets Identified in Dhaka and Northwestern Region

District Name	Market Name	Market Type	Location
<b>URBAN AREA MARKETS</b>			
<b>Gaibandha Sadar</b>	Dariapur Fish Market	Wholesale	Beside Gaibandha-Sundarganj Road
	Kuptala Union Market	Retailer	Kamarpara
	Lakshmipur Fish Market	Retailer	Palashbari-Sadullapur Road
	Chapadaha bazar	Retailer	Beside Ghaghat river
	Kalibari bazar Fish market	Wholesale	Polashbari-Bogra-Rangpur Highway
	Sapon Traders	Supermarket	Station Road-Jalinge
	M/S Al Mamun Traders	Supermarket	Railgate,Miapara-Mondol para
	Sadar Market	Wholesale	Sadar Upazila
	Fulchhari Fish Market	Retailer	Kalir Bazar
<b>Pabna Sadar</b>	Sadar Fish Market	Wholesale	Sadar Upazila
	Bera Bazar	Wholesale	Choturhat-Near Sojib grocery shop
	Nagar Bari Bazar	Retailer	Kashinathpur
	Sujanagar	Retailer	Baraipara Road
	Shahjadpur Fish Market	Retailer	Near Dhaka-Rangpur Highway
	Dulai Bazar	Retailer	Dhaka-Pabna Highway
	Santhia Bazar	Retailer	Bera Bazar Road
<b>Bogra Sadar</b>	Chashi Bazar Fish Market	Wholesale	Beside Karatoya river-Near Fateh Ali bridge
	Buriganj Bazar	Retailer	Khetlal Road
	Gabtali Bazar	Retailer	Shariakandi Road
	Itakhola Fish market	Retailer	Khetlal Road
	Santahar Bazar	Wholesale	Near Adamdighi
	Kagoil Bazar	Retailer	Uzgram-Kagoil Road
	Chapapur Hat	Retailer	Abadpukur-Naogaon Road,Champapur
	Matidali Bazar	Retailer	Rangpur Road
	Bejora Bazar	Retailer	Madla Road
<b>Rangpur City Coporation</b>	Pouro Fish market	Wholesale	City Coporation
	Terminal Fish market	Wholesale( <i>Deshi &amp; Sea Fish</i> )	City Coporation
	Kamal kasna Fish market	Retailer	City Coporation
	Maikhum bajar Fish market	Retailer	Mahiganj,Sadar Upazila
	Cantonment Road Fish Market	Retailer	City Coporation
	Shatgara Fish Market	Retailer	R.K. Road
	Sultaan Moor Fish Market	Sea Fish	Shatgara-Beside 13 No. Word
<b>Rajshahi City Coporation</b>	Shaheb bajar Fish market	Wholesale	City Coporation
	Shalbon Fish market	Retailer	City Coporation

District Name	Market Name	Market Type	Location
	Court Bazar	Wholesale	City Coporation
	Horogram Fish market	Retailer	City Coporation
	Laxmipur Kacha Bazar	Retailer	City Coporation
	Binodpur Fish Market	Retailer	City Coporation
	New Market Fish Bazar	(Hilsha & Golda) Fish	City Coporation

<b>Dinajpur Sadar</b>	Komolpur Hat	Retailer	Bankra,Rajgonj Road
	Hakimpur Bazar	Retailer	Bazar Road
	Naeem Bazar	Retailer	Dhaka-Dinajpur Highway
	Phulbari Bazar	Wholesale	Bazar Road
	Bazardighi Bazar	Retailer	Dinajpur-Pirganj Road
	Rail Bazar	Wholesale	Sadar Upazila
	Chalk Bazar	Wholesale	Sadar Upazila
	Pulhat Bazar	Retailer	Sadar Upazila
	Sikdar Bazar	Retailer	Sadar Upazila
	Khanpur Bazar	Retailer	Sadar Upazila
	Bahadur Bazar	Retailer	Sadar Upazila

#### RURAL AREA MARKETS

District Name	Market Name	Market Type	Location
<b>Mithapukur Upazila</b>	Mithapukur Hat	Wholesale	Sadar
	Gorer Hat	Retailer	Local
	Girai Hat	Retailer	Local
	Balar Hat	Retailer	Local
	Komorganj Hat	Retailer	Local
	Hazir Hat	Retailer	Local
	Kaforikhal Hat	Retailer	Local
	Miaher Hat	Retailer	Local

<b>Sadullahpur Upazila</b>	Pulbandhi Bazar	Wholesale	Balashi Road
	Kalitola Bazar	Wholesale	Idilpur
	Alnar Bazar	Retailer	Local
	Kishamotkhaju Bazar	Retailer	Local
	Kamar Para	Retailer	Local
	Edrakpur Hat	Retailer	Local

<b>Parbatipur Upazila</b>	Lakshmipur Bazar	Wholesale	Gobindopur
	Raikali Bazar	Retailer	Kha Para
	Bosirbania Hat	Retailer	Lamp Hospital-Choitapara Road
	Debiganj Bazar	Retailer	Dhaka-Dinajpur Highway(Boiragi Para)
	Durgapur Bazar	Wholesale	Sordar Para
	Daglagonj Bazar	Retailer	Baghachora



District Name	Market Name	Market Type	Location
	Khoyerpukur Hat	Retailer	Bishnupur
	Vaduri Hat	Retailer	Purbo Rosulpur
	Garments Bazar	Wholesale	Chirir Bandar Road
	Champatali Bazar	Retailer	Chirir Bandar Road-Baragaon
	Khusrur Mor Bazar	Retailer	Shobothpur Local Road
	Puthiya Bazar	Wholesale	Sadar
	Jhalmalia Hat	Retailer	Local
	Pirgacha Bazar	Retailer	Local
	Tarapur Bazar	Retailer	Local
<b>Puthiya Upazila</b>	Kandra Bazar	Retailer	Local
	Miapara Bazar	Retailer	Local
	Gaopara Hat	Retailer	Local
	Dhopapara Bazar	Retailer	Local
	Dhupchachia Bazar	Wholesale	Sadar
	Bibir Pukur Bazar	Retailer	Jaitul,kahaloo
<b>Dhupchachia Upazila</b>	Altafnagar Bazar	Retailer	Altafnagar
	Dorgahat Bazar	Retailer	Bogura-Nouga Highway
	Fuldighi Bazar	Retailer	Etakhola-Hinda Shimultali Bazar
	Shabrul Bazar	Retailer	Shajahanpure-Ashekpur
	Chatmohar Bazar	Wholesale	Sadar
	Nutun Bazar	Wholesale	Sadar
	Dohopara Hat	Retailer	Local
<b>Chatmahar Upazila</b>	Notabaria Bazar	Retailer	Local
	Charaikol Hat	Retailer	Local
	Mathurapur Hat	Retailer	Local
	Mohela Hat	Retailer	Local
	Dashmile Hat	Rural	
	Chakarmari Hat	Rural	
	Board Hat	Rural	
	Moharaja Hat	Rural	
	Kajir Hat	Rural	
	Banggutary Hat	Rural	
<b>Panchagarh Sadar Upazila</b>	Goalyhal Hat	Semi urban	
	Model Hat	Semi urban	
	Tista Vanga Hat	Rural	
	Shaber Hat	Rural	
	Joybangla Hat	Rural	
	Pukuridanga Hat	Rural	

Jogdal Hat	Semi urban
Kakhpara Hat	Rural
Ziabari Hat	Rural
Kajipara Hat	Rural
Dewan Hat	Rural
Amkathal Hat	Rural
Hariyasha Hat	Semi urban
Jaigun Hat	Rural
Barister Bazar	Rural
Panimach Pokuri Bazar	Rural
Talma Hat	Rural
Seker Hat	Rural
Chakla Hat	Semi urban
Notun Chakla Hat	Rural
Kahuru Hat	Rural
Rathnibari Hat	Rural
Goleha Hat	Semi urban
Tunir Hat	Rural
Pattanir Hat	Rural
Station Bazar	Semi urban
Fakerer Hat	Rural
Kajali Bazar	Rural
Futkibari Morh Bazar	Rural
Golapara Notun Hat	Rural
Dalua Hat	Semi urban
<hr/>	
Hazir Hat	Rural
Dungdungir Hat	Rural
Char Boraibari Hat	Rural
Shardove Bazar	Rural
Maddhakumarpur Hat	Rural
Rajar Hat	Rural
Pataeswari Hat	Semi urban
Kathal Bari Hat	Semi urban
Nayar Hat	Rural
Mastarer Hat	Rural
<b>Kurigram Sadar</b> <b>Upazila</b> Suban Daha Hat	Rural
Ghogadaha Ha	Semi urban
Kachirchar Hat	Rural
Dasher Hat Rdrs Bazar	Rural
Tograi Hat	Rural
Trimohone Bazar	Rural
Shahid Zia Bazar	Semi urban
Chatrapur Sulkur Bazar	Rural
Panchgachi Hat	Rural
Jatrapur Hat	Semi urban
Kurigram Government Hat	Semi urban

	Adarsa Powra Bazar	Semi urban
	Khaliljong Bazar	Semi urban
	Kalir Hat	Rural
	Zatiner Hat	Rural
	Mogalbacha Hat	Semi urban
	Nayar Hat	Rural
	Velur Hat	Rural
	Simultala Wapdar Hat	Rural
	Ghani Mohespur Hat	Rural
	Bangla Bazar	Semi urban
	Gunjura Hat	Rural
	Velar Hat	Semi urban
	Akhanagar Rail Station Hat	Rural
	Rongiani Hat	Rural
	Board Office Hat	Semi urban
	Choidhori Hat	Rural
	Munshir Hat	Rural
	Lakhmer Hat	Rural
	Dhadir Hat	Rural
	Sobdol Hat	Rural
	Jati Bhanga Hat	Rural
	Kachubari Upurpari Hat	Rural
	Bodashori Hat	Rural
	Bokbsher Hat	Rural
	Debipur Hat	Semi urban
	Charadangi Hat	Rural
	Board Office Hat	Semi urban
<b>Thakurgaon Sadar Upazila</b>	Kartictala Hat	Semi urban
	Burur Hat	Rural
	Bagher Hat	Rural
	Molani Hat	Rural
	Aladi Hat	Rural
	valalal Hat	Rural
	Motora Hat	Rural
	Kutbar Hat	Rural
	Polly Biddut Hat	Rural
	Thakurgaon Road Hat	Semi urban
	D-Hat	Rural
	Choudhuri Hat	Semi urban
	Gareya Hat	Rural
	Nilar Hat	Rural
	Purba Fokdonpur Hat	Rural
	Dorammari Bazar	Rural
	Godhuli Bazar	Rural
	Kallbari Hat	Rural
	Kalitola Chowrangi Bazar	Rural

	Golam Babur Hat	Rural
	Pirbari Hat	Rural
	Bhodatgagi Hat	Rural
	Ragpugi Hat	Rural
	Biswaspur Hat	Rural
	Fersha Dangi Hat	Rural
	Mile Hat	Rural
	Khekidangi Hat	Rural
	Shialdangi Hat	Rural
	Begunbari Chowdhuri Hat	Semi urban
	<hr/>	
	Bhobanondo Hat	Rural
	Kachari Hat	Rural
	Ghorongi Hat	Semi urban
	Chourangi Hat	Rural
	Dakhinchowra Boder Hat	Rural
	Taronibari Bazar	Rural
	Beltali Hat	Rural
	Akashkuri Hat	Rural
	Bhangamalir Hat	Rural
	Hortokitola Bazar	Rural
	Bhobaniganj Hat	Rural
	Polasbari Hat	Semi urban
	Ramganj Hat	Rural
	Charchara Bazar	Rural
	Choudhuri Bazar	Rural
	Tupamari Hat	Semi urban
	Ramnagar Hat	Semi urban
<b>Nilphamari Sadar Upazila</b>	Hajiganj Hat	Rural
	Monaganj Bazar	Rural
	Hali More Bazar	Rural
	Tepur Dangal Bazar	Rural
	Shalbariboter Hat	Rural
	Chander Hat	Rural
	Duhuli Bazar	Rural
	Sakha Macha Hat	Rural
	Kochukata Hat	Semi urban
	Bdiamor Bazar	Rural
	Nilphamari municipal market	Semi urban
	Babur Bazar	Rural
	Panchpukur Bazar	Semi urban
	Nuton Bazar	Semi urban
	Gabtolli Bazar	Rural
	Fokirer Danga Hat	Rural
	Fakergonj Hat	Rural
Puler Hat	Rural	
Chinir Kutir Hat	Rural	

Zadur Hat	Rural
Darwani Textile Bazar	Rural
Chairman Bazar	Rural
Chakekazir Hat	Rural
Shokher Bazar	Rural
Nogordorwani Bazar	Semi urban
Babrijhar Hat	Rural
Chowra Bazar	Rural
Chorainkhola Bazar	Rural
Chapra Bazar	Rural
Kalar Bazar	Rural
Dalaler Bazar	Rural
Kajir Hat	Rural
Babur Hat	Rural
Khairat nagar Hat	Rural
jakergonj Hat	Rural
Barua Hat	Rural
Shimultali Bazar	Rural
Dhalapir Bazar	Rural
<hr/>	
Magaram Hat	Rural
Kulaghat Bazar	Semi urban
Vatebare Hat	Rural
Mogol Hat	Rural
Noyar Hat	Rural
Natabear Hat	Semi urban
Goshala Bazar	Rural
Busstand Hat	Rural
Dhabdhebir Hat	Rural
Tiktikir Hat	Rural
Chandi Bazar	Rural
Hasen Bazar	Rural
Khedabag Bazar	Rural
<b>Lalmonirhat Sadar</b> <b>Upazila</b>	
Amtali Bazar	Rural
Borobari Hat	Semi urban
Indirerpar Bazar	Rural
Burir Hat	Rural
Mahendranagar Hat	Semi urban
Faringer Dighi Hat	Rural
Ananda Bazar	Rural
Hiramanik Bazar	Rural
Kalhate Hat	Rural
Okrabari Hat	Rural
Khuniagach Hat	Rural
Marer Hat	Semi urban
Milon Bazar	Rural
Changrer Hat	Rural

	Tista Bazar	Rural
	Mondoler Hat	Rural
	Kursamare Hat	Rural
	Mostofir Hat	Rural
	Kadamtala Bazar	Rural
	Fokirtoky Hat	Rural
	Dautre Hat	Rural
	Sindumoti Hat	Rural
	Fatkai hat	Rural
	Simanto bazar	Rural
	Ratankandi hat	Semi urban
	Kuralia hat	Rural
	Vennabari hat	Rural
	Mesra	Semi urban
	Bahuka hat	Rural
	Soratol hat	Rural
	Bijoypur bazar	Rural
	Rupsa ahat	Rural
	Char gotia hat	Rural
	Shimla hat	Rural
	Bagbari hat	Rural
	Pipul baria bazar	Rural
	Panchthakuri hat	Rural
	Ghoptachara hat	Rural
	Garadaho hat	Rural
	Bejgatih	Rural
	Chhangachha	Semi urban
<b>Sirajganj Upazila</b>	<b>Sadar</b>	Bamonboira hat
		Rajitpur hat
		Khoksabari hat
		Kalidashgati hat
		Ekdala bazar
		Hat boyra
		Fakirtala hat
		Ramigram bazar
		Sirajganj kalibari bazar
		Launch ghat bazar
		Bramgati hat
		Rahmatganj bazar
		Chondidashgati bazar
		Sirajganj boro bazar
		Milgate bazar
		Seatkolo hat
		Rajganj railway bazar
		Mirpur bazar
		Bahuti bazar

		Kalia hat	Semi urban
		Dhukuria hat	Rural
		Paikpara hat	Rural
		Bopitara hat	Rural
		Chhatiantoli hat	Rural
		Koddamor bazar	Rural
		Saidabad hat	Semi urban
		Punorbason hat	Rural
		Zarila bazar	Rural
		Barur hat	Rural
		Telkupi hat	Rural
		Chhatni hat	Semi urban
		Digapatia hat	Rural
		Akdigha hat	Rural
		Dhorail hat	Rural
		Terminal bazar	Semi urban
		Station bazar	Semi urban
		Dangapara hat	Rural
		Niocha bazar	Semi urban
<b>Natore Upazila</b>	<b>Sadar</b>	Gokulnoger bottola hat	Rural
		Halsa hat	Semi urban
		Tebaria hat	Semi urban
		Chandpur hat	Rural
		Pirgonj hat	Rural
		Jalalabad hat	Rural
		Kafuria hat	Rural
		Haybatpur hat	Semi urban
		Sankarvag hat	Rural
		Dorappur hat	Rural
		Borboria hat	Rural
		Tentulia bazar	Rural
		Sombari bazar	Rural
		Kirtipur hat	Rural
		Sahapur hat	Rural
		Nagar kusumbi bazar	Rural
		Ghat tilakpur bazar	Rural
		Chakalita bazar	Rural
<b>Naogaon Upazila</b>	<b>Sadar</b>	Paharpur hat	Rural
		Haparia hat	Rural
		Tilakpur	Semi urban
		Adamdurgapur bazar	Rural
		Fatapur hat	Rural
		Amkali bazar	Rural
		Lakhanganj bazar	Rural
		Raintitola bazar	Rural
		Balihar bazar	Rural

	Paina bazar	Rural
	Matha bazar	Semi urban
	Dubalhati bazar	Rural
	Battali bazar	Rural
	Bhimpur bazar	Rural
	Madarmolla bazar	Rural
	Ananda bazar	Rural
	Mokimpur bazar	Rural
	Chandipur bazar	Rural
	Sailgachi hat	Rural
	Dighipar bazar	Rural
	Goali bazar	Rural
	Hasaigari bazar	Rural
	Katkhir hat	Rural
	Gopal bazar	Rural
	Gabratala hat	Rural
	Mohipur hat	Rural
	Chapia hat	Rural
	Ranjibanpur hat	Rural
	Nashpur hat	Rural
	Palsha hat	Rural
	Amnura hat	Rural
	Atahal hat	Rural
	Novagota hat	Rural
	Karbala hat	Semi urban
	Tomtom stand	Semi urban
	Ramchandra hat	Semi urban
	Morajpur hat	Rural
	Borogharia hat	Rural
<b>Chapainawabganj Sadar Upazila</b>	Ramtola hat	Rural
	Namisankorbati hat	Rural
	Ramkristopur hat	Rural
	Narayanpur hat	Rural
	Kalinagar hat	Rural
	Bagchar hat	Rural
	Jointapur hat	Rural
	Chataidubi hat	Rural
	Nasirabad hat	Rural
	Debinagar hat	Rural
	Dhulauri hat	Rural
	Char bagdanga hat	Semi urban
	Kamarpara hat	Rural
	Shahjahanpur hat	Rural
	Kodal kati hat	Rural
<b>Joypurhat Sadar Upazila</b>	Kadamtali bazar	Rural
	Dhalahar HS bazar	Semi urban



Jamtali bazar	Rural
Bhatiapara bazar	Rural
Batris singason bazar	Rural
Khaspahanonda bazar	Rural
Pullybala bazar	Rural
Bishnopur bazar	Rural
Ragabpur bazar	Rural
Puranapail hat	Semi urban
Habibpur bazar	Rural
Hatigara bazar	Rural
Halatti bazar	Rural
Madhai nagar hat	Rural
Kaitaheer bazar	Rural
Helkuda bazar	Rural
Amdoi bazar	Semi urban
Kutibari bazar	Rural
Chowmohoni bazar	Rural
Durgadaha bazar	Rural
Hitchmi bazar	Rural
Pollibiddut bazar	Semi urban
Nengapir bazar	Rural
Shotaharmor bazar	Rural
Sagunachara hat	Rural
Mazipara bazar	Rural
Bhadsa bazar	Semi urban
Teghor bazar	Semi urban
Gopalpur bazar	Rural
Pali hat	Rural
Kazir hat	Rural
Hairpur bazar	Rural
Akhra hat	Rural
Suktaheer bazar	Rural
Dharki high school bazar	Rural
Baskata bazar	Rural
Khejurtoli bazar	Rural

## Annex 5: Captured Fish Shortages

### Phase 1 (n = 507)

SL	Fish Type	No.	Percentage
1	Ilish	47	9.3%
2	Mola	18	3.6%
3	Puti	16	3.2%
4	Gura Chingri	13	2.6%
5	<i>Panchmishali (Mixed)</i>	13	2.6%
6	Rupchada	12	2.4%
7	Dhela	10	2.0%
8	Pabda	10	2.0%
9	Kechki	10	2.0%
10	Guchi	9	1.8%

### Phase 2 (n = 557)

SL	Fish Type	No.	Percentage
1	Ilish	69	12.4%
2	Gura Chingri	23	4.1%
3	<i>Panchmishali (Mixed)</i>	17	3.1%
4	Rupchada	17	3.1%
5	Mola	15	2.7%
6	Pabda	13	2.3%
7	Guchi	9	1.6%
8	Dhela	6	1.1%
9	Puti	5	0.9%
10	Kechki	1	0.2%

### Phase 1 and 2 Combined (N = 1064)

SL	Fish Type	No.	Percentage
1	Ilish	120	11.3%
2	<i>Panchmishali (Mixed)</i>	36	3.4%
3	Mola	34	3.2%
4	Gura Chingri	31	2.9%
5	Rupchada	29	2.7%
6	Pabda	24	2.3%
7	Puti	22	2.1%
8	Guchi	20	1.9%
9	Dhela	16	1.5%
10	Kechki	11	1.0%

## Annex 6: Cultured Fish Shortages

### Phase 1 (n = 507)

SL	Fish Type	No.	Percentage
1	Pabda	10	2.0%
2	Magur	6	1.2%
3	Tengra	6	1.2%
4	Bata	5	1.0%
5	Boal	5	1.0%
6	Shing	5	1.0%
7	Catla	4	0.8%
8	Koi	4	0.8%
9	Sarputi	4	0.8%
10	Golda	4	0.8%

### Phase 2 (n = 557)

SL	Fish Type	No.	Percentage
1	Pabda	10	1.8%
2	Magur	6	1.1%
3	Tengra	6	1.1%
4	Bata	5	0.9%
5	Boal	5	0.9%
6	Shing	5	0.9%
7	Catla	4	0.7%
8	Koi	4	0.7%
9	Shorputi	4	0.7%
10	Golda	4	0.7%

### Phase 1 and 2 Combined (N = 1064)

SL	Fish Type	No.	Percentage
1	Pabda	24	2.3%
2	Tengra	21	2.0%
3	Golda	16	1.5%
4	Magur	15	1.4%
5	Boal	13	1.2%
6	Koi	12	1.1%
7	Shorputi	11	1.0%
8	Shing	10	0.9%
9	Catla	10	0.9%
10	Bata	9	0.8%

## Annex 7: Top Fish Purchase Types Segregated by Gender

### Phase 1

**Overall** n = 507

SL	Fish Type	No.	Percentage
1	Rui	140	28%
2	Catla	57	11%
3	Pangas	50	10%
4	Koi	48	9%
5	Silver Carp	48	9%

**Male** n = 441

SL	Fish Type	No.	Percentage
1	Rui	124	28%
2	Catla	48	11%
3	Pangas	45	10%
4	Koi	44	10%
5	Silver Carp	42	10%
6	Tilapia	35	8%
7	Ilish	35	8%

**Female** n = 66

SL	Fish Type	No.	Percentage
1	Rui	16	24%
2	Golda	14	21%
3	Catla	9	14%
4	Tilapia	8	12%
5	Shing	8	12%
6	Ilish	8	12%
7	Pabda	8	12%

## Phase 2

**Overall** n = 557

SL	Fish Type	No.	Percentage
1	Rui	105	19%
2	Ilish	94	17%
3	Pangas	74	13%
4	Tilapia	56	10%
5	Catla	45	8%
6	Silver carp	42	8%
7	Puti	42	8%
8	<i>Panchmishali</i> (Mixed)	38	7%
9	Shing/Kanos	20	4%

**Male** n = 491

SL	Fish Type	No.	Percentage
1	Rui	94	19%
2	Ilish	84	17%
3	Pangas	63	13%
4	Tilapia	49	10%
5	Catla	40	8%
6	Silver carp	40	8%

**Female** n = 66

SL	Fish Type	No.	Percentage
1	Pangas	11	17%
2	Rui	11	17%
3	Ilish	10	15%
4	Tilapia	7	11%
5	Catla	5	8%
6	Koi	5	8%

## Phase 1 and 2 Combined

Overall n = 1064

SL	Fish Type	No.	Percentage
1	Rui	245	23%
2	Ilish	137	13%
3	Pangas	124	12%
4	Catla	102	10%
5	Tilapia	99	9%
6	Silver Carp	90	8%
7	Koi	82	8%
8	<i>Panchmishali</i> (Mixed)	69	6%
9	Puti	59	6%

Male n = 932

SL	Fish Type	No.	Percentage
1	Rui	218	23%
2	Ilish	119	13%
3	Pangas	108	12%
4	Catla	88	9%
5	Tilapia	84	9%

Female n = 132

SL	Fish Type	No.	Percentage
1	Rui	27	20%
2	Ilish	18	14%
3	Pangas	16	12%
4	Golda	15	11%
5	Tilapia	15	11%

## Annex 8: Top Fish Purchase Types Segregated by Age Group

### Phase 1

**Overall** n = 507

SL	Fish Type	No.	%
1	Rui	140	28%
2	Catla	57	11%
3	Pangas	50	10%
4	Koi	48	9%
5	Silver Carp	48	9%

**41 - 50 YO** n = 123

SL	Fish Type	No.	%
1	Rui	26	21%
2	Catla	18	15%
3	<i>Panchmishali</i> (Mixed)	14	11%
4	Ilish	14	11%
5	Koi	14	11%

**21-30 YO** n = 95

SL	Fish Type	No.	%
1	Rui	26	27%
2	Catla	12	13%
3	Pangas	12	13%
4	Gura Chingri	11	12%
5	Boal	10	11%

**51 - 60 YO** n = 59

SL	Fish Type	No.	%
1	Rui	22	37%
2	Silver Carp	6	10%
3	Bata	6	10%
4	Catla	6	10%
5	Pangas	6	10%

**31 - 40 YO** n = 201

SL	Fish Type	No.	%
1	Rui	62	31%
2	Silver Carp	23	11%
3	Tilapia	22	11%
4	Shing/Kanos	20	10%
5	Catla	20	10%

**61 - 70 YO** n = 17

SL	Fish Type	No.	%
1	Silver Carp	4	24%

## Phase 2

**Overall** n = 557

SL	Fish Type	No .	Percentage
1	Rui	105	19%
2	Ilish	94	17%
3	Pangas	74	13%
4	Tilapia	56	10%
5	Puti	42	8%
6	Catla	45	8%
7	Silver carp	42	8%
8	<i>Panchmishali</i> (Mixed)	38	7%

**21-30 YO** n = 117

SL	Fish Type	No .	Percentage
1	Tilapia	20	17%
2	Pangas	17	15%
3	Catla	16	14%
4	Rui	16	14%
5	Silver carp	15	13%

**31 - 40 YO** n = 220

SL	Fish Type	No .	Percentage
1	Rui	50	23%
2	Ilish	35	16%
3	Pangas	34	15%
4	Tilapia	21	10%
5	Koi	17	8%
6	Silver carp	18	8%
7	Puti	16	7%
8	Catla	15	7%

**41 - 50 YO** n = 146

SL	Fish Type	No .	Percentage
1	Puti	26	18%
2	Rui	18	12%
3	<i>Panchmishali</i> (Mixed)	14	10%
4	Ilish	14	10%

**51 - 60 YO** n = 57

SL	Fish Type	No .	Percentage
1	Ilish	14	25%
2	Rui	8	14%
3	<i>Panchmishali</i> (Mixed)	8	14%
4	Pangas	7	12%
5	Tilapia	6	11%

**61 - 70 YO** n = 11

SL	Fish Type	No .	Percentage
1	Catla	1	9%



## Phase 1 and 2 Combined

**Overall** n = 1051

SL	Fish Type	No.	Percentage
1	Rui	245	23%
2	Ilish	137	13%
3	Pangas	124	12%
4	Catla	102	10%
5	Tilapia	99	9%

**21-30 YO** n = 212

SL	Fish Type	No.	Percentage
1	Rui	42	20%
2	Pangas	29	14%
3	Catla	28	13%
4	Tilapia	25	12%
5	Ilish	23	11%

**31 - 40 YO** n = 421

SL	Fish Type	No.	Percentage
1	Rui	112	27%
2	Pangas	52	12%
3	Ilish	49	12%
4	Tilapia	43	10%
5	Silver Carp	41	10%

**41 - 50 YO** n = 269

SL	Fish Type	No.	Percentage
1	Rui	57	21%
2	Ilish	46	17%
3	<i>Panchmishali</i> (Mixed)	29	11%
4	Catla	25	9%

**51 - 60 YO** n = 116

SL	Fish Type	No.	Percentage
1	Rui	30	26%
2	Ilish	17	15%
3	Pangas	13	11%
4	<i>Panchmishali</i> (Mixed)	11	9%

**61 - 70 YO** n = 28

SL	Fish Type	No.	Percentage
1	Mrigel	4	14%
2	Silver Carp	4	14%
3	Pangas	3	11%
4	Pabda	3	11%
5	Tilapia	3	11%

## Annex 9: Top Fish Aspirations Segregated by Region

### Phase 1

**Overall** n = 507

SL	Fish Type	No.	Percentage
1	Ilish	301	59%
2	Rui	162	32%
3	Rupchada	80	16%
4	Catla	72	14%
5	Pabda	67	13%

**Rajshahi** n = 48

SL	Fish Type	No.	Percentage
1	Ilish	25	52%
2	Rui	15	31%
3	Catla	11	23%
4	Rupchada	7	15%
5	Silver Carp	6	13%

**Dhaka** n = 195

SL	Fish Type	No.	Percentage
1	Ilish	109	56%
2	Rui	76	39%
3	Rupchada	52	27%
4	Golda	42	22%
5	Pabda	32	16%

**Pabna** n = 52

SL	Fish Type	No.	Percentage
1	Ilish	22	42%
2	Silver Carp	10	19%
3	Rui	9	17%
4	Boal	9	17%
5	Ayre	8	15%

**Rajshahi Division** n = 149

SL	Fish Type	No.	Percentage
1	Ilish	69	46%
2	Rui	33	22%
3	Catla	24	16%
4	Silver Carp	22	15%
5	Boal	18	12%

**Bogra** n = 49

SL	Fish Type	No.	Percentage
1	Ilish	22	45%
2	Tengra	10	20%
3	Rui	9	18%
4	Catla	7	14%
5	Magur	7	14%

**Rangpur Division** n = 163

SL	Fish Type	No.	Percentage
1	Ilish	123	75%
2	Rui	53	33%
3	Gura Chingri	33	20%
4	Shing	33	20%
5	Pabda	28	17%

**Rangpur** n = 67

SL	Fish Type	No.	Percentage
1	Ilish	58	87%
2	Rui	23	34%
3	Shing	16	24%
4	Gura Chingri	12	18%

**Gaibandha** n = 43

SL	Fish Type	No.	Percentage
1	Ilish	26	60%
2	Rui	11	26%
3	Gura Chingri	10	23%

**Dinajpur** n = 53

SL	Fish Type	No.	Percentage
1	Ilish	39	74%
2	Rui	19	36%
3	Pabda	12	23%
4	Gura Chingri	11	21%

### Phase 2

**Overall** n = 557

**Rajshahi** n = 59

SL	Fish Type	No.	Percentage
1	Ilish	401	72%
2	Rui	112	20%
3	Shing/Kanos	78	14%
4	Boal	77	14%
5	Golda	73	13%

**Dhaka** n = 197

SL	Fish Type	No.	Percentage
1	Ilish	148	75%
2	Boal	41	21%
3	Golda	36	18%
4	Rupchada	36	18%
5	Shing/Kanos	26	13%

**Rajshahi Division** n = 179

SL	Fish Type	No.	Percentage
1	Ilish	90	50%
2	Rui	58	32%
3	Catla	41	23%
4	Silver carp	22	12%
5	Boal	16	9%
6	Mrigel	15	8%

**Rangpur Division** n = 181

SL	Fish Type	No.	Percentage
1	Ilish	163	90%
2	Shing/Kanos	43	24%
3	Rui	38	21%
4	Gura Chingri	34	19%
5	Chital	25	14%
6	Boal	20	11%

SL	Fish Type	No.	Percentage
1	Ilish	27	46%
2	Rui	22	37%
3	Catla	12	20%
4	Bagda	8	14%
5	Silver carp	7	12%
6	Mola	7	12%

**Pabna** n = 60

SL	Fish Type	No.	Percentage
1	Ilish	32	53%
2	Rui	17	28%
3	Catla	11	18%
4	Ayre	8	13%
5	Pangas	7	12%

**Bogra** n = 60

SL	Fish Type	No.	Percentage
1	Ilish	31	52%
2	Rui	19	32%
3	Catla	18	30%
4	Kalibaus	10	17%
5	Big Head Silver Carp	9	15%

**Rangpur** n = 63

SL	Fish Type	No.	Percentage
1	Ilish	55	87%
2	Shing/Kanos	16	25%
3	Rupchada	13	21%
4	Gura Chingri	14	22%
5	Rui	12	19%
6	Chital	11	17%

**Gaibandha** n = 58

SL	Fish Type	No.	Percentage
1	Ilish	54	93%
2	Gura Chingri	15	26%
3	Rui	14	24%
4	Shol	13	22%
5	Mola	9	16%
6	Golda	9	16%

**Dinajpur** n = 60

SL	Fish Type	No.	Percentage
1	Ilish	54	90%
2	Boal	15	25%
3	Magur	14	23%
4	Shing/Kanos	12	20%
5	Rui	12	20%
6	Bagair	7	12%

### Phase 1 and 2 Combined

**Overall** n = 1064

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	245	23%
2	Ilish	136	13%
3	Pangas	124	12%
4	Catla	102	10%
5	Tilapia	98	9%

**Rajshahi** n = 106

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	79	75%
2	Silver carp	51	48%
3	Catla	42	40%
4	Koi	26	25%
5	Ilish	20	19%

**Dhaka** n = 392

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	114	29%
2	Ilish	78	20%
3	Tilapia	54	14%
4	Pangas	46	12%
5	Golda	40	10%

**Bogra** n = 113

SL	Fish Type	No. of Purchases	% of Respondents
1	Ilish	15	13%
2	Rui	12	11%
3	Pangas	8	7%
4	Silver carp	5	4%
5	Panchmishali (Mixed)	4	4%
6	Tilapia	4	4%

**Rajshahi Division** n = 328

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	96	29%
2	Silver carp	64	20%
3	Catla	50	15%
4	Pangas	47	14%
5	Ilish	39	12%

**Pabna** n = 109

SL	Fish Type	No. of Purchases	% of Respondents
1	Silver carp	8	7%
2	Catla	6	6%
3	Rui	5	5%
4	Pangas	5	5%
5	(Mixed)	5	5%

**Rangpur Division** n = 344

**Rangpur** n = 130

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	35	10%
2	Pangas	31	9%
3	Puti	31	9%
4	<i>Panchmishali</i> (Mixed)	22	6%
5	Ilish	19	6%

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	13	10%
2	Puti	13	10%
3	Pangas	10	8%
4	Tilapia	8	6%
5	<i>Panchmishali</i> (Mixed)	7	5%
6	Ilish	7	5%
7	Bata	7	5%

**Gaibandha** n = 113

**Dinajpur** n = 101

SL	Fish Type	No. of Purchases	% of Respondents
1	Pangas	12	11%
2	Puti	11	10%
3	Rui	11	10%
4	<i>Panchmishali</i> (Mixed)	8	7%
5	Koi	6	5%

SL	Fish Type	No. of Purchases	% of Respondents
1	Rui	11	11%
2	Pangas	9	9%
3	Puti	7	7%
4	<i>Panchmishali</i> (Mixed)	7	7%
5	Ilish	7	7%

### Annex 10: Purchase of Processed Fish Items Segregated by Region and Income Class

#### Phase 1

	Dried Fish (Shutki)	%	Chepa Shutki	%	Shidol Shutki	%	Salted Fish	%	Marinated Fish	Fish Sauce	Fish Stock	Fish Fingers	Frozen Fish	Smoked Fish	Fish Oil	Fish Pickles	Fish Fillet
<b>Region</b>																	
Dhaka	72	37%	40	21%	21	11%	3	2%	1	0	0	2	0	0	0	0	2
Outside Dhaka	168	54%	1	0%	3	1%	5	2%	0	0	0	0	1	0	0	0	0
<b>Total</b>	<b>240</b>	<b>91%</b>	<b>41</b>	<b>21%</b>	<b>24</b>	<b>12%</b>	<b>8</b>	<b>3%</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>
<b>Income Category</b>																	
Below BDT 7,101	7	35%	0	0%	0	0%	0	0%	0	0	0	0	0	0	0	0	0
7,100 - 12,000	23	34%	2	3%	2	3%	1	1%	0	0	0	0	0	0	0	0	0
12,001 - 14,200	44	60%	1	1%	0	0%	2	3%	0	0	0	0	0	0	0	0	0
14,201 - 22,500	78	53%	9	6%	9	6%	1	1%	0	0	0	0	1	0	0	0	0
22,501 - 90,000	66	49%	24	18%	13	10%	4	3%	0	0	0	0	0	0	0	0	0
90,001 - 150,000	22	38%	5	9%	0	0%	0	0%	1	0	0	2	0	0	0	0	2
150,001 and above	0	0%	0	0%	0	0%	0	0%	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>240</b>		<b>41</b>		<b>24</b>		<b>8</b>		<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Phase 2**

	Dried Fish (Shutki)	%	Chepa Shutki	%	Shidol Shutki	%	Salted Fish	%	Marinated Fish	Fish Sauce	Fish Stock	Fish Fingers	Frozen Fish	Smoke d Fish	Fis h Oil	Fish Pickles	Fish Fillet
<b>Regio</b>																	
Dhaka	105	54%	35	18%	3	2%	11	6%	1	2	0	1	0	0	0	0	0
Outside Dhaka	181	58%	24	8%	11	4%	1	0%	0	0	0	0	3	0	0	0	0
<b>Total</b>	<b>286</b>	<b>51%</b>	<b>59</b>	<b>11%</b>	<b>14</b>	<b>3%</b>	<b>12</b>	<b>2%</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Income Category</b>																	
Below BDT 7,101	6	46%	0	0%	0	0%	0	0%	0	0	0	0	0	0	0	0	0
BDT 7,101-12,000	39	51%	6	8%	3	4%	0	0%	0	0	0	0	0	0	0	0	0
BDT 12,001-14,200	76	63%	9	8%	3	3%	0	0%	0	0	0	0	1	0	0	0	0
BDT 14,201-22,500	44	64%	6	9%	0	0%	1	1%	0	0	0	0	0	0	0	0	0
BDT 22,501-41,500	58	52%	8	7%	3	3%	2	2%	0	0	0	0	1	0	0	0	0
BDT 41,501-90,000	28	43%	14	22%	3	5%	1	2%	0	0	0	0	0	0	0	0	0
BDT 90,001-150,000	32	32%	14	14%	2	2%	8	8%	1	1	0	1	1	0	0	0	0
150,001 and above	3	3%	2	2%	0	0%	0	0%	0	1	0	0	0	0	0	0	0
<b>Total</b>	<b>286</b>		<b>59</b>		<b>14</b>		<b>12</b>		<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Phase 1 and 2 Combined**

	Dried Fish (Shutki)	%	Chepa Shutki	%	Shidol Shutki	%	Salted Fish	%	Marinated Fish	Fish Sauce	Fish Stock	Fish Fingers	Frozen Fish	Smoked Fish	Fish Oil	Fish Pickles	Fish Fillet
<b>Regional</b>																	
Dhaka	177	34%	75	75%	24	63%	14	70%	2	2	0	0	0	0	0	0	3
Outside Dhaka	349	66%	25	25%	14	37%	6	30%	0	0	0	0	4	0	0	0	0
<b>Total</b>	<b>526</b>	<b>49%</b>	<b>100</b>	<b>9%</b>	<b>38</b>	<b>4%</b>	<b>20</b>	<b>2%</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>
<b>Income Category</b>																	
Below BDT 7101	13	3%	0	0%	0	0%	0	0%	0	0	0	0	0	0	0	0	0
BDT 7101-12000	62	13%	8	11%	5	20%	1	6%	0	0	0	0	0	0	0	0	0
BDT 12001-14200	120	26%	10	13%	3	12%	2	13%	0	0	0	0	1	0	0	0	0
BDT 14201-22500	122	27%	15	20%	9	36%	2	13%	0	0	0	0	1	0	0	0	0
BDT 22501-41500	58	13%	8	11%	3	12%	2	13%	0	0	0	0	1	0	0	0	0
BDT 41501-90000	28	6%	14	18%	3	12%	1	6%	0	0	0	0	0	0	0	0	0
BDT 90001-150000	54	12%	19	25%	2	8%	8	50%	2	1	0	0	1	0	0	2	2
BDT 150001 and Above	3	1%	2	3%	0	0%	0	0%	0	1	0	3	0	0	0	0	0
<b>Total</b>	<b>460</b>		<b>76</b>		<b>25</b>		<b>16</b>		<b>2</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>



## Annex 11: Top-most purchased fish types according to each age group

### Phase 1

Fish Types	21-30 Age Group	31-40 Age Group	41-50 Age Group	51-60 Age Group	61-70 Age Group	Overall
<b>Rui</b>	27%	31%	21%	37%	12%	28%
<b>Catla</b>	13%	10%	15%	10%	6%	11%
<b>Pangas</b>	13%	9%	7%	10%	12%	10%
<b>Gura Chingri</b>	12%	6%	5%	2%	6%	7%
<b>Silver Carp</b>	5%	11%	7%	10%	24%	9%
<b>Tilapia</b>	5%	11%	9%	7%	0%	8%
<b>Shing</b>	8%	10%	9%	3%	0%	8%
<b><i>Panchmishali</i></b> (Mixed)	2%	4%	11%	5%	12%	6%
<b>Ilish</b>	11%	7%	11%	5%	6%	8%
<b>Koi</b>	8%	9%	11%	8%	6%	9%
<b>Bata</b>	4%	4%	7%	10%	6%	6%

### Phase 2

Fish Type	15 - 21 Age Group	21 - 30 Age Group	31 - 40 Age Group	41 - 50 Age Group	51 - 60 Age Group	61 - 70 Age Group	Overall
<b>Rui</b>	0%	14%	23%	21%	14%	0%	19%
<b>Ilish</b>	0%	11%	16%	22%	25%	0%	17%
<b>Pangas</b>	60%	15%	15%	8%	12%	9%	13%
<b>Tilapia</b>	0%	17%	10%	25%	11%	27%	10%
<b>Catla</b>	20%	14%	7%	5%	7%	9%	8%
<b>Gura Chingri</b>	20%	2%	3%	5%	5%	0%	4%
<b>Silver Carp</b>	0%	13%	0%	5%	4%	0%	8%
<b>Shing</b>	0%	4%	5%	3%	0%	0%	4%
<b><i>Panchmishali</i></b> (Mixed)	0%	3%	5%	10%	14%	2%	7%
<b>Koi</b>	0%	3%	8%	6%	7%	0%	6%
<b>Bata</b>	0%	3%	3%	3%	2%	0%	3%

### Phase 1 and 2 Combined

Fish Type	15 - 21 years	21 - 30 years	31 - 40 years	41 - 50 years	51 - 60 years	61 - 70 years	Overall
<b>Rui</b>	8%	20%	27%	21%	7%	20%	23%
<b>Ilish</b>	0%	11%	12%	17%	4%	20%	13%
<b>Pangas</b>	38%	14%	12%	8%	11%	20%	12%
<b>Catla</b>	8%	13%	8%	9%	7%	20%	10%
<b>Tilapia</b>	0%	12%	10%	6%	11%	20%	9%
<b>Gura Chingri</b>	6%	5%	5%	3%	4%	40%	5%
<b>Silver Carp</b>	9%	10%	6%	7%	14%	0%	9%
<b>Shing</b>	6%	7%	6%	2%	0%	0%	6%
<b><i>Panchmishali (Mixed)</i></b>	2%	5%	11%	9%	11%	20%	7%
<b>Koi</b>	6%	9%	9%	8%	4%	0%	8%
<b>Bata</b>	1%	1%	0%	0%	0%	0%	0%

## Annex 12: Segregation of Spending on Food Categories according to Income and Regions

### Phase 1

Proportion of Spending	Staples	Vegetables & Fruit	Meat and Eggs	Fish	Others	Total
<b>Overall</b>						
Average Spending in BDT	749	456	672	841	468	3,097
Spending as Percentage of Total	24%	15%	22%	27%	15%	100%
<b>BY INCOME*</b>						
<b>Low Income</b>						
Average Spending in BDT	576	292	393	472	321	2,001
Spending as Percentage of Total	29%	15%	20%	24%	16%	100%
<b>Middle Income</b>						
Average Spending in BDT	770	437	681	866	461	3,115
Spending as Percentage of Total	25%	14%	22%	28%	15%	100%
<b>High Income</b>						
Average Spending in BDT	1,099	961	1,345	1,665	858	5,845
Spending as Percentage of Total	19%	16%	23%	28%	15%	100%
<b>BY REGION</b>						
<b>Dhaka</b>						
Average Spending in BDT	928	616	971	1,153	494	4,093
Spending as Percentage of Total	23%	15%	24%	28%	12%	100%
<b>Rajshahi</b>						
Average Spending in BDT	588	314	460	555	504	2,295
Spending as Percentage of Total	26%	14%	20%	24%	22%	100%
<b>Rangpur</b>						
Average Spending in BDT	681	394	505	724	404	2,646
Spending as Percentage of Total	26%	15%	19%	27%	15%	100%

## Phase 2

Proportion of Spending	Staples	Vegetables & Fruit	Meat and Eggs	Fish	Others	Total
<b>Overall</b>						
Average Spending in BDT	1046	561	963	991	727	4288
Spending as Percentage of Total	24%	13%	22%	23%	17%	100%
<b>BY INCOME*</b>						
<b>Low Income</b>						
Average Spending in BDT	717	402	455	509	353	2437
Spending as Percentage of Total	29%	17%	19%	21%	14%	100%
<b>Middle Income</b>						
Average Spending in BDT	1054	586	888	955	763	4246
Spending as Percentage of Total	25%	14%	21%	22%	18%	100%
<b>High Income</b>						
Average Spending in BDT	1693	823	2106	2047	1409	8078
Spending as Percentage of Total	21%	10%	26%	25%	17%	100%
<b>BY REGION</b>						
<b>Dhaka</b>						
Average Spending in BDT	1246	560	1341	1431	706	5283
Spending as Percentage of Total	24%	11%	25%	27%	13%	100%
<b>Rajshahi</b>						
Average Spending in BDT	1048	639	835	846	920	4288
Spending as Percentage of Total	24%	15%	19%	20%	21%	100%
<b>Rangpur</b>						
Average Spending in BDT	845	486	700	697	559	3287
Spending as Percentage of Total	26%	15%	21%	21%	17%	100%

## Phase 1 and 2 Combined

Proportion of Spending	Staples	Vegetables & Fruit	Meat and Eggs	Fish	Others	Total
<b>Overall</b>						
Average Spending in BDT	903	510	821	920	569	3722
Spending as Percentage of Total	24%	14%	22%	25%	15%	100%
<b>BY INCOME*</b>						
<b>Low Income</b>						
Average Spending in BDT	654	354	427	493	320	2247
Spending as Percentage of Total	29%	16%	19%	22%	14%	100%
<b>Middle Income</b>						
Average Spending in BDT	840	472	702	845	476	3335
Spending as Percentage of Total	25%	14%	21%	25%	14%	100%
<b>High Income</b>						
Average Spending in BDT	1417	835	1663	1738	1156	6809
Spending as Percentage of Total	21%	12%	24%	26%	17%	100%
<b>BY REGION</b>						
<b>Dhaka</b>						
Average Spending in BDT	1081	589	1149	1288	570	4677
Spending as Percentage of Total	23%	13%	25%	28%	12%	100%
<b>Rajshahi</b>						
Average Spending in BDT	841	492	660	715	688	3395
Spending as Percentage of Total	25%	14%	19%	21%	20%	100%
<b>Rangpur</b>						
Average Spending in BDT	767	442	607	709	456	2982
Spending as Percentage of Total	26%	15%	20%	24%	15%	100%

\* Low-Income households categorized as households with monthly incomes of up to BDT 14,200 (USD 168); Middle-Income Households categorized as households with monthly incomes of between BDT 14,201 (USD 168) and BDT 90,000 (USD 1,066); and High-Income Households categorized as households with monthly incomes of BDT 90,001 (USD 1,066) and above.

## Annex 13: Most Aspired Purchased Small Fish Types (as reported by respondents)

### Phase 1

SL	Fish Type	No.	Percentage	Avg. Size (grams)	Avg. Price (BDT)
1	Mola	109	25%	-	418
2	<i>Panchmishali</i> (Mixed)	102	23%	-	401
3	Puti	82	19%	-	315
4	Gura Chingri	78	18%	-	459
5	Kechki	50	11%	-	558
6	Tengra	44	10%	45	425
7	Dhela*	35	8%	-	-
8	Darkina	28	6%	-	200

### Phase 2

SL	Fish Type	No.	Percentage	Avg. Size (grams)	Avg. Price (BDT)
1	<i>Panchmishali</i> (Mixed)	115	25%	455	363
2	Mola	80	17%	1,000	313
3	Tengra	77	17%	30	407
4	Gura Chingri	53	11%	500	583
5	Kechki	30	6%	250	589
6	Chela	22	5%	-	180
7	Darkina	21	5%	-	332

### Phase 1 and 2 Combined

SL	Fish Type	No.	Percentage	Avg. Size (grams)	Avg. Price (BDT)
1	<i>Panchmishali</i> (Mixed)	255	25%	199	199
2	Mola	195	21%	-	333
3	Gura Chingri	138	15%	18	448
4	Tengra	133	15%	37	302
5	Kechki	83	9%	87	667
6	Shing/Kanos	63	7%	274	406

### Annex 14: Roles, Market Prominence and Challenges Faced by Actors in the Fish Value Chain

Actor	Role	Level of Competition	Market Power	Challenges
<b>Mahajan/ Dadondar</b>	Provides major factors of production	Depends on locality	Low to Medium	<p><b>Credit management:</b> In cases when <i>mahajans</i> sell fish through <i>arats</i>, they often have to bear the credit risk</p> <p><b>High Mortality Rates of Fish:</b> Producers often have to incur large losses due to disease and infection</p>
<b>Fish Farmers</b>	Producers	High	Low	<p><b>Credit management:</b> In cases when <i>mahajans</i> sell fish through <i>arats</i>, they often have to bear the credit risk</p> <p><b>High Mortality Rates of Fish:</b> Producers often have to incur large losses due to disease and infection</p>
<b>Fishermen</b>	Catchers	Medium; depends on locality	Low; depends on locality	<b>Seasonality employment:</b> Catches are seasonal, with long periods of lean season
<b>Faria</b>	Intermediary	Low to Medium; depends on locality	Medium	
<b>Transporters</b>	Transport Intermediary	High	Low	<b>Transport:</b> Challenges in transportation of live fish over long distances
<b>Aratdar</b>	Commission Agent (Intermediary)	Low to Medium; Medium; depends on locality	Medium to High	<p><b>Lack of Financial Records:</b> Because most aratdars do not maintain any deeds when providing dadan or credit to their buyers, they often do not have any acceptable form of records to help them recover their loans. This means that they cannot seek legal measures to recover the loans through a court of law. This is a major reason banks are not willing to extend loans to fish aratdars.</p>
<b>Paiker</b>	Wholesale Buyer and Seller	Medium	Low to Medium	<p><b>Planning:</b> Demand projection and management is very difficult</p> <p><b>Transport:</b> Challenges in transportation of live fish over long distances</p>
<b>Local Retailer</b>	Wholesale Purchaser and Retail Seller	Medium	Low to Medium	<b>Local Infrastructure:</b> Essential local infrastructure such as storage and icing facilities are often lacking
<b>Hawkers</b>	Wholesale Purchaser and Retail Seller	Medium	Low	
<b>Superstores</b>	Bulk Buyers and Retail Seller	Low	High	
<b>Online Retail</b>	Retail Seller	Medium to High	Medium	

## Annex 15: Projected Households Income Compositions Across Different District Tiers

	2019	2020	2021	2022	2023	2024
<b>Proportion of Households*</b>	<b>TIER 1 DISTRICTS**</b>					
Upto BDT 14,200	15%	15%	14%	13%	13%	10%
BDT 14,200 - 22,500	48%	47%	46%	46%	44%	45%
BDT 22,500 - 41,500	18%	18%	18%	19%	19%	20%
BDT 41,500 - 90,000	10%	10%	11%	11%	12%	12%
BDT 90,000 and above	9%	10%	11%	11%	12%	13%
<b>SUM</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

	2019	2020	2021	2022	2023	2024
<b>Proportion of Households</b>	<b>TIER 2 DISTRICTS**</b>					
Upto BDT 14,200	19%	19%	18%	17%	17%	14%
BDT 14,200 - 22,500	57%	56%	55%	55%	53%	54%
BDT 22,500 - 41,500	10%	10%	10%	11%	11%	12%
BDT 41,500 - 90,000	8%	8%	9%	9%	10%	10%
BDT 90,000 and above	6%	7%	8%	8%	9%	10%
<b>SUM</b>	<b>101%</b>	<b>101%</b>	<b>101%</b>	<b>101%</b>	<b>101%</b>	<b>101%</b>

	2019	2020	2021	2022	2023	2024
<b>Proportion of Households</b>	<b>TIER 3 DISTRICTS**</b>					
Upto BDT 14,200	22%	22%	21%	20%	20%	17%
BDT 14,200 - 22,500	62%	61%	60%	60%	58%	59%
BDT 22,500 - 41,500	7%	7%	7%	8%	8%	9%
BDT 41,500 - 90,000	5%	5%	6%	6%	7%	7%
BDT 90,000 and above	4%	5%	6%	6%	7%	8%
<b>SUM</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

	2019	2020	2021	2022	2023	2024
<b>Proportion of Households</b>	<b>TIER 4 DISTRICTS**</b>					
Upto BDT 14,200	33%	33%	32%	31%	31%	28%
BDT 14,200 - 22,500	59%	58%	57%	57%	55%	56%
BDT 22,500 - 41,500	4%	4%	4%	5%	5%	6%
BDT 41,500 - 90,000	2%	2%	3%	3%	4%	4%
BDT 90,000 and above	2%	3%	4%	4%	5%	6%
<b>SUM</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

\* Adapted from the BCG study of Middle and Affluent Class populations, 2015

\*\* In the study area, districts defined across Tiers are:



**Rajshahi Division**

<b>Tier 2</b>	Bogra
<b>Tier 4</b>	Chapai Nawabganj
<b>Tier 4</b>	Jaipurhat (Joypurhat)
<b>Tier 4</b>	Naogaon
<b>Tier 4</b>	Natore
<b>Tier 3</b>	Pabna
<b>Tier 2</b>	Rajshahi
<b>Tier 4</b>	Sirajganj

**Rangpur Division**

<b>Tier 3</b>	Dinajpur
<b>Tier 4</b>	Gaibandha
<b>Tier 4</b>	Kurigram
<b>Tier 4</b>	Lalmonirhat
<b>Tier 4</b>	Nilphamari
<b>Tier 4</b>	Panchagarh
<b>Tier 3</b>	Rangpur
<b>Tier 4</b>	Thakurgaon

**Dhaka Division**

<b>Tier 1</b>	Dhaka
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### Annex 16: Top Live Fish Species Purchased Across Regions

**Overall** n = 505

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Pangas	43	9%	1,115	137	1.63
2	Rui	33	7%	1,302	247	2.94
3	Koi	26	5%	131	234	2.79
4	Shing/Kanos	17	3%	93	408	4.86
5	Catla	14	3%	1,679	286	3.40

**Dhaka** n = 174

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Pangas	15	9%	1,216	177	2.11
2	Rui	14	8%	1,506	266	3.17
3	Koi	8	5%	99	259	3.08
4	Shing/Kanos	6	3%	89	433	5.15
5	Tilapia	5	3%	340	154	1.83

**Rajshahi Division** n = 167

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Rui	10	6%	1,238	227	2.70
2	Koi	7	4%	129	243	2.89
3	Catla	7	4%	1,821	269	3.20
4	Pangas	6	4%	1,280	111	1.32

**Rangpur Division** n = 164

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Pangas	22	13%	1,009	117	1.39
2	Koi	11	7%	163	211	2.51
3	Rui	9	5%	1,043	242	2.88
4	Shing/Kanos	7	4%	110	318	3.79
5	Taki	6	4%	-	256	3.05

### Annex 17: Top Live Fish Species Purchased Across Income Class

**Overall** n = 505

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Pangas	43	9%	1,115	137	1.63
2	Rui	33	7%	1,302	247	2.94
3	Koi	26	5%	131	234	2.79
4	Shing/Kanos	17	3%	93	408	4.86
5	Catla	14	3%	1,679	286	3.40

**Low Income** n = 167

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Pangas	28	17%	1,006	144	1.71
2	Koi	11	7%	145	186	2.21
3	Shing/Kanos	6	4%	55	348	4.14

**Middle Income** n = 174

SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Rui	13	7%	1,185	237	2.82
2	Pangas	10	6%	1,740	129	1.54
3	Koi	10	6%	89	243	2.89
4	Taki	6	3%	63	242	2.88
5	Catla	5	3%	1,105	284	3.38

**High Income** n = 164




SL	Fish Type	No. of Purchases	% of Respondents	Avg. Size	Avg Price per KG	
					in BDT	in USD
1	Rui	15	9%	1,153	238	2.83
2	Shing/Kanos	8	5%	98	456	5.43
3	Catla	7	4%	2,250	306	3.64
4	Koi	5	3%	89	243	2.89
5	Pangas	5	3%	1,740	129	1.54

## Annex 18: List of Fish-Based Items






### Chilled & Dressed Fish:

Sl.	Photos	Name of Product	Name of Producer	Price	Processing Site	Type of Fish Used
01		Smoked Pepper Fish Fillet	Bengal Meat	BDT 790/kg	Tejgaon, Dhaka	Dori
02		Smoked Fish Fillet	Bengal Meat	BDT 790/kg	Tejgaon, Dhaka	Dori
03		Ready Fish Dhela Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 490/kg	Kaptan Bazar, Nawabpur, Dhaka	Dhela
04		Ready Fish Mani Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 880/kg	Kaptan Bazar, Nawabpur, Dhaka	Mani
05		Ready Fish Poa Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 850/kg	Kaptan Bazar, Nawabpur, Dhaka	Poa

Sl.	Photos	Name of Product	Name of Producer	Price	Processing Site	Type of Fish Used
06		Ready Fish Rupchada Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 900/kg	Kaptan Bazar, Nawabpur, Dhaka	Rupchada
07		Ready Fish Shol Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 980/kg	Kaptan Bazar, Nawabpur, Dhaka	Shol
08		Ready Fish Chela Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 630/kg	Kaptan Bazar, Nawabpur, Dhaka	Chela
09		Ready Fish Rupchada Black Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 680/kg	Kaptan Bazar, Nawabpur, Dhaka	Rupchada
10		Ready Fish Shing Deshi Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 880/kg	Kaptan Bazar, Nawabpur, Dhaka	Shing

Sl.	Photos	Name of Product	Name of Producer	Price	Processing Site	Type of Fish Used
11		Ready Fish Faisha Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 690/kg	Kaptan Bazar, Nawabpur, Dhaka	Faisha
12		Ready Fish Puti Deshi Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 550/kg	Kaptan Bazar, Nawabpur, Dhaka	Puti
13		Ready Fish Koi Process	Shwapno Listed Vendor Ponkoj Rai (Lic No: DHK/Fish Supplier/14)	BDT 285/kg	Kaptan Bazar, Nawabpur, Dhaka	Koi

**Frozen Fish:**

Sl.	Photos	Name of Product	Name of Producer	Measure	Price	Processing Site	Type of Fish Used
01		Fish Fillet	Fresh One Brand; Bengal Meat	1000 gm	BDT 575	Major Agro Products, Tejgaon, Imported from Vietnam	Basa/ Vietnamese Pangas
02		King Prawn Meat	Regan International	500 gm	BDT 1300	Azampur, Chalabagan, Uttora, Dhaka	Prawn
03		Cattle Fish Meat	Regan International	500 gm	BDT 925	Azampur, Chalabagan, Uttora, Dhaka	Not Specified
04		Lottya Fish	Regan International	500 gm	BDT 150	Azampur, Chalabagan, Uttora, Dhaka	Bombay Duck
05		Sarden Fish	Regan International	500 gm	BDT 160	Azampur, Chalabagan, Uttora, Dhaka	Sardine






### Highly Processed Fish Items:






Sl	Photos	Name of Product	Name of Producer	Measure	Price	Processing Site	Type of Fish Used
01		Fish Breaded Fillet	Bengal Meat		BDT 715/kg	Tejgaon, Dhaka	Dori
02		Fish Finger	Bengal Meat		BDT 790.80/kg	Tejgaon, Dhaka	Dori
03		Fish Fillet	Bengal Meat	320 gm	BDT 275	Kashinathpur, Santhia, Pabna	Dori
04		Fish Ball	Bengal Meat		BDT 795/kg	Tejgaon, Dhaka	Dori
05		Fish Finger	Golden Harvest	200 gm	BDT 175	Bokran, Monipur, Bhobanipur, Gazipur	Not Known



Sl	Photos	Name of Product	Name of Producer	Measure	Price	Processing Site	Type of Fish Used
06		Fish Sticks	Roja	240 gm	BDT 200	Sea Natural Food Ltd, Sonarga, Dhaka/Rangs Group	Not Known
07		Vegie Fish Ball	OceanRia	500 gm	BDT 499	EON Foods Ltd, Tejgaon, Dhaka	Not Known
08		Seafood Tofu-Fish Cake	OceanRia	500 gm	BDT 449	EON Foods Ltd, Tejgaon, Dhaka	Not Known
09		Thai Vegie Fish Ball	OceanRia	500 gm	BDT 439	EON Foods Ltd, Tejgaon, Dhaka	Not Known
10		Lingo Fish Cake	OceanRia	500 gm	BDT 399	EON Foods Ltd, Tejgaon, Dhaka	Not Known

**Dried Fish (Shutki):**

Sl	Photos	Name of Product	Name of Producer	Measure	Price	Processing Site	Type of Fish Used
01		Loitta Shutki	Chattala Dry Fish Centre	250 gm	BDT 320	Teknaf, Sonadia, Moheskhali, Kutubdia	Bombay Duck
02		Rupchada Shutki	CDFC	100 gm	BDT 450	Teknaf, Sonadia, Moheskhali, Kutubdia	Rupchada
03		Churi Shutki	Mashuk Enterprise	80 gm	BDT 205	South Banasri, Goran Eastern Housing, Dhaka	Churi
04		Chingri Shutki	Mashuk Enterprise	70 gm	BDT 120	South Banasri, Goran Eastern Housing, Dhaka	Chingri
05		Chanda Shutki	Mashuk Enterprise	70 gm	BDT 136	South Banasri, Goran Eastern Housing, Dhaka	Chanda

Sl	Photos	Name of Product	Name of Producer	Measure	Price	Processing Site	Type of Fish Used
06		Kechki Shutki	Mashuk Enterprise	130 gm	BDT 270	South Banasri, Goran Eastern Housing, Dhaka	Kechki
07		Kechki Dried Fish	Kazi Farms Kitchen	125 gm	BDT 230	Beron, Ashulia, Savar, Dhaka	Kechki
08		Shrimp Small Dried Fish	Kazi Farms Kitchen	125 gm	BDT 235	Beron, Ashulia, Savar, Dhaka	Shrimp
09		Kackhi Dry Fish	Relish	125 gm	BDT 230	Aamin Foods, Dhaka	Kechki
10		Lotya Dry Fish	Relish	125 gm	BDT 239	Aamin Foods, Dhaka	Bombay Duck

### Canned Fish Products:

Sl	Photos	Name of Product	Name of Producer	Measure	Price	Importer & Processing Site	Type of Fish Used
01		Tuna Chunk In Oil	Fortune	185 gm	BDT 188	J.H. Enterprise, Middle Badda, Gulshan-1 Imported from Thailand	Tuna
02		Tuna Flakes In Soya Bean Oil	Saporito	150 gm	BDT 759	Taj Enterprise, Bosundhara, Dhaka Imported from China	Tuna
03		Chunk Light Tuna	S & W	120 gm	BDT 320	Foodex Int. Gulshan, Dhaka, Imported from Singapore	Tuna
04		Light Meat Tuna in Vegetable Oil	King Bell	185 gm	BDT 170	Omega Distribution Ltd. West Agagaon, Dhaka Imported from Thailand	Tuna
05		Sardine in Tomato Sauce	Hosen Quality	425 gm	BDT 280	Foodex Int. Gulshan, Dhaka Imported from Malaysia	Sardine
06		Light Meat Tuna in Brine	King Bell			ABD Khan Co. Ltd. Imported from Thailand	Tuna

Sl	Photos	Name of Product	Name of Producer	Measure	Price	Importer & Processing Site	Type of Fish Used
07		Sandwich Tuna in Soya Bean Oil	Nautilus Lite		BDT 200	Kamal General Store, DNCC Market, Gulshan-1, Dhaka Imported from Thailand	Tuna
08		Tuna Salad in Mayonnaise	King Bell	170 gm	BDT 170	Omega Distribution, West Agargaon, Dhaka Imported from Thailand	Tuna
09		Sardines in Vegetable Oil	King Bell	155 gm	BDT 120	Omega Distribution, West Agargaon, Dhaka Imported from Thailand	Sardine
10		Ikan Meckerel in Tomato Sauce	Hosen Quality	425 gm	BDT 280	Foodex Int. Gulshan, Dhaka Imported from Malaysia	Mackerel
11		Tuna Salad with Vegetables	King Bell	170 gm		Omega Distribution, West Agargaon, Dhaka Imported from Thailand	Tuna

Sl	Photos	Name of Product	Name of Producer	Measure	Price	Importer & Processing Site	Type of Fish Used
12		Tuna Salad in Tomato Sauce	King Bell	170 gm		Omega Distribution, West Agargaon, Dhaka Imported from Thailand	Tuna
13		Sardines in Tomato Sauce	King Bell	125 gm	BDT 110	Omega Distribution, West Agargaon, Dhaka Imported from Thailand	Sardine
14		Sardine in Soya Bean Oil	Saporito	125 gm	BDT 132	Taj Enterprise, Bosundhara, Dhaka, Imported from China	Sardine
15		Sardines in Sun Flower Oil	John West	120 gm	BDT 298	Aqeeda Int. Gulshan-1, Dhaka. Imported from Morocco	Sardine
16		Sardines in Tomato Sauce	King Bell		BDT 120	Omega Distribution, West Agargaon, Dhaka Imported from Thailand	Sardine