



# **Effectiveness of current and alternative procurement modalities**

**An evaluation of the effectiveness of current and potential alternative grain procurement modalities, and development of a framework for stock turnover**

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## ACRONYMS AND ABBREVIATIONS

<b>AGD</b>	Approved Grain Dealers
<b>AWP</b>	Average World Price
<b>BBS</b>	Bangladesh Bureau of Statistics
<b>BFPP</b>	Bangladesh Food Policy Project
<b>BIDS</b>	Bangladesh Institute of Development Studies
<b>CIF</b>	Cost, Insurance and Freight
<b>CSD</b>	Central Storage Depot
<b>CCC</b>	Commodity Credit Corporation
<b>DAE</b>	Department of Agricultural Extension
<b>DAM</b>	Department of Agricultural Marketing
<b>DDP</b>	Delivered Duty Paid
<b>DDW</b>	Delivered to Destination Warehouses
<b>FCI</b>	Food Corporation of India
<b>FFP</b>	Food Friendly Program
<b>FOB</b>	Free on Board
<b>FPMU</b>	Food Planning and Monitoring Unit
<b>FPMC</b>	Food Planning and Management Committee
<b>FPO</b>	Farmer Producer Organization
<b>G2G</b>	Government-to-Government
<b>GoB</b>	Government of Bangladesh
<b>HYV</b>	High Yielding Varieties
<b>ICT</b>	Information and Communications Technology
<b>IFPRI</b>	International Food Policy Research Institute
<b>IFPRP</b>	Integrated Food Policy Research Program
<b>JV</b>	IFPRI-BIDS-UIUC Joint Venture
<b>LDP</b>	Loan Deficiency Payment
<b>LGED</b>	Local Government Engineering Department
<b>LSD</b>	Local Supply Depot
<b>MAL</b>	Marketing Assistance Loan
<b>MATS</b>	Market and Traders Survey MATS
<b>MFSP</b>	Modern Food Storage Facilities Project



<b>MoDMR</b>	Ministry of Disaster Management and Relief
<b>MoWCA</b>	Ministry of Women and Children Affairs
<b>MSP</b>	Minimum Support Price
<b>MT</b>	Metric Ton
<b>OMS</b>	Open Market Sales
<b>OTM</b>	Open Tendering Method
<b>PFDS</b>	Public Foodgrain Distribution System
<b>PPR</b>	Public Procurement Rules
<b>RRA</b>	Real Rate of Assistance
<b>SSNP</b>	Social Safety Net Program
<b>TPC</b>	Temporary Procurement Centers
<b>UIUC</b>	University of Illinois at Urbana-Champaign
<b>UPMC</b>	Upazila Procurement and Monitoring Committee
<b>UNO</b>	Upazila Nirbahi Officer
<b>USAID</b>	United States Agency for International Development
<b>VAT</b>	Value Added Tax
<b>VGD</b>	Vulnerable Group Development
<b>VGF</b>	Vulnerable Group Feeding

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## EXECUTIVE SUMMARY

This report has been prepared as one of the deliverables of the Bangladesh Integrated Food Policy Research Program (BIFPRP) implemented by the Ministry of Food, Government of Bangladesh under a World Investment for Modernizing Food Storages Facilities in the country. The key arguments and recommendations drawn up for the report are based on both quantitative and qualitative data.

Food and agricultural policies have historically played a crucial role in triggering growth in many developing countries. While there were debates, public procurement and distribution of food are widely accepted as a “second best” solutions for countries characterized by markets and institutional failures. However, Bangladesh has done remarkably well in adjusting to changing realities and the country is now widely recognized for its agricultural policy reforms. But there is still room for further improvement and efficiency gains for which two broad sets of recommendation can be considered:

- 1) **Pricing and procurement targets** - Pricing in Bangladesh continues to be based on the average cost of production but with the application of satellite imageries, app-based small area estimation, the procurement price estimates can be improved substantially. Also, the current procurement target determination formula misses out on some key aspects of production, marketing, and macroeconomic parameters. The quota for each upazila is based on total production and milling capacities but it also needs to consider the net surplus to calculate how much could be procured in each Upazilas.
- 2) **Alternative procurement modalities**
  - a) The report recommends changing this modality to Delivered to Destination Warehouse (DDW) through the open tendering method and undertaking pilots and learning from experiences to enhance efficiency can be important.
  - b) Linking smallholders to markets through product aggregation has received renewed attention globally. Available data suggests that Bangladesh’s public procurement has thus far not managed to effectively integrate small farmers to its procurement system. To scale up nationally, we believe that more innovation in technology and a new institutional set up will be necessary.
  - c) Implementing Delivered Duty Paid Modality on a pilot basis where the seller assumes all responsibilities and costs for delivering the goods to the named place of destination.
  - d) Piloting Deficiency Payment Method as an effective method to provide both income and price to farmers of a wide range of agricultural commodities. Two key instruments of implementing this method would be Marketing Assistance Loan (MAL) and the Loan Deficiency Payment (LDP), which are tools available to the farmers. A recent [report](#) by the NITI Aayog of India also makes a strong case for this procurement modality and we also argue in favor of undertaking this pilot.

# 1 BACKGROUND

Public procurement of food grain is a critical part of food and agricultural policies in developing countries. In Asia, these policies had played a critical role in promoting the green revolution. The theoretical justifications for adopting such policies were clear: (a) protect farmers against market collapse following a bumper harvest and (b) provide safety nets to the poor. For an illustration of how critical these policies were, consider a story from India, presented in Rashid et al. (2007). In 1967, with first time large-scale adoption of High Yielding Varieties (HYVs) of rice and wheat, India harvested 17 million tons of wheat, which was five million tons more than the previous peak of 12 million tons. The challenge of managing such a large harvest was much bigger than the policy makers anticipated. Neither the farmers nor the government was equipped with the infrastructure to deal with this huge blessing of new technology. Many schools in rural Punjab were closed to store the grain and, while students were on holidays, policy makers were hard at work, trying to find ways to deal with the new situation. What would have happened in the absence of public procurement of food grain? There is no counter-factual to answer the question, but one can certainly imagine that prices would have collapsed, farmers would have lost incentives, and technology diffusion would have faltered, if not abandoned by farmers altogether. There are similar stories from other developing and emerging countries in Asia, including Indonesia, Philippines, and Vietnam (Rashid et al. 2008).

Thus, there is broad consensus that these policies played important roles in triggering the process of development in most countries at the onset of the green revolution.<sup>1</sup> However, the policy context has changed dramatically from the realities of 1960s and 1970s. Bangladesh and other countries in Asia adjusted their policies to the new reality, albeit at a varying degree. Yet, there are several arguments for further reforms. These arguments rely on the following theoretical basis: all sources of market failures justifying the policies implemented in the 1960s—such as inadequate infrastructure, asymmetric information, and incomplete or missing institutions—have improved dramatically. The risks of market collapse, especially given that markets are now well-integrated both locally and internationally, has been greatly reduced. As a result, public procurement should now be seen and evaluated differently (World Bank, 2005). In fact, many industrialized countries that had similar programs adjusted their policies overtime (USDA FAS, 2015; Godo, 2009; Takahashi, 2009).

However, the political economy consideration of food price stability continues to dominate policy thinking, although there are a handful of countries that eliminated large scale public procurement programs (e.g., Uganda, Ethiopia, and Mozambique) and yet ensured price stability (Jayne, et al, 2008). On the other hand, most industrialized countries (e.g., USA, EU, and Japan) have policies to ensure price stability and strategic reserve. A key difference, however, is that the institutional design and implementation approaches are very different. For example, instead of government undertaking procurement, they rely on financial institutions and market intelligence to protect farmers against price shocks, deficiency payment and distribution. Stocks are held by the private sector with the agreement that they are obligated to meet public requirements in case of shocks or emergencies. Clearly, Bangladesh has not reached that stage. However, with the current state of the food and agriculture in the country, it is perhaps time for Bangladesh to re-evaluate its policies, at least to enhance the efficiency of public procurement and distribution from both logistical and institutional points of view.

<sup>1</sup>

Timmer (1989 & 1997) elaborate this policy as a second best solutions to solving food market problems in developing countries.



It is in this spirit that the Government of Bangladesh had asked IFPRI-led Integrated Food Policy Research Program (IFPRP)—an important component of the Modern Storage Facilities Project (MSFP)—to undertake this study. As already alluded, one of the key policy instruments to promote agri-food system development has been public procurement, which, although has undergone some reforms, continues to be an important policy intervention to date. Given the success of the country in promoting agricultural productivity, and ensuring food security during natural disasters, it is perhaps safe to argue that these policy instruments did play important roles. However, there is now a recognition that these instruments need to be re-evaluated to achieve greater effectiveness in the context of the changing food policy structure. In line with the ToR, this study will be designed to address the following questions: (a) are policy objectives and operational modalities justifiably aligned? (b) does the current procurement system protect farmers in the event of bumper harvest and consumers in case of price spike? (c) how does the current method compare with available alternatives practiced elsewhere in the developing world?

The rest of the report is organized as follows. The next section provides an overview of the evolution of public procurement and associated policy parameters, which is followed by an assessment of effectiveness and efficiency of the current domestic and international procurement methods. Section IV discusses the available alternative procurement modalities, and the report concludes with the policy recommendations.

## 2 EVOLUTION OF PUBLIC PROCUREMENT

### 2.1 Brief overview of procurement price determination

Public procurement of rice in Bangladesh has a long history. In the 1960s, then government of East Pakistan used to implement this policy through a levy system, which involved delivery of rice at predetermined price (Ahmed, 1979). This system was replaced after independence by a system of voluntary sales to the public warehouses at a fixed price. As rice production in the country started increasing with the extensive adoption of green revolution technologies in the late 1970s, the initial policy response was to procure paddy from the farmers directly at a predetermined price (determined largely with an arbitrary method). This initial response was solely guided by the perception that farmers could be supported only if purchased directly from them—the notion of providing price support through market mechanism was largely absent in policy thinking at that time.

The priorities of the development partners at the time also lacked alignment with the emerging realities of the food and agricultural situations in the country. Since imports, including food aid, were commonly perceived to be critical for both price stabilization and food security, the investment in warehouse facilities was directed to facilitate the arrival and the subsequent distribution along a south-to-north (John-Evans, 1986; World Bank, 1992). Starting from the early 1980s, Bangladesh received generous donor support in constructing many warehouses, but their focus was too on the food deficit districts. As a result, there were major challenges in executing public procurement in the new surplus districts in the norther part of the country. In the absence of effective movement and distribution planning, the operational efficiency of public procurement and distribution suffered a great deal (World Bank, 1992). Besides, ensuring quality of paddy stored in 450 temporary purchase centers proved particularly challenging to the directorate of food (Chowdhury, 1992). The evolution of public procurement policies was largely guided by these realities, and the chronology of the key events can be summarized as follows:

1. Because of the war of independence, green revolution was delayed taking root in Bangladesh. As a result, unlike in other countries like India, Indonesia, and the Philippines, agricultural price policies of which public procurement is a key component, did not get formalized until the early 1990s.
2. After the country's independence, and the haunting memories of famine in 1974, the initial thrust of the procurement was purchasing paddy directly from the farmers at fixed price, and this practice continued until the late 1980s. However, this method of procurement was widely seen as inefficient and ineffective (World Bank 1979; Osmani and Quasem 1985).
3. Thus, in the late 1980s, the government adopted a new method, called Millgate procurement system, where government purchased rice from the millers under a “millgate contract”. This too proved to be plagued with inefficiencies, corruption, and other moral hazards (Chowdhury, 1991, and Ahmed et al., 1992). In particular, the study reported that the system, which was essentially a method of bilateral negotiations between mill owners and the public food officials, had involved a wide range of arbitrariness that allowed millers and traders to rig the system.

In the late 1980s—with ballooning food budget, evidence of widespread irregularities in public food systems—Bangladesh launched of a large research program to evaluate various aspects of the country's agriculture and food policies. The project, called Bangladesh Food Policy Project (BFPP), was implemented by the International Food Policy Research Institute (IFPRI) in partnership with the Bangladesh Institute of Development Studies (BIDS) with financial support from the United States Agency for International Development (USAID). A whole spectrum of food and agricultural issues

were studied under this project, and a collection of those studies was published in a book, titled [Out of the Shadow of Famine: Evolving Food Markets and Food Policy in Bangladesh](#). One of the early studies under this project was an assessment of public procurement system, which was the [first study](#) of its kind in Bangladesh to systematically (and rigorously) evaluate the policy rationale, procurement modalities, determination of procurement prices, as well as operational complexities associated with the implementation. A key contribution of this study was proposing three different methods for determining procurement prices based on: (a) costs of production, (b) market prices, and (c) international prices. The report's recommendation was to determine procurement based on a combination of costs of production and the market price. The cost of production is based on the survey of the Department of Agricultural Extension (DAE) and the market price is based on historical trends. This method continues to be followed to date, although an inter-ministerial committee, called the Food Planning and Management Committee (FPMC), has the authority to adjust prices, if deemed necessary. It is to be noted here that, from an economic theoretical perspective, price setting based on average costs is inefficient and sub-optimal. The optimal allocation is ensured when prices are based on the marginal costs of production, which is also the price in a competitive market. Setting up prices based on the international parity prices is more efficient, but it carries implementation challenges in developing countries (details later in the report).

In terms of procurement modality, Ahmed et al. (1993) recommended moving away from the mill-gate procurement method and adopting an open tendering or competitive bidding method. The Directorate General of Food (DG Food) initiated a pilot of open tendering, but it was subsequently abandoned on the ground of implementation complexities, despite IFPRI's offer to work with the directorate to devise strategies to address the implementation challenges. It remains a mystery why competitive bidding for international procurements, which too was recommended under IFPRI's BFPP, have been so successful, but not the local procurement. In fact, liberalization of private import of food grain in the early 1990s, was so successful that it helped avert a famine following the unprecedented flood of 1998, when many media—including the Economist and BBC—predicted millions would die of hunger and starvation in the aftermath. Thanks to private trade effective safety nets, no died of hunger and starvation (Dorosh, 2001, del Ninno et al. 2001). Bangladesh continues to be credited for its success in dealing with the 1998 floods with the policies of liberalized trade and effective safety nets.

## 2.2 Policy justifications for public procurement

Over the past few decades, several policy justifications have been put forward in support of public procurement. Two of these arguments, which prominently feature in DG Food's mandates, are protecting farmers through price support and feeding the vulnerable section of society. While effectiveness of implementation approaches was debated, these two policy justifications generally received widespread recognition. At the operational level, DG Food continues to place heavy emphasis on building up foodgrain stock to address natural disasters and other market shocks. During a series of consultations with the food ministry officials and other stakeholders, it became obvious that there are misconceptions about fundamental logics of public procurement and distribution. Therefore, we attempt to bring some degree of clarity about the logics, which are central to an understanding of the procurement modality and determination of government's procurement price.

**Price supports to the farmers.** A widely accepted argument for public procurement of foodgrain is to protect farmers against market collapse or price shocks. This was particularly true at the onset of green revolution, as new technology involved high risks and hence—the argument goes—protecting them against price shocks or market collapse was essential in promoting the technology and triggering agricultural development. However, while this argument made sense realities are much

different today. Furthermore, available evidence from many countries that adopted such policies suggest that instead of supporting farmers, many of these policies net-taxed farmers in countries where government heavily controlled international trade (Rashid et al., 2008; Gulati et al., 2018, OECD various years). Estimates of producers' support specifically for rice are not available in Bangladesh, there are studies to argue that the estimates of Real Rate of Assistance (RRA) for exportable agricultural goods were negative—that is instead of being supported, producers of exportable agricultural goods were taxed in real terms (World Bank, 2007).

**Support to smallholders.** One argument that continues to be supported by the government and development partners is to promote an inclusive agri-food system transformation. In other words, special attention should be paid to the policy process to ensure that the smallholders are not left out from the economic transformation process. This was a consistent theme during the 2021 UN Food System Summit. In fifty years of policy experiments, food policy does not appear to have managed to develop mechanism to support the smallholders to address the problems of “product aggregation” that prevents them taking advantage of public procurement or full potentials of markets. For an illustration, consider a few recent estimates. According to the latest national agricultural census, Bangladesh has about 16.5 million farm households of which 14 million are smallholders, owning less than half an acre of land (BBS, 2019). Most of these smallholders are either net-buyers (i.e., purchases more than they sell) or do not generate a large enough surplus to be able to sell to the DG Food.

This implies that public procurement mainly caters to the 2.5 million relatively large farmers. Under the MFSP, a pilot (or proof of concept) was undertaken to experiment whether proving scale neutral drying technologies can solve the product aggregation Support to smallholders' problem of the smallholders (Winter-Nelson et al., 2023). This is especially true during the Boro season, when moisture contents in paddy are high, and due to the lack of aggregation capacity, smallholders are disadvantaged when it comes to selling their products.

### 3 ASSESSMENT OF THE CURRENT PROCUREMENT SYSTEM

The Directorate General of Food (DG Food), an agency of the Ministry of Food of the Government of Bangladesh (GoB) is responsible for the procurement of foodgrains for the Public Food Distribution System (PFDS) of Bangladesh. In addition to procurement, DG Food performs three core functions: the storage of foodgrains (Storage), the movement of foodgrains between surplus and deficit regions (Movement), and the distribution of foodgrains to beneficiaries of the many distribution programs.

According to DG Food, public procurement of foodgrains attempts to achieve the following objectives:

1. Giving price support to farmers
2. Stabilizing the market price of rice
3. Building up safety/security level food stock. DG Food treats the monthly ending stock as security level stock. In 2023, the public food distribution system (PFDS) targeted holding 1.13 million tons of foodgrains as safety stock
4. Building up food stocks for meeting distribution needs.

DG Food engages in domestic and international procurement to achieve the four objectives. Domestic procurement comprises the purchase of paddy (and wheat) from farmers and rice from millers while international procurement includes imports of rice and wheat through open tenders and government-to-government (G2G) negotiations.

Analyses of historical procurement data reveal that the government of Bangladesh (GoB) primarily uses domestic procurement for meeting distribution needs while international procurement serves mostly in emergency management of stocks. Interestingly, although domestic procurement of foodgrains has fallen short of the respective target almost every year, international procurement is often not planned sufficiently in advance to meet the shortfall.

GoB declares two key policy variables prior to the beginning of each of the two domestic procurement drives in a year: procurement price and procurement target, one for paddy and one for rice. Each set of policy variables are chosen for the Aman crop, harvested in November-December, and the Boro crop, harvested between April and June. Procurement for each crop continues through most of the respective harvesting season. The set of procurement prices for a particular crop – paddy and rice – are determined on the basis of farm-level cost of production and the expected values of future market prices which in turn are functions of prevailing contemporaneous prices. Procurement prices are typically set at higher than corresponding market price levels to incentivize farmers and millers to sell paddy and rice, respectively, to the government.

#### 3.1 A brief analysis of the procurement policy variables

DG Food procures paddy from farmers, and rice from millers on a much larger scale. The direct purchase of paddy at a higher than market price (and cost of production) transfers benefits to farmers. However, the price-support influence of procurement is likely to work only through the large-scale purchase of rice from millers; as government procurement reduces marketed surplus, the price of rice is expected to rise along the demand curve which in turn is expected to increase the demand for paddy and raises its price. The success of the price support scheme, however, depends crucially on two important related aspects: first, the quantity procured from the market must be large enough to reduce marketed surplus in a meaningful way, and second, the own-price elasticity of

demand for rice must be small. Although rice has traditionally had very low own-price elasticity because of being the staple food of a large population, per capita human consumption of rice has fallen in recent years while its expanded use as inputs in animal feed or consumer food items such as noodles or edible oil is likely to increase the elasticity. As such, existing procurements may not be large enough to exert any significant influence on the price. It is no surprise that recent studies have found no impact of procurement on the price of rice.

Even if the particular quantity-elasticity combination can raise prices, it is important to note that the price support scheme is not a classic price-floor mechanism in which authorities procure all quantities offered at the declared floor price. Because the current system has a preset price and a preset maximum procurement quantity, there can be an upward pressure on the market price of rice during the life of the procurement drive. As a result of the construction of the system, authorities cannot predict how procurement would influence the market price.

### **Box 1.a: Price Support Scheme.**

#### **Price support scheme illustrated:**

- Procurement target was set at 1.0 million tons for the 2020 (April) Boro crop against total Boro production of 19.6 million tons (5.1%).
- Even if only 50% of Boro production was marketed by farmers, procurement target of 1.0 million tons were 10.0% of total marketed output.
- Given a range of price elasticity of rice between -0.8 and -0.3, the 10% reduction in quantity would increase prices by between 1.2% and 3.3%.
- In April 2020, market price of coarse rice was 29.3 Taka/KG. Procurement would have raised prices to between 29.7 Taka (for elasticity=-0.8) and 30.2 Taka (for elasticity=-0.3).

Regarding the stock-building objectives of procurement, DG Food is generally successful in procuring enough grain to meet distribution needs. However, the other stock-related objective, i.e., building a safety-level stock, is not reached; although DG Food maintains a monthly ending stock of 1.13 million tons, such stocks are tied to distribution in the following months. The foremost area in need of improvement concerns domestic procurement which is frequently off its target, and it is only the emergency import of foodgrains that saves the day. The phenomenon of frequent domestic shortfalls is not due to peculiarities of the procurement pricing policy – procurement prices always exceed the relevant market prices – or availability concerns as domestic shortfalls have continued regardless of the concomitant manifold increases in paddy/rice production in the country. Importantly, the failure to meet domestic procurement target is mostly on paddy because of the difficulties of procuring paddy – well-known difficulties of procuring paddy are described later – and also because of over-optimistic target setting for paddy. Domestic shortfalls can be attributed to rice to a lesser extent as well. Analyses of the system strongly that domestic procurements problems are mostly related to the implementation of the procurement system.

## **3.2 Current system of procurement**

### **3.2.1 Domestic Procurement**

Advance estimates of aggregate distribution numbers are needed for determining the aggregate procurement target for the coming year. Officials from the Ministry of Food and DG Food use

program specific distribution numbers from the just concluded year to prepare estimates of combined distribution needs for the upcoming year.

Quantities distributed under outlets of the social safety net program (SSNP) including the Food Friendly Program (FFP), Open Market Sales (OMS), Vulnerable Group Development (VGD), Vulnerable Group Feeding (VGF), Essential Priorities (EP), etc. are used to approximate prospective distribution needs. While many of the programs are paid for by the affiliated ministries including the Ministry of Food (MoFood), the Ministry of Disaster Management and Relief (MoDMR), and the Ministry of Women and Children Affairs (MoWCA), etc., DG Food procures the aggregate foodgrain quantities.

Following the estimation of aggregate distribution needs, the national procurement target and its distribution between domestic and international sources are initially decided during the formulation of the national budget. At that stage, DG Food usually provides a domestic target of approximately 2.0 million tons and an international procurement target of 1.0 million tons. The targets are approved after reviews by the Ministry of Food and the Cabinet division. If domestic procurement is later found to have fallen short of the corresponding procurement target, the shortfall must be met with international procurement. DG Food accordingly prepares a mid-year budget with estimates for additional international procurement. The modified budget numbers must also be reviewed and approved by the Cabinet Division.

### ***3.2.2 Operationalization of Domestic Procurement***

The Food Planning and Monitoring Committee (FPMC) takes the budget numbers into consideration when setting procurement targets and prices. Armed with estimates of the national procurement target and its expected distribution between domestic and international sources, FPMC operationalizes the domestic procurement drive by making a few key decisions.

1. **Decision (by FPMC):** Dividing the national procurement target between the Aman and the Boro seasons.

The first FPMC meeting of the fiscal year convenes right before the Aman harvesting season. In choosing the procurement target for the Aman season, FPMC considers historical data on the production of rice during the Boro and the Aman seasons. Once the procurement target for the Aman season is fixed, an initial procurement target for the Boro season is effectively determined.

2. **Decision (by FPMC):** Dividing procurement target for each season into separate targets for rice and paddy.

For each season, FPMC must decide how much of the procurement target should be in paddy and how much should be in rice. There is no specific formula to split the seasonal target between rice and paddy. Rather, the FPMC considers market price and the available godown space, etc., in making its decision. It should be noted that although rice has been the traditional choice for domestic procurement, procurement targets of paddy have been raised substantially in recent years. The increased importance of paddy likely reflects the political goal of policymakers; the idea is to extend price support directly to farmers.

3. **Decision (by FPMC):** What (procurement) price to pay for procuring paddy and rice in each season?

FPMC selects procurement prices with the dual goal of carrying out a successful procurement drive and extending price support to farmers. As such, policymakers want procurement price to have the



following characteristics: first, procurement price must cover the cost of production, else farmers would lose by selling to the government, and second, procurement price should be close to the corresponding market price, else farmers or rice millers would not sell to the government.

In choosing procurement price, FPMC uses information on the cost of production (of paddy) and the market prices (of rice and paddy). The information on the cost of production arrives from the Department of Agricultural Extension (DAE) of the Ministry of Agriculture. For information on the expected market price during the upcoming procurement drive, FPMC uses the current market price. The Food Planning and Monitoring Unit (FPMU) of the Ministry of Food collects current price information from the Department of Agricultural Marketing (DAM) of the Ministry of Agriculture. DG Food also collects current prices from the Regional and District Controllers of Food. DG Food collates the information and submits a suggested procurement price to the FPMC through FPMU. FPMC then reviews prices collected from different regions and determines the procurement price for the upcoming harvesting season after deliberations in their meeting.

It is important to note that the national procurement targets split between the Boro and Aman seasons and between rice and paddy, and corresponding procurement prices are variables relevant for the national scene. In contrast, the domestic procurement drives for rice and paddy take place at the Upazila level. Rice is purchased directly from eligible rice millers through a contract-based approach, and paddy is purchased directly from farmers.

### ***3.2.3 Domestic Procurement of Rice at the upazila level***

#### **1. Decision (by DG Food):** How much rice should be procured from each upazila?

The determination of the procurement target of rice for an upazila is a function of the combined milling capacity of the enlisted rice mills in the upazila (relative to the total milling capacity in the country) and the level of production of paddy in the upazila (relative to the total paddy production in the country). The target procurement of rice in the upazila is a weighted average: 30.0% derived from the production of paddy and 70.0% from the milling capacity of rice.

The combined milling capacity of an upazila is obtained by summing over the capacities of each of the active, enlisted rice mills in the upazila. In order to be enlisted in a given year, a miller must renew the mill license before the month of June. DG Food field level officials subsequently compile a list of enlisted (active) mills and their corresponding capacities; the list is sent to the DG Food head office through the Regional Controller of Food prior to the start of the drive. The target for each upazila is determined using the following formula:

#### **2. Decision (by DG Food):** How much rice should be procured from each miller?

Once the target for the upazila is obtained, the next task is to determine how much rice should be provided by each miller. DG Food uses the following formula to make the decision.

### ***3.2.4 Domestic Procurement of Paddy at the upazila level***

Paddy as a part of domestic procurement used to be a minor part item. However, the target for paddy has been raised substantially in recent years. For example, the national target for paddy procurement increased from 100,000 tons (for Boro) in 2015 to 700,000 tons in 2016. The large

increase in the procurement target for paddy reflects the political goal of the government of helping farmers receiving larger benefits from production. Aligned with the goal is the government announcement that a number of small paddy silos, capacity of 5,000 tons each featuring paddy drying facilities would be built.

Domestic procurement of paddy operations at the upazila level needs to answer the following questions:

1. **Decision (by DG Food):** How much paddy should be procured from each upazila?

The determination of paddy target for an upazila depends only on the level of paddy produced in the upazila relative to the total production in the country. The fraction, multiplied with the national target for paddy gives the upazila level target. The following formula is used for determining the allocation of paddy from the upazila:

2. **Decision (by DG Food):** How much paddy should be procured from each farmer?

In order to move from the upazila level target for paddy to allocation of 'sale quantities' to individual farmers DG Food *Kirshoker App*, the smartphone-based software for purchasing paddy. If *Krishoker App* is not available in the village, DG Food follows the traditional method for purchasing paddy.

*Traditional method:* An Upazila Procurement and Monitoring Committee (UPMC) headed by the Upazila Nirbahi Officer (UNO) distributes the upazila target of paddy among its Unions using production data. Next, the committee selects farmers for meeting the procurement target. During the selection process, marginal farmers as well as female farmers are given priority; the data used in the process is provided by the Department of Agriculture of the Ministry of Agriculture. Based on the Union level target and the number of farmers selected from the Union, UPMC usually allocates an equal quantity of paddy ('sale quantity') among the farmers and sends the list of selected farmers and the corresponding quantity to the Officer in Charge at the local supply depot (LSD).

*Krishoker App:* For Upazilas where the *Krishoker App* has been introduced – there are 302 Upazilas – farmers must register online and express an interest to sell paddy through the app. The committee (UPMC) approves the farmer after the Upazila Agriculture Officer has verified the information. Farmers are grouped into categories of small, medium, and large depending on the size of their farms, and small, medium, and large farmers are chosen at 40%, 30%, and 20%, respectively. All farmers are given the same quantity of allocation.

### 3.2.5 *International Procurement*

Initial estimates of International Procurement targets are available from the budget document. DG Food officials provide the estimates based on expected values of distribution needs and domestic procurement targets. Subsequent modifications of international procurement quantities are allowed if domestic procurement drives are found to fall short of their respective targets.

International procurements are carried out in two different ways.

1. International Tenders
2. Government to Government (G2G) Negotiations



### 3.2.6 International Procurement: Tenders

International tenders are handled by the Director of Procurement of DG Food. Advertisements inviting tenders used to ask for quotes from bona fide traders. Recent notices inviting applications for enlistment suggest that tender notices are likely to be confined to only enlisted traders in future.

From an inspection of recent tender documents, the following features of international tenders are observed:

1. Quoted prices include Cost, Insurance, and Freight (CIF), meaning that the seller would be responsible for cost, insurance, and freight. Advertisements also specify that sellers must pay for stevedoring tasks and any lighterage charge that may apply.
2. Most of the advertisements specify delivery at the Chittagong and the Mongla ports.
3. Some advertisements inviting tenders, however, specified delivery by rail and named the designated inland storage facilities where shipments were to be made. Similar to delivery by ship, the price for the by rail delivery, termed as Carriage Paid to (CPT) asked for the seller to bear the cost of the product to the designated warehouse. Unloading at the facility, however, is the responsibility of the buyer.

### 3.2.7 International Procurement: Government to Government Negotiations (G2G)

G2G negotiations as a means of international exports have risen in recent years. Unlike procuring through international open tenders, G2G negotiations take place between the Ministry of Food representing the GoB and foreign governments or their designated representatives or traders. Unlike in open tenders, the terms of the negotiation are not fixed a priori, rather each negotiation is conducted separately. G2G negotiations are usually reserved for emergency stock management.

#### *A critique of the upazila-level paddy allocation formula*

An important step in the operationalization of procurement is the conversion of the national target of paddy (rice) into local level allocations. For paddy, there are two conversions; the first, from the national level to the upazila level, uses the formula while the second conversion, from upazila to unions, uses respective production shares of each union in the upazila.

Conversions at both levels use production weights, but the weights should be based on measures of availability rather than production levels. There can be two Upazilas, for example, where production levels are similar but with widely different populations. A simple division of paddy production by population would yield per capita production which is a measure of availability.

**Table 1:** Upazila-wise Allocation and Estimated Surplus: Boro Procurement from April

Upazila	Production (ton)	Share in nation	Allocation using production weights	Population	Estimated Consumption	Estimated Surplus
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<b>Dinajpur Sadar</b>	114,622	0.40%	4,034	484,597	70,751	43,871
<b>Mahadebpur, Naogaon</b>	166,590	0.59%	5,863	292,589	42,718	123,872

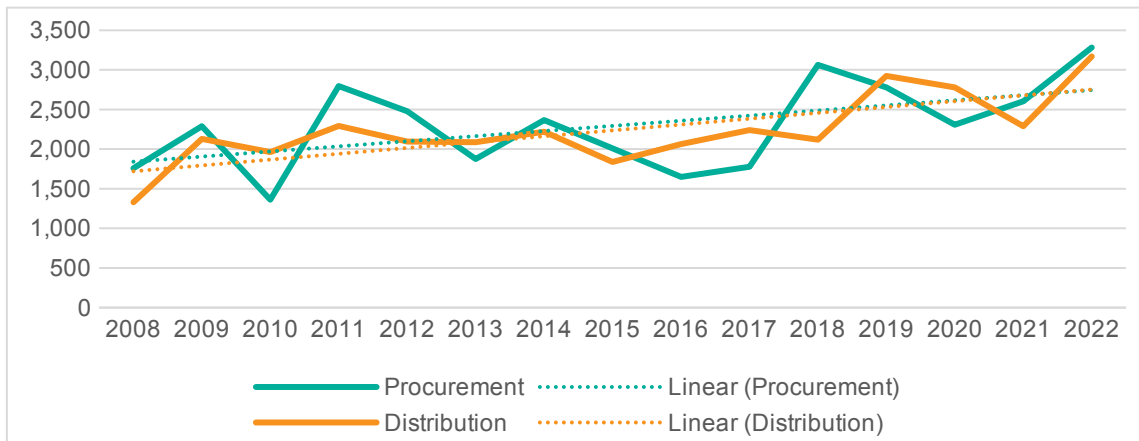
Table 1 reports paddy allocations for two upazilas – Dinajpur Sadar, and Mahadebpur in Naogaon. According to the current formula using only production weights, Dinajpur, Sadar and Mahadebpur, Naogaon receive allocations of 4,034 and 5,863 tons, respectively. However, Dinajpur, Sadar has a population that is 1.65 times larger. Consumption is approximated by population times 400 grams (assumed daily consumption), expressed in tons. Surplus is estimated as the difference between production and consumption. Table 1 demonstrates how ignoring surplus and focusing only on gross production can lead to misleading allocations.

A similar problem plagues the rice allocation rule as the following formula is used.

### 3.2.8 How well does the system work?

From short and long-term data on distribution and procurement, DG Food appears to have done a commendable job in meeting annual distributional needs.

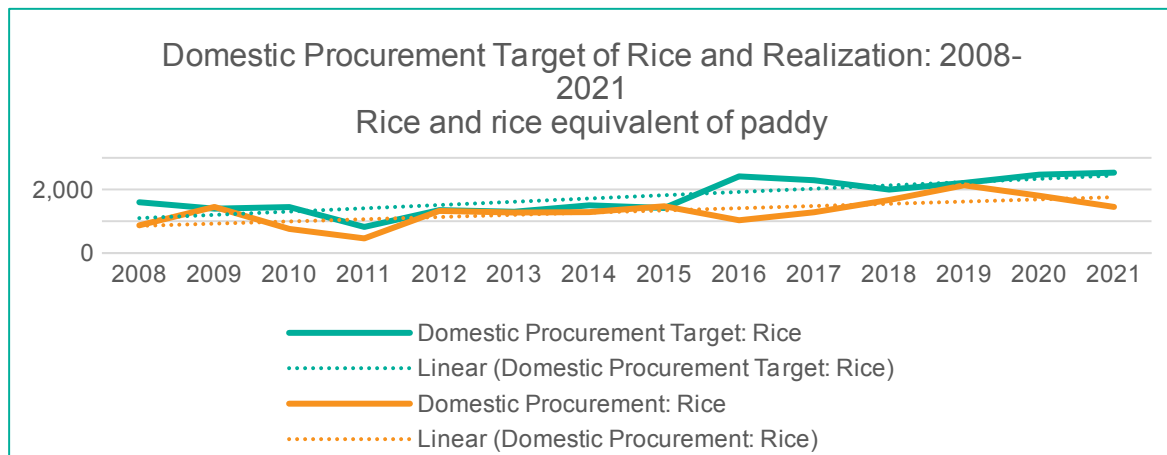
**Figure 1: Annual Public Procurement and Distribution of Rice and Wheat: 2008 to 2022**



Despite the impressive performance regarding total procurement, DG Food has room to improve with respect to domestic procurement. By far the larger source of annual procurement, between 2008 and 2021, domestic procurement fell short of its target in 10 out of 14 years.



**Figure 2: Procurement Targets and Realization: Rice and Rice Equivalent of Paddy 2008 to 2021**



A further disaggregation of rice and rice equivalents into paddy and rice reveals that meeting the procurement target for paddy has been difficult for DG Food. Between 2008 and 2009, DG Food did not meet its paddy procurement target (non-zero values) even once. Moreover, in only three of those 14 years, namely 2016, 2017, and 2019, actual procurement exceeded the 50% mark.

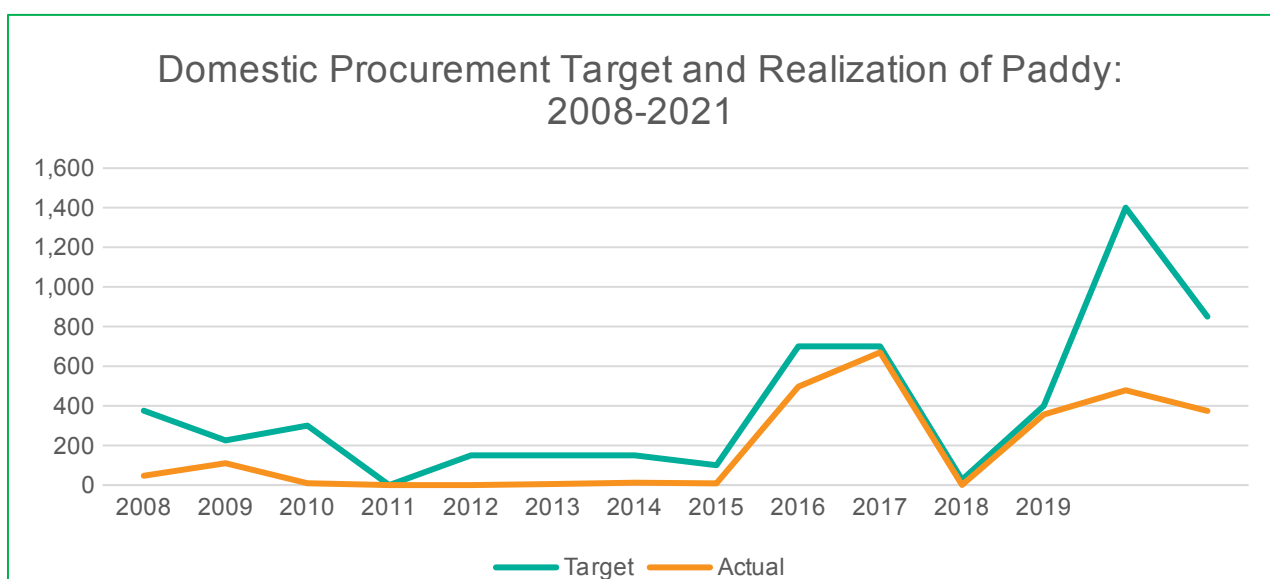
The difficulties with the procurement of paddy are well-known; there are three major factors: the high moisture content of paddy, the problem of aggregation, and transaction costs faced by farmers.

*Moisture control of paddy:* DG Food cannot purchase paddy with more than 14% moisture. Farmers, on the other hand, cannot dry their crops up to the specification. More importantly, farmers often do not know the moisture content of their crop.

*Aggregation problem:* DG Food has to allocate significant manpower and time to purchase paddy from small to medium farmers. The restriction on the maximum quantity of paddy deters bulk purchase by the agency.

*Transaction costs incurred by farmers:* Transportation costs, uncertainty regarding moisture control, and other difficulties affect the feasibility of sale by farmers to DG Food.

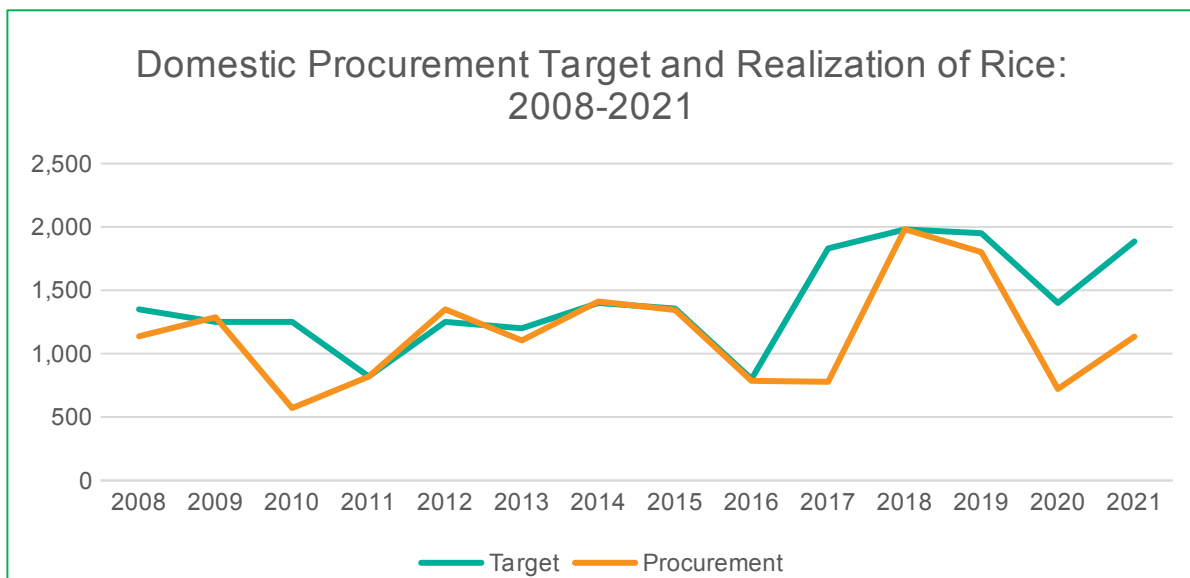
**Figure 3: Procurement Target and Realization of Paddy: 2008-2021**



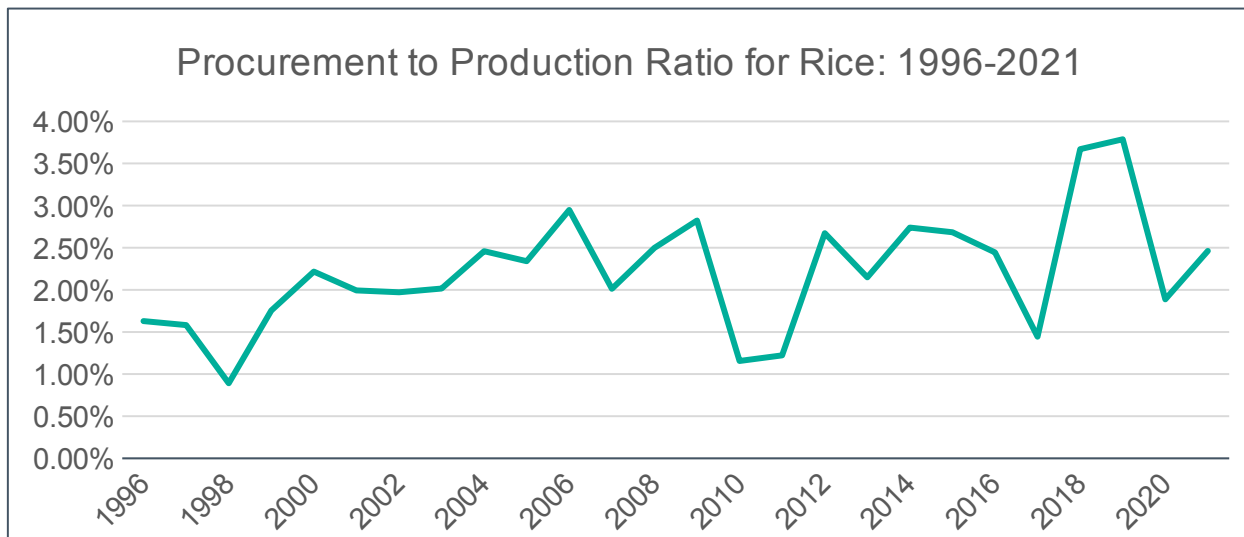
Despite the well-known set of difficulties with the procurement of paddy, FPMC, the policymaking body has persisted with setting high targets for paddy. From 2015 to 2016, the paddy procurement target increased seven-fold, from 100,000 tons to 700,000 tons. The sudden increase coincided with the introduction of the largest distribution program – the Food Friendly Program – that distributes 775,000 tons annually. Policymakers find it politically expedient to promote the procurement of paddy as an alternative to procuring rice although the implementation of procuring paddy is difficult. The desire to increase the share of paddy in domestic procurement illustrates an interesting divide between policymakers and the implementors of the policy, namely, DG Food. For example, while policymakers are interested in setting procurement prices as a means to transferring benefits to farmers, DG Food officials care more about building a sufficiently large stock to meet distribution needs.

While paddy has not done well and rice, on average, has done better in procurement but rice itself has not met its procurement target with any consistency. What is the problem with the domestic procurement of rice? The availability of rice does not appear to be the answer. Between 1996 and 2021, the production of rice in Bangladesh almost doubled – from less than 30 million tons to almost 56 million tons. The procurement of rice also increased during the period. However, the ratio of procurement to production showed remarkable fluctuations over the period, negating availability concerns as a negative influence on procurement performance. Pricing policy also did not appear to affect procurement performance. While DG Food field-level officials claim that procurement performance would improve only if procurement prices were increased, historical data show procurement prices consistently exceeding corresponding market price. Moreover, there is hardly any significant correlation between the following measures: ratio of procurement to market price (relative price) and ratio of actual to target procurement (procurement success).

**Figure 4: Procurement Target and Realization of Rice: 2008-2021**



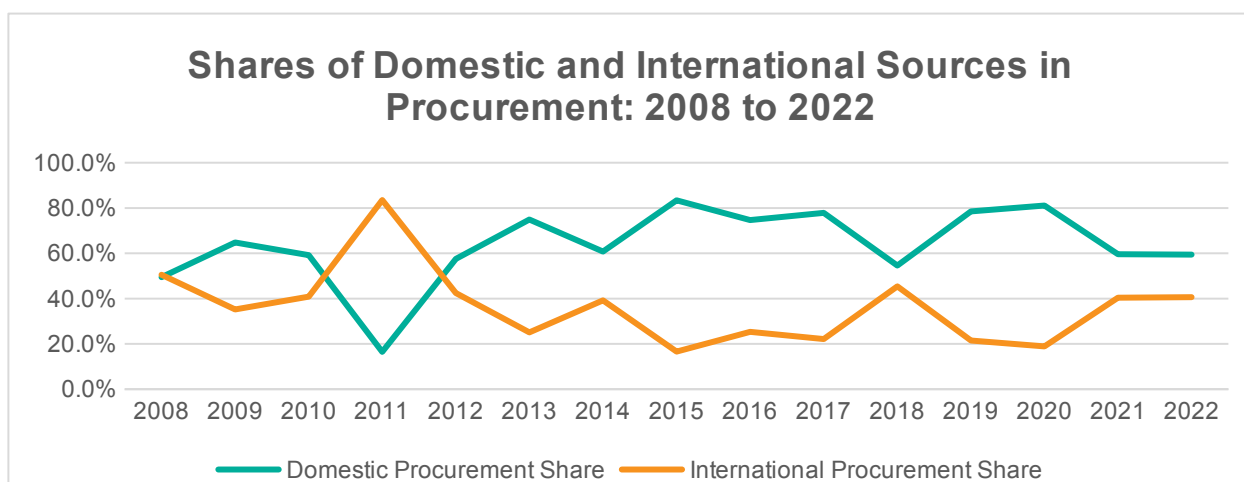
**Figure 5: Procurement to production of Rice: 1996-2021**



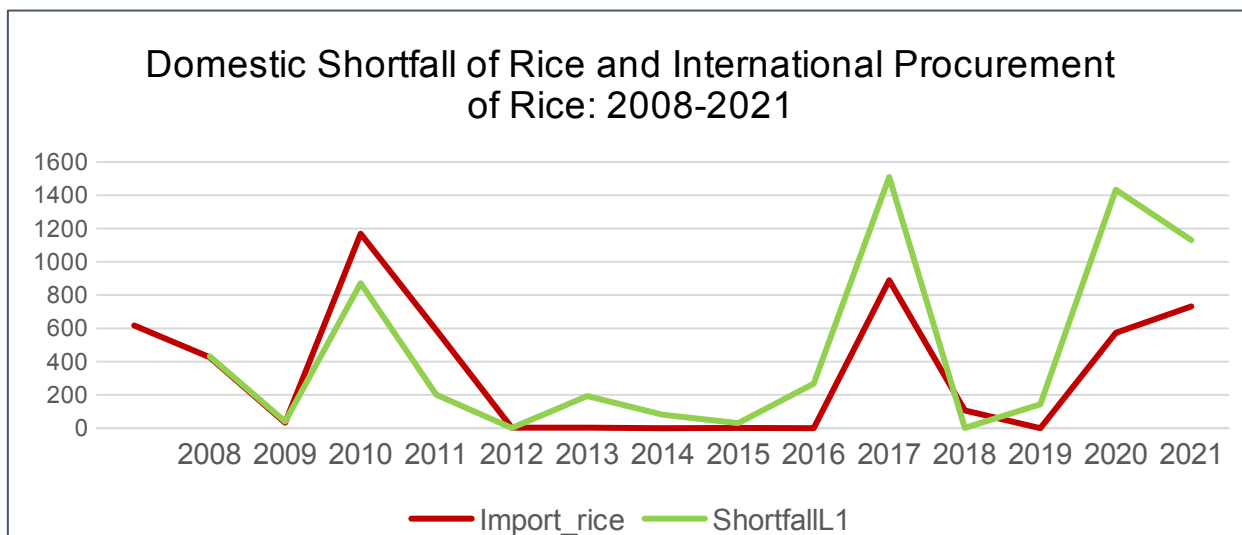
With domestic procurement consistently underperforming, the government of Bangladesh has been forced to rely on international procurement to compensate for the gap between domestic target and realization. International procurement, while extremely helpful in meeting distribution needs, is conducted mostly as an exercise in emergency procurement management operation.

Three observations are advanced in favor of the statement. First, the share of international procurement in total procurement fluctuates in an identical opposite pattern with the share of domestic procurement (see Figure 6). The implication is clear: when domestic procurement fails, international procurement steps in. Second, the import of rice is almost perfectly synchronized with the lagged shortfall in domestic procurement of rice (see Figure 7). Third and finally, monthly imports of rice are not correlated with any of the price variables, current or lagged; imports, however, are strongly correlated with monthly stocks, lagged four months. Presumably, it takes four months to arrange the import of rice.

**Figure 6: Shares of Domestic and International Sources in Procurement: 2008 to 2022**



**Figure 7: Domestic Shortfall and Imports of Rice: 2008-2021**



### 3.2.9 Efficiency considerations

Operational costs are a relatively large component of DG Food’s total procurement expenditure. In the procurement expenditure of 12,646 Crore Taka in 2019, handling costs were 61 Crore Taka, transportation costs were 416 Crore Taka, and costs of Jute bags were 461 Crore Taka. Overall, operational costs were worth 935 Crore Taka, almost 7.5% of the total costs of procurement.

The chapter closes by looking at potential inefficiencies in the movement of foodgrains among DG Food facilities. Although movement is not a part of procurement, it is an integral component of bringing foodgrains from sellers –millers, and the ports for international procurement – and transporting foodgrains among facilities, mostly from surplus regions to deficit areas. As such, the cost of movement is an important consideration, and practices likely to inflate movements are important by the same consideration.

Movement is a serious challenge for a system comprising 600-plus facilities spread across the country. Moreover, the need to procure between three and four times its capacity during the procurement season for facilities in surplus regions often result in frenetic movement activities as DG Food officials must engage in quick turnover of stocks for preparing space for incoming stocks. Even while acknowledging the difficulty, movement tends to suffer from the absence of an optimized nationally effective plan for movement that minimizes costs. Instead of preparing an optimum plan, DG Food officials are engaged in carrying out separate movement orders, leading to unnecessary movements and costs.



**Table 2:** Distribution, Movement, and Movement-to-Distribution Ratios for Rice and Wheat

Year	Rice			Wheat		
	Distribution (tons)	#Movements	#Movements /Distribution	Distribution (tons)	#Movements	#Movements /Distribution
2016	1,518,851	1,246,224	0.8	553,722	536,210	1.0
2017	1,613,331	1,087,792	0.7	637,832	582,039	0.9
2018	1,709,609	1,173,461	0.7	419,820	544,007	1.3
2020	2,207,056	1,749,922	0.8	579,717	852,379	1.5
2021	1,770,977	1,067,754	0.6	520,818	669,330	1.3
2022	2,406,815	1,789,825	0.7	668,696	867,409	1.3

**Source:** Compiled from multi-year data on movement and distribution provided by DG Food.

Table 2 shows that over the years, DG Food has often moved more than a ton of wheat to distribute a ton of wheat. The ratio of movement to distribution was the highest for wheat in 2020 when a ton of wheat was moved a staggering 1.5 times prior to being distributed to beneficiaries. While unplanned movements are the clear reason behind such excessive movements, DG Food officials claim that such high values are observed only for imported wheat and pressures on keeping port-attached silos in Chittagong and Mongla free are responsible for the phenomenon. Imported wheat arriving at one of two ports is first stored in the silos and then moved to other facilities so that the two port-silos can accommodate new shipments. A second movement is necessary to transport wheat from the interim facility to the ultimate destination facility from where distributions would be made, thus creating high values of the ratio. While the explanation of DG Food appears true, it also illustrates the problem with the system – the absence of an optimized plan of movement.

## 4 ALTERNATIVE PROCUREMENT MODALITIES

Procurement is a complex subject, involving many actors, lengthy regulatory processes, and time-consuming execution. This becomes evident a quick browsing through close to 200 page [Public Procurement Rules](#) (PPR), published by the Ministry of Planning, government of Bangladesh. This is however not unique to Bangladesh—it is true for other countries, the UN systems, as well as for the companies and corporations and around the world. Examining all the intricacies of procurement rules is beyond the scope of this study. However, brief descriptions of a set of key procurement modalities, and related technical terms, are needed to better appreciate the recommendations that this report has put forward.

### 4.1 Domestic Procurement Modalities that DG Food has tried thus far

There are several methods of procuring goods and services from the domestic markets. Over the years, the DCG has adopted the following procurement modalities for rice and wheat:

**Direct purchase from the farmers.** In the late 1970s, public procurement followed two distinct methods of public procurement: (a) procurement from the farmers at a predetermined price through Temporary Procurement Centers (TPCs), and (b) through Approved Grain Dealers (AGD). The AGDs were expected to buy rice or paddy at fixed procurement prices and deliver the grain to government warehouses for fixed commission. The implementation of these methods proved inefficient and was replaced by mill-gate procurement in the mid-1980s. Under this method, the DG Food relied on millgate contractors to procure paddy and mill it into rice. In theory, like the AGDs, millers were to pay the government's preannounced procurement price to farmers and charge DG Food only a fixed milling commission. The pitfalls of this method were abundantly documents in a 1993 IFPRI study.

**Procurement with geographic quota.** Since the mid-1990s, the DG Food has been following a method, which can be termed as spatially dispersed incoming quota method. Under this method, national procurement target is determined, largely based on the distribution needs, and a market price is announced prior to harvest. How much from each of the upazila to be procured is calculated using the production forecast and milling capacities. During a series of consultations for this study, it became clear that rice millers generally supply to the public warehouses within the upazila or within the district, if procurement is larger than the local storage capacity.

**Open Tendering Method (OTM).** Open tendering is the process of acquiring goods and services at the lowest price. The underlying idea is to stimulate competition that ensures minimum price and eliminate the scopes for favoritism, discrimination, and other moral hazards. This is a transparent procurement process which allows fair play for competing contractors, suppliers, or vendors. The method is also known as competitive bidding, open competition, or open solicitation. Following the recommendation of an IFPRI study, DG Food tried out this method in mid-1990s for domestic procurement but was subsequently abandoned due to execution challenges resulting from collusion of large traders (locally known as syndicate), and weak information and institutions. However, it is to be noted that DG Food continues to use OTM for international procurement.

**Delivered to Destination Warehouses (DDW).** We use this term to describe an extended version of the OTM. As discussed earlier, the current domestic procurement system involves a long chain with multiple actors, multiple stops, and a complex administrative procedure before rice / wheat reaches the intended beneficiaries. From a theoretical and common-sense perspective, this implies higher logistic costs for transferring a unit food under the safety nets program. Indeed, a large body





typically at harvest-time lows, which allows the producer to delay the sale of the commodity until more favorable market conditions emerge. Allowing producers to store production at harvest or shearing provides for a more orderly marketing of commodities throughout the year.

Marketing assistance loans (MAL), on the other hand, provide producers interim financing at harvest time to meet cash flow needs without having to sell their commodities when market prices are typically at harvest-time lows. Marketing assistance loans provide producers interim financing at harvest time to meet cash flow needs without having to sell their commodities when market prices are typically at harvest-time lows. Loan Deficiency Payments (LDPs) are payments made to producers who, although eligible to obtain a CCC (Commodity Credit Corporation) loan, agree to forgo the loan in return for a payment on the eligible commodity. A simple illustration<sup>2</sup> is presented in Figure 9. Three key concepts to understand the figure are average world price (AWP) and market prices (on the vertical axis) and the marketing seasons, which varies by commodities (on the horizontal axis).<sup>3</sup> Clearly, market price the first season was above the AWP, therefore there was no payment by the government to the farmers. If a farmer took MAL, s/he would have to pay off the loan with interest to the government. In the second season, however, market price fell below the AWP, therefore government's income supports kicks-in. That is, the government must transfer the cash—equivalent to the difference between the value of value of commodities at AWP and the value of sales at below AWP price. If a farmer has MAL loan, government can forfeit the stock instead of recovering the loan.<sup>4</sup>

Is this a feasible price support option for Bangladesh or other developing countries? To the best of our knowledge, no developing or emerging economies have seriously experimented with the option. However, the NITI Aayog (former planning commission), of India has recently [published a report](#), reports convincingly arguing for introducing an adapted version of the deficiency payments. In addition to providing policy justifications, this report has also presented implementation modalities. The fundamental basis for this proposal is the advancement of the country's infrastructure and information technology. Given Bangladesh has also been actively promoting Information and Communications Technology (ICT), we are of the opinion that the model should also be tried, at a pilot level, in Bangladesh.

**Buying from the smallholders.** As alluded earlier, linking smallholders to markets through product aggregation has received renewed attention globally. Available data suggest that Bangladesh's public procurement has thus far not managed to effectively integrate small farmers to its procurement system. This is not a new issue. In the 1990s, DG Food procured more than 90% of rice and wheat through traders and millers. The same trend continues. In a recent study, [Ahmed et al. \(2020\)](#), roughly 83% of the Bangladeshi rice growers are marginal (owning <0.5 acres) and small (owning <1.5 acres) farmers. When it comes to selling paddy, over 58% of all farmers in the 2019 Boro season had sold paddy, of which 68 percent were small and marginal farmers. Of the total paddy sales during the Boro season, DG Food accounted for only 1.34 percent of the paddy sales during April to August 2019.

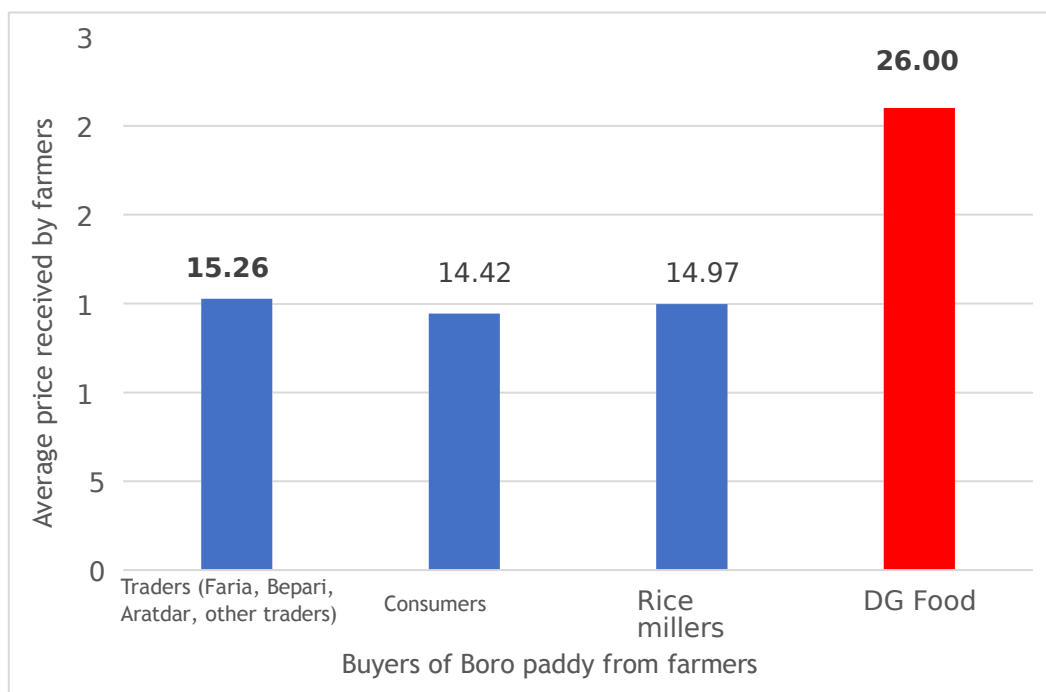
<sup>2</sup> Details about the history, underlying rationales, and the implementation process are described in the USDA website; and a good illustration about the effectiveness of MAL and LDP for cotton is presented in [a series of studies](#) by the University of Georgia.

<sup>3</sup> For cereals, marketing season is July to June.

<sup>4</sup> The US food aid program was a response to mounting stock resulting from the public procurement program. After the introduction of deficiency payment, the county no longer accumulates large stock of any agricultural commodities.



**Figure 10:** Average price of paddy received by farmers from various buyers from April to August 2019



A careful review of the recent IFPRI surveys, including the ones carried out under MFSP, indicate that DG Food has not been successful in linking the smallholders to markets.<sup>5</sup> Somewhat surprisingly, it appears that procurement pricing was not the reasons for smallholders to the DG Food. Figure 10, taken from Ahmed et al. (2020), suggest that price offered by the DG Food during 2019 Boro season was almost double the price at which farmers had sold their paddy to other market actors. True, the moisture contents of the paddy sold to other market actors are higher than the DG Food. However, this too becomes hard to reconcile with the data. Suppose farmers who were selling to traders at BDT 15 / kg had a moisture content of 16% --that is, four percent more than DG Food's allowable limit. If we assumed additional 10% costs for drying and sorting, their price would have been Tk. 16.5/kg, much lower than what DG Food had offered price of BDT 26/kg.

Reviewing the data and evidence, authors of this report re-iterate the long-standing conclusion that smallholders in the Bangladesh are not linked with markets / public procurement program. Recent market surveys also point to the fact that smallholders' inability to supply to the DG Food results from the fact their marketed surplus is small and scattered, which prevents them from selling to the public warehouses (i.e., product aggregation problem). The *proof-of-concept* study with small scale driers, carried out in collaboration with the University of and Bangladesh Agriculture University, has generated encouraging results in terms of linking smallholders to the market. Thus, we recommend that the GoB conducts larger scale pilots with more innovative technology and institutional set ups. The current drying technology cannot address parboiled paddy, but that should not be a problem because dried paddy goes to the automatic rice mills, where parboiling technology is an integral

<sup>5</sup> However, we are also cognizant of the fact that there are trickle down benefits when markets are competitive and spatially well integrated.



part. However, innovation is needed to improve technology so that it can become multi-purpose (for example, machines being used for ripening of fruits, drying of other cereals, etc.). In terms of institutionalization, Bangladesh can draw from the Farmers and Producers' Organization (FPO's) for product aggregation and scaling up this technology in the future. In addition, major development partners, like the World Bank, IFC, and others will likely be interested in investing in such efforts.

### 4.3 International procurement modalities

There are several international procurement modalities. Government of Bangladesh broadly follows two methods—one for wheat and the other for rice. For wheat, DG Food procures mainly through open tendering method, but for rice it follows (a) international OTM, (b) International open quotation, and (c) national open tendering for international procurement, and (d) Government to Government procurement. Barring some restrictive food trade policies (e.g., the ones in India and China), the international market for food grain is widely considered to be efficient and effective. Inefficiency creeps in depending on the modalities of international procurement. Before we discuss various options, some technical terms of shipping and handling need to be defined:

**Free on Board (FOB).** In this arrangement, the price of goods is determined at the frontier of the exporting country. It includes the values of the goods at the origin plus the transportation and handling costs up to the port, minus net subsidies (subsidies – tax). or services at the basic price, the transport and distribution services up to the frontier, the taxes minus the subsidies. In FOB contract, the buyer accepts the title of the goods at the shipment point and assumes all other costs and risks once the seller ships the product. To the best of our knowledge, DG Food does use this method for its international procurement. So, further discussions are not warranted for the purpose of this report.

**Cost Insurance and Freight (CIF).** This is the most used method for DG Food and private sectors in the country. It is an international shipping agreement used when freight is shipped via sea or waterway. Under CIF, the seller is responsible for covering the costs, insurance, and freight of the shipment until goods arrive in the destination port. The buyer is responsible for any costs once the goods have reached the buyer's destination port. This means the buyer is responsible for clearing the goods, paying VAT and taxes, as well as transporting the goods to the desired destinations. For the DG Food, this involves clearing at the port, off loading at the port silos, and shipping to the destination warehouses (CSD or LSDs).

**Delivered Duty Paid (DDP).** This is an international contract, where the seller assumes all responsibilities and costs for delivering the goods to the named place of destination. The seller must pay both export and import formalities, fees, duties, and taxes. In this arrangement, the buyer is free of any risk or cost until the goods are unloaded from the vehicle at the named place of destination. DDP is the only Incoterms rule that places responsibility for import clearance and payment of taxes and duties the seller. The arrangement can be problematic for the seller, especially in importing countries where bureaucracy is complex. As a result, only the companies with local knowledge and affiliated partners generally engage in DDP method.

The DG Food has thus far not adopted DDP method for its imports. One of the main reasons for not using DDP has been the fact that when commodities are imported in bulk, offloading at the Silo for bagging and shipping becomes essential. However, a review of recent import transactions indicates that the shipment sizes can be much smaller as shown in Table 3.



**Table 3:** Recent import transactions by the DG Food

Importers	Tender Qty.	B/L Qty.	# of Shipments	Tender to first B/L	Days: Tender to final B/L
M/S P.K ddAgri Link, India	50,000	50,567	6	21	71
M/S Rika Global, India	50,000	52,197	2	60	87
M/S P.K Agri Link	50,000	47,529	4	72	94
M/S ETC Agro Processing, India	50,000	50,706	3	46	70
M/S. Agrocorp, Singapore	50,000	45,520	3	61	108
M/S P.K Agri Link	50,000	50,967	3	37	108
M/S Bagadiya Brothers, India	50,000	52,462	3	34	76
M/S. P.K Agri Link	50,000	49,137	3	137	235
M/S P.K Agri Link	50,000	49,461	3	223	252

Source: DG Food records.

Furthermore, private sector in Bangladesh has matured over the years. From not being able to participate in international trade in the early 1990s, private importers have now become a very large part of wheat imports and other grains. For wheat, the private sector's share in recent years has averaged over 80% (five million out of the total import of six million tons). This is also true for many other grains and root crops—such as lentils, onion, turmeric, etc. This suggest that much of the trading and transportation functions can be delegated to them including DDP contracts, at least on a pilot basis.

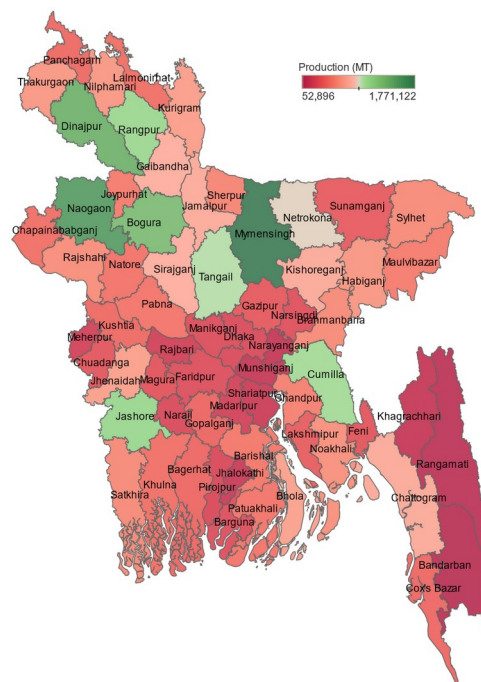
## 5 RECENT EVIDENCE ON FOOD GRAIN MARKETS AND DG FOOD OPERATION

It should be clear at this point that this study recommends DG Food to adopt new approaches in order to reach the smallholders, enhance operational efficiency, as well as adjust to the changing realities of domestic and international markets. During a recent meeting, chaired by the secretary, Ministry of Food, and attended by the Director General and the senior officials of the DG Food, the officials expressed concerns that the DDS and DDW are unlikely to succeed. Three main arguments were: (a) it would be expensive, (b) stock rotation would be difficult, (c) system would be rigged by cartel (syndicate). From an operational standpoint, these are obviously very important issues and need to be assessed carefully before adopting new procurement modalities. This is the reason why we recommend piloting to learn, course correct, and ultimately find solutions to enhance efficiency of DG Food as an institution.

Clearly, more data and evidence could be generated through pilots. However, analysis of IFPRI's 2018 Market and Traders Survey (MATS), 2017 storage facilities survey, as well as other secondary data appears to lend *a priori* support to support to our recommendations. Let us begin with the spatial dimension of the rice production in the country (Figure 11), which shows that the rice production in Bangladesh is largely concentrated in 4 districts—namely, Mymensingh, Bogra, Nogaon, Dinajpur, and Rangpur. Jessore and Comilla also produce large quantities, but populations are much higher in those districts. This is also consistent with the DG Food's procurement and storage capacity utilization. The aggregate annual averages capacity utilization is presented in Figure 12, and the maps of monthly utilization rates are given in the appendix. The appendix table also presents the capacity utilization by storage types. It is obvious from the figure that storage capacity utilization rates are higher in the norther part of the country. It is also important to note that the Rajshahi and Rangpur divisions face capacity constraints in some months, when capacity utilization rates exceed 100 percent, reflecting a lack of efficient grain movement (or stock rotation) planning. Two other important points call for special attention given these numbers. First, the capacity utilization maps (in the appendix), capacity utilization in southern division (Khulna) never exceeds more than 50% except January, February, and March. This is a clear indication that the DG Food has much to gain by executing an automated and optimized movement planning.

The other point to note is that public storage capacity utilization remains well below 50% in many districts at the height of the public procurement seasons (April to August). Taken these two observations together, one can safely

**Figure 11: Rice Production Situation in Bangladesh, 2016 – 2017**



**Figure 12: Average capacity utilization of public warehouses in Bangladesh, 2017**



argue DDW procurement method, along with good movement planning, will lead to efficiency gains in public procurement system in Bangladesh.

Given these data, it is hard to argue that the stock rotation would be a challenge for the DG Food in implementing the DDW modality of procurement in Bangladesh.

The most important point raised during the presentation of our initial results at the Ministry of Food was that implementing DDW can result in higher costs to the government. There is widespread evidence that costs of transportation and handling by the government are generally much higher than the private sector. For example, studies from India suggest that, despite concessional credit and transportation, per unit trading cost of wheat by Food Corporation of India (FCI) is estimated to be more than twice as much as private traders' costs (Chand 2002). Not only has the unit costs of FCI operation been larger than private traders, but some studies also suggest that the gap between the two has been widening in recent years (Jha and Srinivasan 2003). For Bangladesh, earlier studies suggest that DG Food's costs of transportation and handling are 40-100 percent higher than the private sector (World Bank, 1992). A 2018 IFPRI market survey of millers and traders finds that private traders' costs of transportation by truck, estimated to be BDT 4.46 /ton per kilometer (Table 4), is half the cost of DG Food's costs of BDT 10.0 per metric ton per kilometer (Chowdhury, 2017). Notice that there is also quite a bit of variations across the divisions with cost estimates ranging from as low as BDT 3.9 / MT/KM in Rajshahi division to over BDT in Dhaka. By contrast, DG Food's transport costs remained constant at BDT 9.91 between 2009/10 and 2013/14, which too would appear counter-intuitive to any rational mind.

**Table 4:** Costs of transporting food grain by private traders, 2018

Origin	Quantity transported (MT)		Truck's share (%)	Average transport cost (BDT/MT/km)		Average distance (km)
	By all modes	By truck		By all modes	By truck	
Barishal	12,166	9,112.50	74.9%	8.15	5.16	43.75
Chattogram	5,603.17	4,539.63	81.0%	5.25	5.06	65.89
Dhaka	54,427.10	27,566.60	50.6%	7.54	8.01	70.64
Khulna	47,981.20	21,035.10	43.8%	5.74	4.34	67.18
Mymensingh	467,290	406,769	87.0%	4.90	4.39	113.62
Rajshahi	113,586	106,332	93.6%	4.58	3.93	118.53



<b>Rangpur</b>	73,423.20	43,286.40	59.0%	5.69	4.16	105.09
<b>Sylhet</b>	34,914.60	32,642.30	93.5%	5.20	4.25	92.18
<b>Overall</b>	<b>809,391</b>	<b>651,284</b>	<b>80.5%</b>	<b>5.48</b>	<b>4.46</b>	<b>98.38</b>

**Source:** IFPRI Millers' and Traders' Survey (MATS) 2018.

There is another very important point that can be noted from this table. On average, most divisions carry out long-distance transactions. In the surplus divisions—Mymensingh, Rangpur, and Rajshahi—traders ship their food grain over 100 kilometers in a typical transaction. Therefore, it is hard to argue that costs of delivering food to the intended beneficiaries would be higher under the DDW modality. However, we are cognizant of the fact that cartels (syndicate) often make news headlines in the country. Addressing such challenges with regulation is a governance problem, which, even though needs careful attention, should not prevent DG Food embarking on innovative procurement modalities.

## 6 SUMMARY AND RECOMMENDATIONS

This report has been prepared as one of the deliverables of the Bangladesh Integrated Food Policy Research Program (BIFPRP) implemented by the Ministry of Food, Government of Bangladesh under a World Investment for Modernizing Food Storages Facilities in the country. The key arguments and recommendations drawn up for the report are based on both quantitative and qualitative data. Primary data collection involved conducting Markets and Traders' Surveys, specially designed household surveys, and holding of stakeholders' consultations. In addition, many operational documents, and secondary data from the DGF, as well as case studies from selected countries, have been reviewed and analyzed to understand the policy rationales, implementation processes, and historical trends.

A large body of literature exists on the policy rationales and cost-effectiveness of public procurement and other aspects of agricultural price policies in developing countries, especially the ones that actively promoted the green revolution. While there were many debates, public procurement and distribution of food are widely accepted as a “second best” solutions for countries characterized by market and institutional failures. This was particularly at the onset of the green

revolution more than five decades ago. However, “policy relevance” is a dynamic concept that needs to change with the change in context and economic transformation. Bangladesh has done remarkably well in adjusting to changing realities and the country is now widely recognized for its agricultural policy reforms that range from liberalization of trade, promotion of technologies, and introduction of innovative social safety nets program. However, as this report has argued, there is room for further improvement and efficiency gains. To this end, we put forward two broad sets of recommendation: the following recommendations:

## 1. Pricing and procurement targets

- a. *Revisiting procurement pricing method:* After revamping of the PFDS in the 1990s, Bangladesh has not made any major changes in its public procurement modalities. Pricing continues to be based on the average cost of production, which is an average over diverse geographic and agroecological conditions. With the application of satellite imageries, app-based small area estimation, the procurement price estimates can be improved substantially. Launching such a program can also contribute to better crop forecasting, targeting subsidies, and planning of public food distribution operation in case of national and global emergencies.
- b. *Determination of Procurement Target:* The current procurement target determination formulae misses out some key aspects production, marketing, and macroeconomic parameters. The national procurement target is largely determined by the distribution needs, and the quota for each upazila is based on the total production and the milling capacities. As a result, as articulated in chapter 3, this method accounts only total production, not net surplus that should be the basis for how much could be procured in each upazilas.

## 2. Alternative procurement modalities

- a. *Delivered to Destination Warehouse (DDW) to reduce costs:* As described in the report, current methods of domestic procurement involve procuring at the surplus districts, storing in local LSD or CSD, moving them within districts, regions, transporting to distribution locations, and then distributing to the intended beneficiaries through dealership. As a result, DGF incurs costs that are twice as much as the private sector. The report recommends changing this modality to Delivered to Destination Warehouse (DDW) through the open tendering method. During the preparation of this report, DGF officials expressed concerns about the feasibility of this method in terms of (a) stock rotation, (b) increasing costs, and (c) the system being rigged by cartel or syndicate. However, we did not find any empirical evidence regarding the feasibility of stock rotation and increasing costs. We could not establish (or study) as to how syndicate can capture the system, but we noted that price gouging with syndicate makes frequent news headlines in the country. Yet, the report strongly argues about undertaking pilots, learning from experiences, and making necessary adjustments to enhance efficiency.
- b. *Linking smallholders to markets:* Linking smallholders to markets through product aggregation has received renewed attention globally. Available data suggest that Bangladesh’s public procurement has thus far not managed to effectively integrate small farmers to its procurement system. This is not a new issue. In the 1990s, DG Food procured more than 90% of rice and wheat through traders and millers. The same trend continues. In a recent study, [Ahmed et al. \(2020\)](#), roughly 83% of the Bangladeshi rice growers are marginal (owning <0.5 acres) and small (owning <1.5 acres) farmers. When it comes to selling paddy, over 58% of all farmers in the 2019 Boro season had sold paddy, of which 68 percent were small and marginal farmers. Of the total paddy sales by



smallholders during the Boro season, DG Food accounted for only 1.34 percent during April to August 2019.

The IFPRI-led JV conducted a pilot (*proof-of-concept*)—in collaboration with Bangladesh Agriculture University—where the drying and aggregation problems were attempted solve by providing a scale neutral drying machine, developed under the USAID innovation lab. The study generated encouraging results in terms of enhancing smallholders' market access and overall increase in income. We recommend that the GoB conducts larger scale pilots. To scale up nationally, we believe that more innovation in technology and a new institutional set up will be necessary. The current drying technology cannot address parboiled paddy, but that should not be a problem because dried paddy goes to the automatic rice mills, where parboiling technology is integral. However, innovation is needed to improve technology so that it can become multi-purpose (for example, machines being used for ripening of fruits, drying of other cereals, etc.). In terms of institutionalization, Bangladesh can draw from the Farmers and Producers' Organization (FPO's) in India. Besides, development partners like the World Bank and IFC may support, given the positive results of the initial pilot, and USAID's innovation lab will continue to support improving the technology. However, all this requires evidence and lessons from the country. Thus, we strongly recommend undertaking a larger scale pilot.

- c. *Implementing Delivered Duty Paid Modality*: This is an international contract, where the seller assumes all responsibilities and costs for delivering the goods to the named place of destination. The seller must pay for both export and import formalities, fees, duties, and taxes. Although execution can be problematic in LDCs due to bureaucratic and institutional challenges, the cost savings and efficiency can be potentially much larger. This will be risk free for the DGF and given the growth in private sectors (with global linkages) and the economic growth of the country in recent decades, this can be a viable procurement modality for Bangladesh. However, we recognize the reservations from CIF and CIP methods to DDP methods will pose challenges. Our analysis does not support to those arguments, but we believe these important concerns and the best way to move forward would be to introduce this procurement modality on a pilot basis.
- d. *Piloting Deficiency Payment Method*: Introduced in the mid-1980s in the US (approved by the congress under Public Law 99-198) this is an effective method to provide both income and price to farmers of a wide range of agricultural commodities. Two key instruments of implementing this method are Marketing Assistance Loan (MAL) and the Loan Deficiency Payment (LDP), which are marketing tools available to the farmers. The MAL provides an influx of cash when market prices are typically at harvest-time lows, which allows the producer to delay the sale of the commodity until more favorable market conditions emerge. Allowing producers to store production at harvest or shearing provides for a more orderly marketing of commodities throughout the year. If market prices fall below the average world prices (AWP), the government can forfeit the stock against the loan and accrued interest. On the other hand, if prices go above AWP, farmers are free to sell and pay the government MAL with interest.

Loan Deficiency Payments (LDPs) are payments to producers who, although eligible to obtain a CCC (Commodity Credit Corporation) loan, agree to forgo the loan in return for a payment on the eligible commodity. To illustrate, suppose that a farmer deposit 100 tons of wheat in a warehouse and that AWP was \$250 / ton. If this farmer did not take MAL and the market prices fall below AWP, say \$200 /ton, the farmer is eligible to receive a payment of \$5,000 as deficiency payment ( $250 \times 100 - 200 \times 100 = 5,000$ ). On the other hand, if prices go above AWP of \$250, the farmer will sell to the market and will not

be eligible for deficiency payment. This method was not considered feasible in developing countries in the 1990s, but things have changed dramatically in terms of infrastructure, international connectivity, and overall maturity of the food markets. However, based on a recently [published a report](#) by the NITI Aayog (former planning commission) of India, the idea of implementing and adapted version of this procurement modality is gain momentum. This report strongly argues in favor of undertaking this pilot.

## APPENDIX 1: SUPPLEMENTARY TABLES AND FIGURES

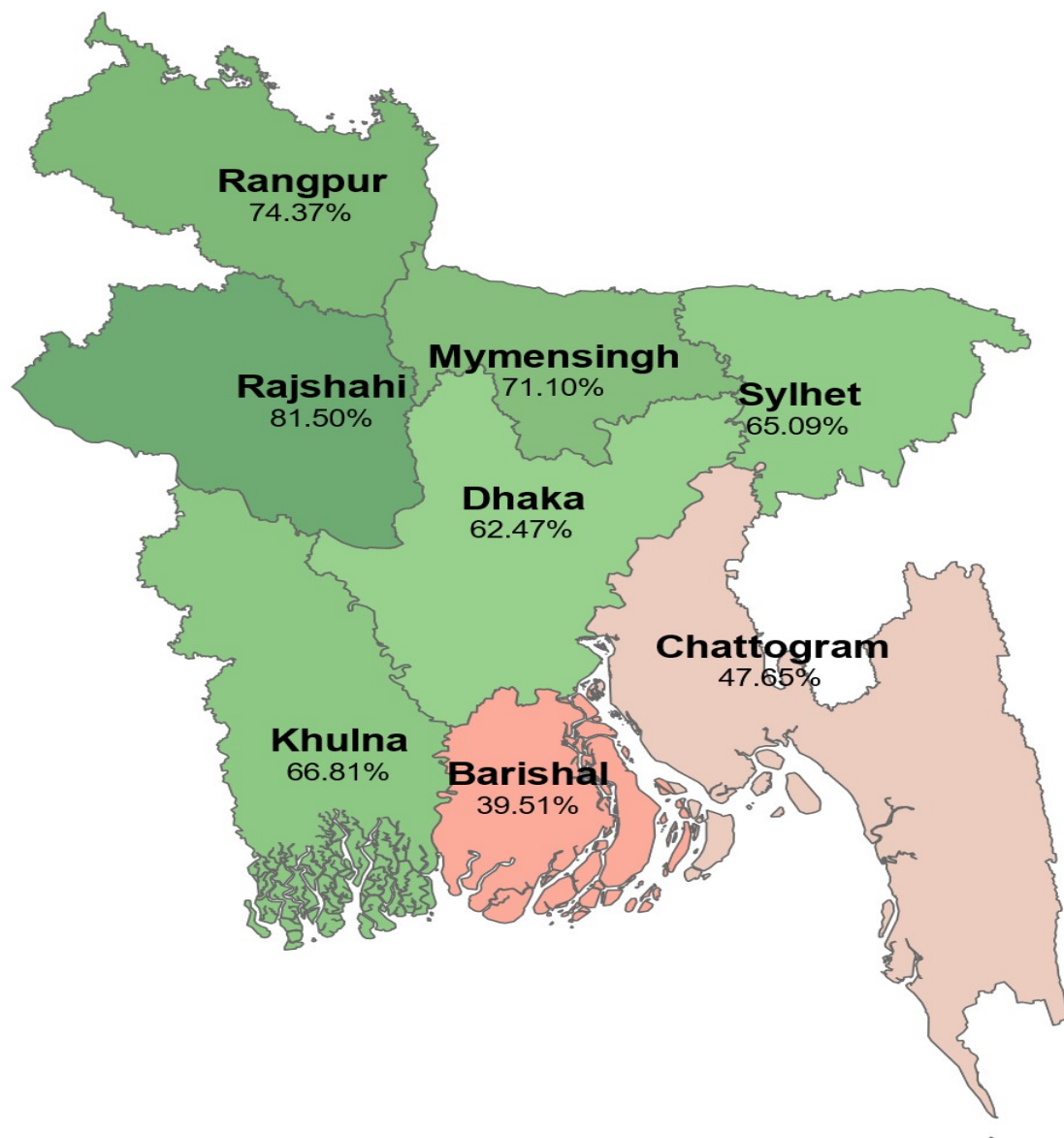
Table A.1: Monthly capacity utilization (% of functional capacity) in 2016

Division	Facility type	Capacity utilization (%)											
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Barishal	LSD	66	70	61	42	39	40	22	29	39	29	22	28
	CSD	-	-	-	-	-	-	-	-	-	-	-	-
Chattogram	LSD	58	61	53	42	37	38	30	42	60	58	45	29
	CSD	77	78	78	62	41	26	20	33	52	55	47	43
Dhaka	LSD	76	74	67	45	39	45	48	69	86	74	69	52
	CSD	96	92	89	77	71	64	54	50	58	52	37	20
Mymensingh	LSD	83	88	87	77	65	64	54	69	89	77	65	35
	CSD	40	44	48	33	31	27	15	16	15	19	23	18
Khulna	LSD	79	73	63	46	41	62	60	74	113	74	66	47
	CSD	130	122	123	108	88	71	43	43	37	36	63	59
Rajshahi	LSD	90	99	94	79	63	77	75	79	94	81	77	59
	CSD	105	106	108	104	87	74	52	57	64	63	50	41
Rangpur	LSD	98	104	102	85	65	67	68	68	83	74	65	48
	CSD	116	117	110	104	56	39	29	30	42	39	36	28
Sylhet	LSD	80	64	65	35	35	39	57	81	103	90	76	63
	CSD	-	-	-	-	-	-	-	-	-	-	-	-
All divisions	LSD	80	82	76	59	50	56	54	64	84	70	62	46
	CSD	95	94	94	82	64	51	36	40	48	47	46	38

Source: IFPRP Grain Stock and Loss Survey 2017.

Note: Capacity utilization figures reported in this Table are applicable to only the 162 surveyed storage facilities. Utilization is the ratio of opening stock in each month over functional capacity. Cells marked in blue indicate periods of overstocking.

Figure A.1: DG Food's Storage Capacity Utilization (2018)



Source: IFPRI Grain Stock and Loss Survey 2017.

Notes: Data are representative of 151 LSDs and 11 CSDs sampled across all 64 districts of Bangladesh. Capacity utilization is reported as share of functional capacity per month (in percentage terms).



Figure A.2: PFDS Storage Capacity Utilization by Month

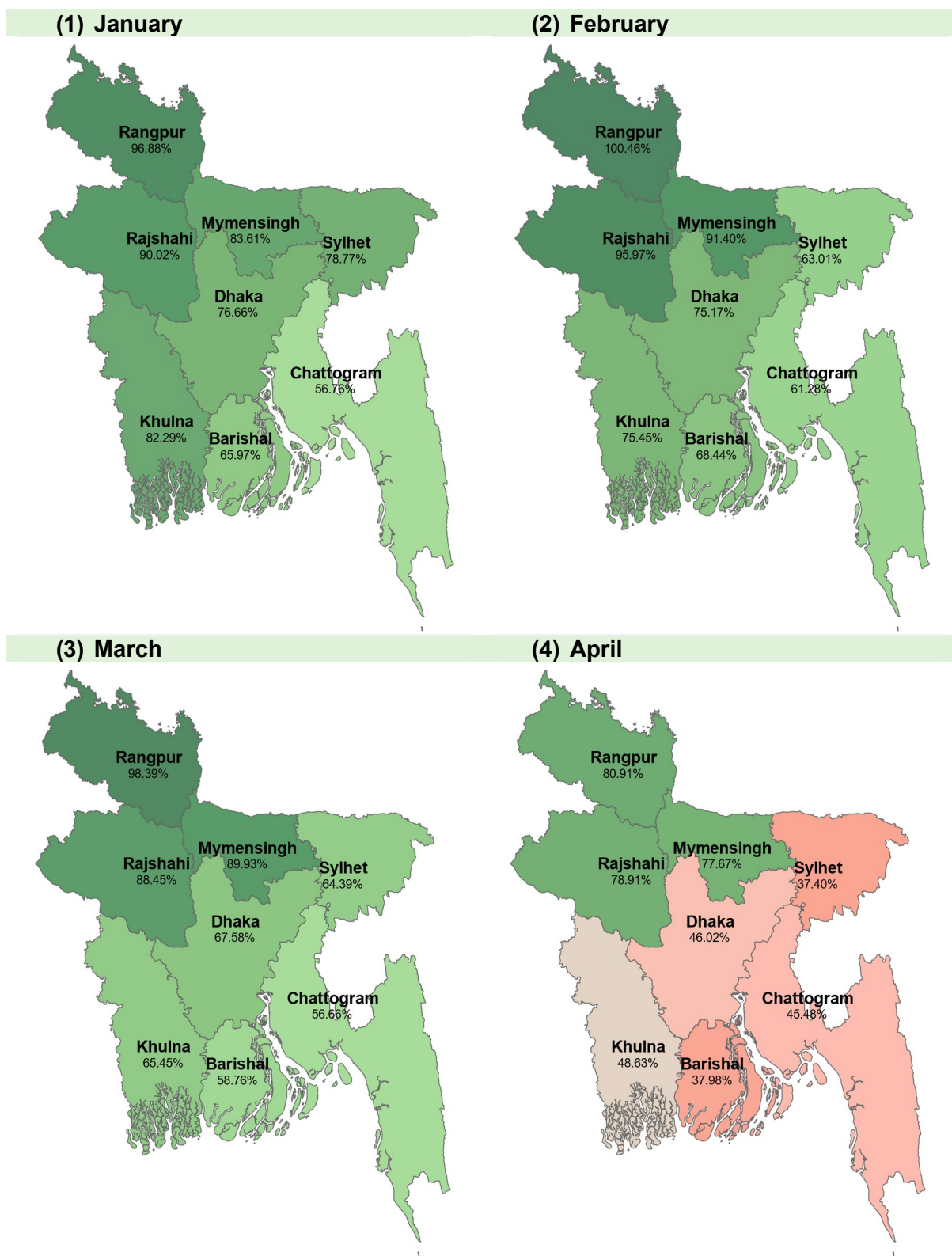
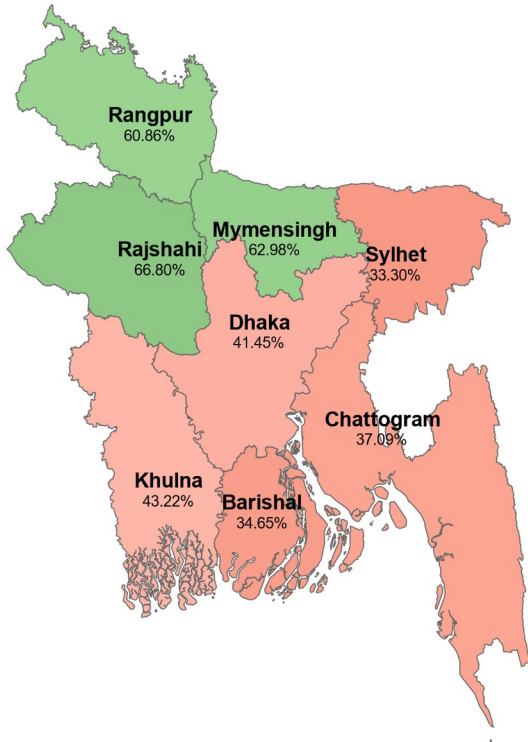
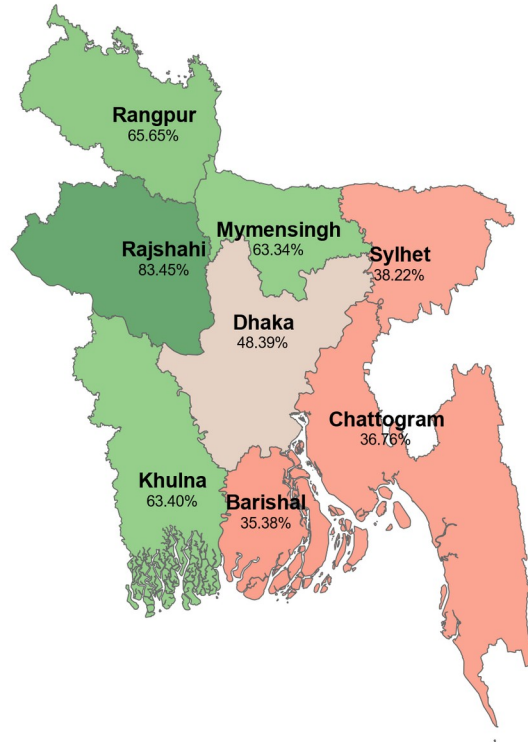


Figure A.1: PFDS Storage Capacity Utilization by Month (Cont.)

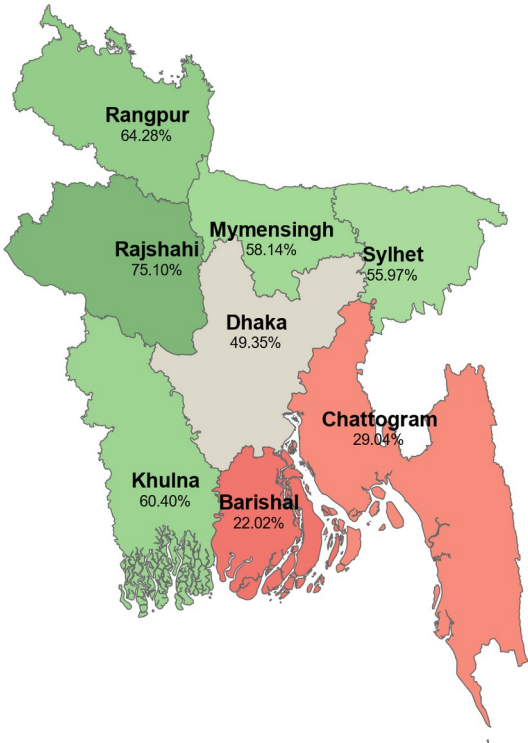
(5) May



(6) June



(7) July



(8) August

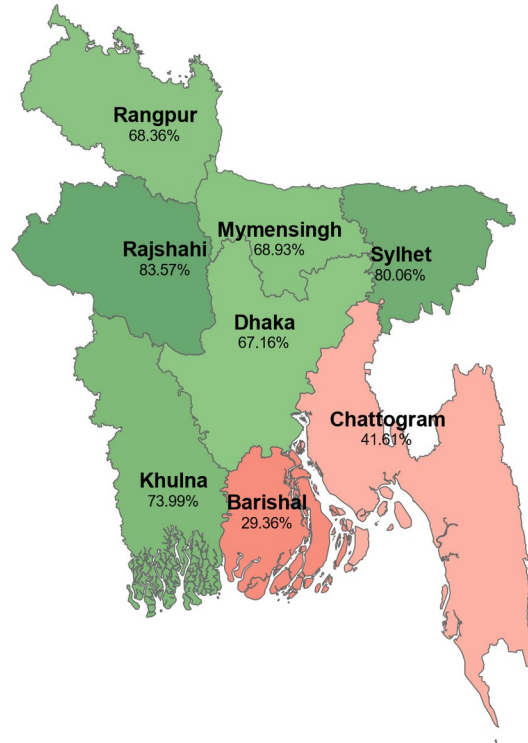
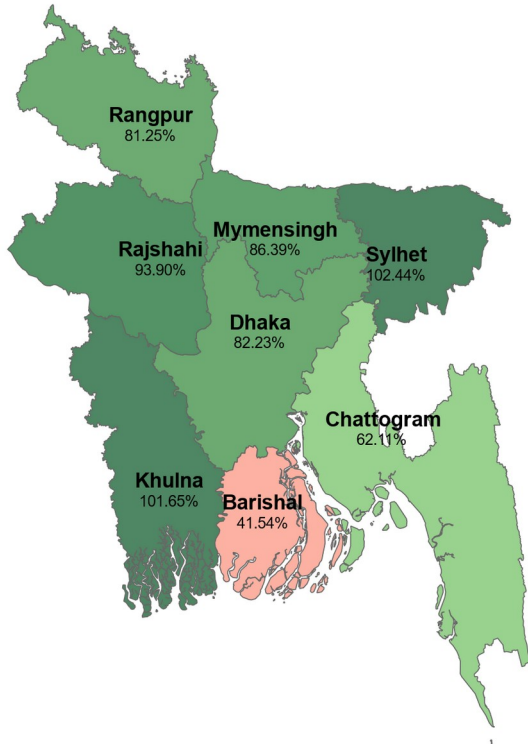
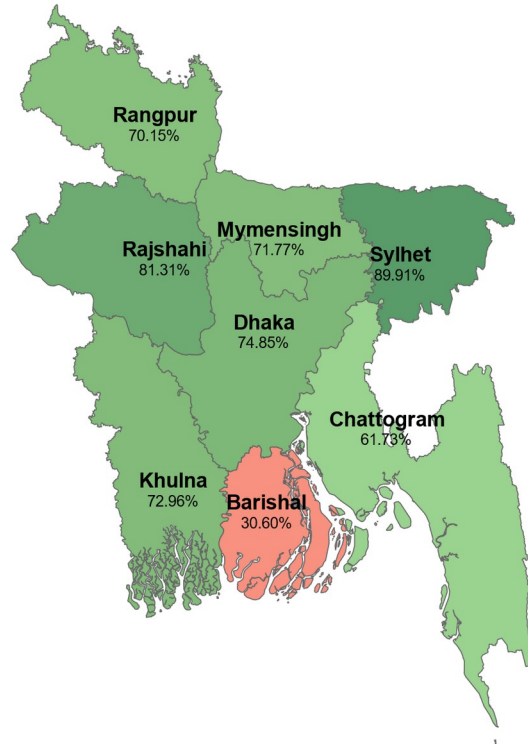


Figure A.1: PFDS Storage Capacity Utilization by Month (Cont.)

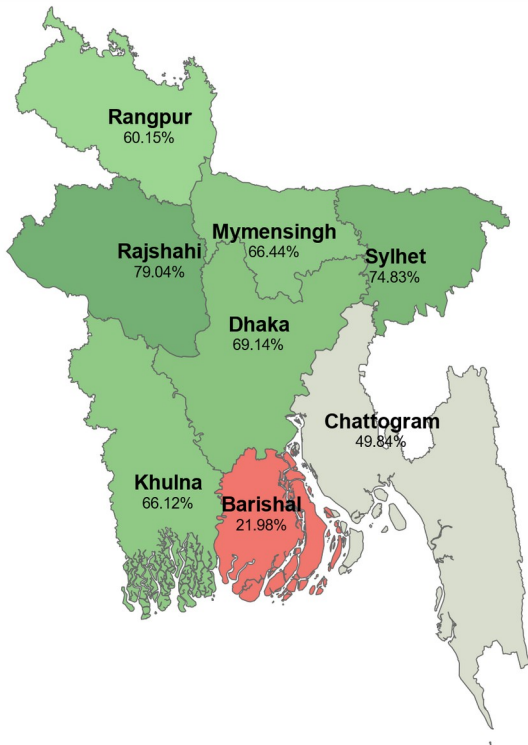
(9) September



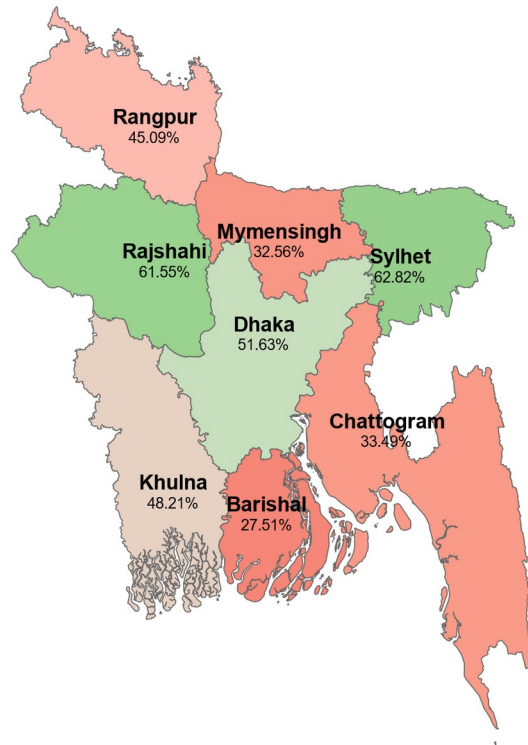
(10) October



(11) November



(12) December



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## REFERENCES

- Ahmed, A., M. Baktiar, et al., 2021. Boro Rice Procurement in Bangladesh: Implications for Policy. Policy Research and Strategy Support Program, International Food Policy Research Institute, Washington DC (available online here)
- Ahmed, R., Chowdhury, N., and Ahmed, A., 1993. Determination of Procurement of Rice in Bangladesh. Working Paper on Food Policy in Bangladesh, No. 6., International Food Policy Research Institute, Washington DC.
- Ahmed, R., Haggblade, S., and Chowdhury, T.E. 2000. Out of the Shadow of Famine: Evolving Food Markets and Food Policy in Bangladesh. Johns Hopkins University Press, Baltimore, MD
- Ahmed, R. 1979. Foodgrain supply, distribution, and consumption policies within a dual pricing mechanism: A case study of Bangladesh. Research Report 8. Washington, D.C.: International Food Policy Research Institute.
- Ahmed, R., and A. Bernard. 1989. Rice price fluctuations and an approach to rice price stabilization in Bangladesh. Research Report 72. Washington, D.C.: International Food Policy Research Institute.
- Chand, R. 2002. Government Intervention in Foodgrain Markets in the New Context (Report to the Ministry of Consumers Affairs, Food and Public Distribution, Government of India), National Centre for Agricultural Economics and Policy Research.
- Chand, R. and J. Singh, 2023. From Green Revolution to Amritkal: Lessons and Way Forward for Indian Agriculture, Niti Aayog, Government of India (available here)
- Chowdhury Sulin, 2017. Costs and Logistics of Grain Transportation in Bangladesh. A report prepared for the Bangladesh Integrated Food Policy Program., International Food Policy Research Institute, Washington DC.
- Chowdhury, N. 1994. Causality and Cost Effectiveness of Public Rice Procurement in Bangladesh. (draft) Prepared for the Bangladesh Food Policy Project, International Food Policy Research Institute, Washington DC.
- Del Ninno, C., P.A. Dorosh, 2001. Averting a food crisis: private imports and public targeted distribution in Bangladesh after the 1998 flood, Agricultural Economics, Volume 25:1-2, pp. 337-346
- del Ninno, C., PA Dorosh, Lisa Smith, and D Kumer, 2001. The 1998 floods in Bangladesh: disaster impacts, household coping strategies, and responses. Research Report No. 122, International Food Policy Research Institute, Washington DC.



- Dorosh, P.A. 2001. Trade Liberalization and National Food Security: Rice Trade between Bangladesh and India. *World Development*, Vol 29, No. 4. pp. 673-689.
- Dorosh, PA and S. Rashid, 2013. Trade subsidies, export bans and price stabilization: Lessons of Bangladesh–India rice trade in the 2000s, *Food Policy*, vol. 41:C pp. 103-111
- Godo, Yoshihisa, 2009. The Changing Political Dynamics of Japanese Agricultural Cooperatives, 2009 Conference, August 16-22, 2009, Beijing, China 51400, International Association of Agricultural Economists.
- Rashid, S. and PA Dorosh, 2018. Grain markets, disaster management, and public stocks: Lessons from Ethiopia, *Global Food Security*, Vol. 19, pp.31-39.
- Rashid, S. A. Gulati, and R. Cummings, Jr. 2008. *From Parastatals to Private Trade: Lessons from Asian Agriculture*. Johns Hopkins University Press, Baltimore, MD.
- Rashid, S. and R. Cummings Jr., and A. Gulati, 2007. Grain Marketing Parastatals in Asia: Results from Six Case Studies, *World Development*, Volume 35:1, pp. 1872-1888
- Takahashi, D. 2009. Quantitative evaluation of the Japanese rice policy reforms under the WTO agreement on agriculture. *Economics Bulletin*, *AccessEcon*, vol. 29(2), pages 712-725.
- Timmer, P. 1997. "Farmers and Markets: The Political Economy of New Paradigms," *American Journal of Agricultural Economics*, 79 (2): 621-627.
- \_\_\_\_\_ (1996). "Does Bulog Stabilize Rice Prices in Indonesia? Should it Try?" *Bulletin of Indonesian Economic Studies*, 32(2): 45-74.
- \_\_\_\_\_ (1989). "Agricultural Prices and Stabilization Policy," *Development Discussion Paper No. 290*, Harvard Institute for International Development.
- World Bank. 1979. *Bangladesh food policy issues*. Washington, D.C.: World Bank.
- \_\_\_\_\_ 1992. *Bangladesh food policy review: Adjusting to the green revolution*. Washington, D.C.: World Bank.



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