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THE POLITICAL ECONOMY OF RICE TRADE BETWEEN BANGLADESH, INDIA AND NEPAL



The Asia Foundation



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It is paradoxical that on the one hand, South Asia is one of the largest food grain producing regions, and on the other, it is home to approximately two-fifths of the food-insecure population in the world. The intra-regional agricultural trade has historically been low in South Asia due to lower yields, a large population to sustain, goal of achieving self-sufficiency, and prevalence high tariffs. India is a net agricultural exporter in the region, and figures in the list of top five import sources of Bangladesh and Nepal. There are many benefits to be accrued from enhanced intra-regional agricultural trade – it keeps the food prices low, improves access to nutrition, increases productivity, and concurrently, has an effect on the overall economy of the region. Between Bangladesh, India and Nepal, rice is a staple food and provides thirty per cent of the calorific requirement for the people (approximately 704 calories per capita per day, as per FAO).

With this background, BRIEF conducted a study to understand and highlight the challenges that are part of the supply chain in India's rice trade with Bangladesh and Nepal, particularly focussing on the procurement and the export-import stages. The report has also made an attempt to highlight the needs of the trade, the dynamics of price control and highlight the general as well as rice trade-specific suggestions that may help in addressing some of the identified challenges.

I would like to thank our partner, The Asia Foundation, for their support in the study. We would also like to appreciate all the stakeholders that we met in New Delhi, West Bengal and Uttar Pradesh, throughout the course of the study for sharing their views and experiences with us.

I sincerely hope that you find this report insightful and useful. This is the pilot study on this subject, wherein every aspect can form a detailed study on its own. Nonetheless, this report has made an attempt to highlight the various processes, policies and institutions that play a role at each step in the supply chain of rice trade, and how the domestic policies for achieving food security can, at times, affect the competitiveness of trade. In the end, suggestions have been put forth to address the challenges arising in the rice trade between Bangladesh, India and Nepal.

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Abbreviations

APMC	Agricultural Produce Market Committee
ARE	Application for Removal of Excisable Goods for Export
BENFED	West Bengal State Cooperative Marketing Federation Limited
BIN	Bangladesh, India and Nepal
C&F	Carrying and Forwarding
CACP	Commission for Agricultural Cost and Prices
CAGR	Cumulative Average Growth Rate
CBr	Customs Broker
CCEA	Cabinet Committee on Economic Affairs
CRM	Custom Rice Milling
CWC	Central Warehousing Commission
DGCI&S	Directorate General of Commercial Intelligence and Statistics
DGFT	Directorate General of Foreign Trade
ePOS	Electronic Point of Sale
FCI	Food Corporation of India
FOB	Freight on Board
G2G	Government to Government
GDP	Gross Domestic Product
GNI	Gross National Income
ICP	Integrated Check Post
IGM	Import General Manifest
INR	Indian Rupees
L/C	Letter of Credit
LCS	Land Customs Station
MEIS	Merchandise Exports from India Scheme
MSP	Minimum Support Price
MT	Million tonnes
NAFED	National Agricultural Cooperative Marketing Federation of India
NSSO	National Sample Survey Office
OTR	Out-Turn Ratio
PDS	Public Distribution System
PPC	Paddy Procurement Centres
PQ	Plant Quarantine
SAFTA	South Asian Free Trade Agreement
TPDS	Targeted Public Distribution System
TT	Telegraphic Transfer
UAE	United Arab Emirates
USD	United States Dollar
UT	Union Territory
WBECSC	West Bengal Essential Commodities Supply Corporation Limited
WTO	World Trade Organisation

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Executive Summary

Protectionism and domestic subsidies have been at the fulcrum of agricultural policies in South Asia. The intra-regional trade in food grains has been low, and a need-based trade pattern has been observed over the last three decades. In Bangladesh, India and Nepal (BIN), rice is the staple food for most of the population, and forms approximately 50 per cent of the total cereal production, providing 30 per cent of the total calorific requirement. While the BIN economies have a significant domestic production of paddy, only India has a surplus, and Bangladesh and Nepal are dependent on imports to fulfil their domestic requirements. However, the high agricultural tariffs in the BIN economies decrease the competitiveness of imports in the local markets.

This study explores the political economy of rice trade between Bangladesh, India and Nepal with the objective of assessing the factors that play a role in the shifting trade patterns between the selected countries. Three levels of analysis have been conducted in the study – (a) at the procurement stage in India, (b) at the export stage, and (c) at the consumption stage in Nepal and Bangladesh. The procurement analysis consists of factors such as input subsidies, domestic production and consumption, and the dynamics of price change in the Indian market; the export stage analyses the prevalence of tariff and non-tariff barriers that exist at the border points; and the consumption stage analyses the trend in consumption and the factors that drive exports from India to Nepal and Bangladesh.

The study is based on secondary and primary analysis. The latter was undertaken through field visits in Gorakhpur and Sonauli in Uttar Pradesh, and Kolkata and Petrapole in West Bengal. This enabled the study team to have a first-hand analysis of the dynamics of the markets and the challenges faced at border points. The report concludes that despite the high-tariff and non-tariff barriers to the trade, the dependency of Nepal and Bangladesh on India would continue due to absence of self-sufficiency in domestic production, and vulnerability to the environmental hazards. It is, thus, necessary to address the factors that affect the quality and the price competitiveness of rice in the trade supply chain.

The key highlights of the study are:

1. In Bangladesh, India and Nepal, rice production contributes to approximately 10 per cent, 2.63 per cent and 6.22 per cent to the GDP, respectively. While this figure has been decreasing over the last three decades in India and Nepal, it has been consistent in Bangladesh in the last one decade. The change is attributed to the economic boom in the three economies, leading to a higher contribution from other sectors in the GDP.
2. While the volume of paddy production has increased in the BIN economies, the area under production has remained the same over the last three decades. Similarly, the area under irrigation from the total area of paddy has only shown marginal growth, indicating limited public spending in the area, despite the heavy reliance on irrigation.
3. Bangladesh has a significant local production of paddy/rice, spread across three seasons – Aman, Boro and Aus. The per capita consumption of rice in Bangladesh is the highest in the sub-continent. However, the country is prone instability in production due to environmental and man-made vulnerabilities. Bangladesh witnessed low self-sufficiency in 2014, 2015 and 2017, due to floods. As a result, the rice imports from India increased with a corresponding decrease in the import tariffs.
4. India is the only country in South Asia where the self-sufficiency ratio in rice exceeds 100 per cent, implying a high capacity for export. The year-on-year paddy production has been increasing at an average CAGR of 1.65 per cent. In 2017-18, India exported 23 per cent and 7 per cent of its total rice export to Bangladesh and Nepal, respectively.
5. In Nepal, the self-sufficiency in rice production has been declining over the last three decades. As a result, Nepal has been importing huge quantities of rice from India. Earlier, Nepal mainly imported non-basmati rice varieties from India, however, in the last few years, its import of the basmati variety has also increased. One of the

reasons for this is the increase in GNI per capita, leading to a preference for higher quality of rice.

6. There are two types of paddy procurement in India – government and private. The government procurement is done for meeting the requirements of the Targeted Public Distribution System (TPDS), for G2G trade and for providing income support to the farmers. This type of procurement is done through a Minimum Support Price (MSP) guaranteed to the farmers at the beginning of the sowing season. There are two main reasons for the importance of the MSP and TPDS in rice trade, in spite of no direct linkages:
 - The MSP acts as a benchmark for the price that paddy should have in the market. Without this, it would be difficult to establish a reference price, leading to exploitation of farmers and variability in export price. It has been noticed that, in practice, the MSP is the maximum price paid to the producers as the market price of paddy has been lower than the MSP
 - The leakages from the TPDS affect the price competitiveness of rice trade with the neighbouring countries, because a significant quantity of the leaked rice is exported at lower costs than the actual FOB price of rice. This leads to creation of importer distrust.
7. The miller plays an important role in converting paddy to rice for the government procurement as well as for the private parties. However, certain policy decisions lead to a loss for the millers, which then has an effect on the private rice procurement. For instance, the out-turn-ratio (OTR) for paddy to rice conversion is fixed at 67 per cent. However, the miller is unable to meet this requirement due to factors such as difference in the quality of rice received. As a result, the miller faces a loss of 4-5 kgs per quintal of paddy. This loss is then recovered by the millers from the farmers or the private parties procuring rice for export, leading to higher export price of rice.
8. Private procurement of paddy comprises of a larger share of the total procurement. It is done for domestic sale and export. It is a market-driven procurement – wherein the price of paddy/rice in the market determines the remuneration given to the farmer. The paddy is procured either directly from the farmers or through the agents by the millers who further sell it to private parties.
9. India allows free export of rice by the privately held stocks. However, the export of rice of seed quality and other rice in husk (paddy) is under the restricted category. In November 2018, the Gol has also extended a subsidy of 5 per cent to non-basmati exporters under the Merchandise Exports from India Scheme (MEIS). The scheme will continue till March 2019. Three reasons are attributed for this subsidy – (a) to address the decline in export in the latter half of 2018, (b) to support the small and medium enterprises, and (c) to offset the reduction in export caused by imposition of high import tariff in Bangladesh in 2018. The import of paddy in to India is restricted (70 – 80 per cent basic customs duty) and can only be done through the State Trading Enterprises.
10. In India's exports to Nepal, two varieties of rice are included – steam and half steam. Sambha rice (steam) is the largest kind of rice exported. The highest rice trade takes place through the Sonauli border in Uttar Pradesh. However, three major issues on the Indian side affect the time and cost of export: (a) high waiting period for trucks (2-3 days) in queue, (b) lack of warehouses for storage of goods, and (c) manual documentation process (of registration certificate and bill of export) from the DGFT Lucknow.
11. In case of India-Bangladesh rice trade, rice varieties of R-36 parboiled rice, Swarna, Minikit, Ratna and Sela rice are exported. High volume of rice trade takes place through the Petrapole Integrated Check Post in West Bengal in India. However, a number of issues increase the waiting period of rice at the border, affect the price, and the quality of rice as well. These include, (a) limited working hours at the ICP, (b) restriction in truck movement as Bangladesh allows 500 trucks to cross the border per day, (c) categorisation of rice as general cargo, instead of semi-perishable, for priority in movement, leading to delays, and (d) prevalence of a parking mafia at Bongaon near Petrapole delays truck movement.
12. A number of steps can be taken to address the challenges faced in rice trade between India-Nepal and India-Bangladesh. These include: (a) upgradation of infrastructure at border points, such as building proper warehouses wherein the quality of rice can be maintained, (b) digitisation of documentation processes, (c) proper categorisation of rice at the border points by the Customs and the CWC in order to expedite its movement, and (d) steps for outreach need to be taken by the Governments of Bangladesh, India and Nepal to address the trust deficit between the traders; the national industry chambers can also play a leading role in this. Apart from trade challenges, challenges in the procurement process need to be addressed in India for increasing transparency, traceability and accountability in the procurement and supply chain module between the various entities – farmers, millers, warehouses and the fair price shops.

1. Introduction

Agriculture in South Asia is a source of employment and livelihood for approximately 43 per cent of the total population (World Bank, 2017). With 56 per cent of the total land area as agricultural, the sector contributes approximately 16 percent to the total GDP of the region (ibid). Within this, the region accounts for almost 40 per cent of the world's total harvested area for rice. South Asia is home to two-fifths of the world's poor, wherein 74 per cent of the population lives on less than USD 2 per day. Here, rice accounts for almost 30 per cent of the calorific requirements of the population (Gumma, Nelson, Thenkabail, & Singha, 2011). Rice production has made a quantum leap in the region, mainly due to unprecedented economic progress and the advent of green revolution; this has tripled the food grain production, thus moving a step towards attaining self-sufficiency in production. In Bangladesh, India and Nepal, paddy production accounts for more than 50 per cent of the total cereal production (Table 1).

There are economic and social factors associated with rice. The consumption of rice, and the change in thereof, is an indicator of the change in the country fuelled by increase in per capita income, variation in individual preferences, and prices. On the social front, rice also has an emotive value based on cultural traditions and beliefs.

1.1. Scope

This study is focussed on three economies of South Asia – Bangladesh, India, and Nepal (BIN). These countries have a substantial rice production, with an aim of achieving self-sufficiency. While India produces surplus rice, Bangladesh and Nepal are importing rice to meet their domestic needs. India exports approximately 23 per cent and 7 per cent of its total non-basmati exports to Bangladesh and Nepal, respectively (2017-18). Various factors play a role in the export of rice – size of the population, consumption pattern, domestic production, price of rice in India, export subsidies, trade barriers etc.

The objective of this study is to assess the factors that play a role in the shifting trade patterns between the selected countries. An attempt has been made to analyse the political economy of rice in the selected countries at three stages – at the procurement stage

According to the 1996 World Food Summit, food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. This definition covers four areas – physical food availability, economic access to food, utilisation of food, and stability of the preceding three dimensions.

in India, at the export stage, and at the consumption stage in Nepal and Bangladesh. Within these stages, the scope expands to understanding the effects of subsidies, support prices, wholesalers, and transport at the source; the the politics of tariff and non-tariff barriers at the border; and an examination of the pricing of imports, local distortionary practices, and protectionist impulses at the consumption points. An analysis of the institutions of influence has also been made to study the role of various arms of the state, domestic markets, and international markets.

1.2. Methodology

The study is based on both secondary and primary research. The secondary research consists of literature review and data collection from country-specific sources such as the ministries of agriculture and commerce of the selected countries, the Bangladesh Bureau of Statistics, and international institutions such as the World Bank, the Food and Agricultural Organisation, International Rice Research Institute, United States Department of Agriculture, etc. Process mapping was also done through review of reports, papers, news articles and field study on the subject matter. Primary research was conducted in Gorakhpur and Sonauli in Uttar Pradesh, and Kolkata and Petrapole in West Bengal. The secondary findings were validated during the field visits wherein focussed stakeholder discussions and interviews were conducted. West Bengal and Uttar Pradesh were chosen because they are the largest producers of non-basmati rice and are the gateways for export to Bangladesh and Nepal, respectively. The findings from both exercises have been analysed and collated in this report.

The first part of the report highlights the role of agri-

Table 1: Trend of Agricultural, Cereal and Paddy Production in Bangladesh, India and Nepal

Parameter/ Country	1987	1997	2007	2017
(A) Total Agricultural Production (MT)				
Bangladesh	38.18	44.79	65.37	81.56
India	474.58	700.54	898.88	990.92
Nepal	7.60	11.83	16.25	22.8
(B) Total Cereal Production (MT)				
Bangladesh	24.33	29.67	44.84	53.33
India	156.11	223.23	260.49	313.61
Nepal	4.76	6.35	7.34	9.76
(C) Total Paddy Production (MT)				
Bangladesh	23.12	28.15	43.18	48.98
India	85.34	123.70	144.57	168.50
Nepal	2.98	3.64	3.68	5.23
(D) Cereal Production as a Percentage of Agricultural Production (%)				
Bangladesh	64	66	69	65
India	33	32	29	32
Nepal	63	54	45	43
(E) Paddy Production as a Percentage of Cereal Production (%)				
Bangladesh	95	95	96	92
India	55	55	55	54
Nepal	63	57	50	54
(F) Paddy Production as a Percentage of Agricultural Production (%)				
Bangladesh	61	63	66	60
India	18	18	16	17
Nepal	39	31	23	23
Source: FAOSTAT				

culture as a significant driver of the economy in BIN and the importance of rice within this system. The area of production and irrigation, at the macro level, has been analysed. The second part of the report delves in to the trend in production and consumption of rice to highlight the import dependency and self-sufficiency of the BIN economies. This builds a case for the need of rice trade within the region. The last part of the report highlights the process of rice trade – from procurement to trade (export and import) – analysing the role played by institutions in the same, and the rice trade policy of the selected countries.

1.3. Limitations

Studying the political economy of rice is an exhaustive and a long drawn exercise. While the study has made an attempt to capture all the factors that affect rice trade and food security between Bangladesh, India, and Nepal, a study of this nature would require deeper analysis into the production and procurement factors. The field work for this report has been con-

ducted only in India. Furthermore, while many trade points exist between India-Nepal and India-Bangladesh, the two highest trading route for rice between the selected countries, Petrapole in West Bengal and Sonauli in Uttar Pradesh, have been covered in this study.

2. Overview of the Economy and Agriculture in Bangladesh, India and Nepal

2.1. Agriculture in GDP

In South Asia as a whole, and particularly in Bangladesh, India, Nepal, agriculture forms a significant part of the GDP. The sector has implications on the overall economic growth of the country, with backward and forward linkages in other sectors (Shekhar & Bhatt, 2012) such as manufacturing, trade, etc. Employment and the value added per worker in agriculture continues to be substantial, in spite of a declining trend in the last three decades (Table 2). In Bangladesh and Nepal, rice contributes more than 5 per cent to the GDP. In India, the share of rice in the GDP is low, however, the country is one of the largest exporters of rice in the world. Three decades earlier, the value added per worker in agriculture⁽ⁱ⁾ was closer to the GDP per capita, reflecting better performance of agriculture in the overall economy.

2.2. Land Use Statistics

Conventionally, the growth in area under agriculture translated to a growth in crop production. However, with economic liberalisation and technological revo-

lution, the sectoral contribution of agriculture in the economy has changed significantly. The economies that were once largely dependent on agriculture have shown growth in area of services, manufacturing, etc. Technology transfer and advent of high-yield variety crops has led to changes in the production volumes whilst the total area required for production has remained constant. From Figure (1), it can be seen that over the last three decades, the share of agricultural land vis-à-vis the total land area has not undergone any significant change.

Furthermore, the percentage of area under irrigation from the total agricultural area also remains stagnant, reflecting marginal growth in the overall public investment on providing irrigation (Figure 2). In the specific case of paddy production, the selected BIN economies show a similar trend. In Bangladesh, the total area under paddy has undergone marginal change, and the total irrigated area for paddy remains low, between 47 – 48 per cent (Figure 3). Most of the paddy areas are irrigated by shallow tubewells (Bangladesh Bureau of Statistics, 2017). The use of traditional methods of irrigation, such as

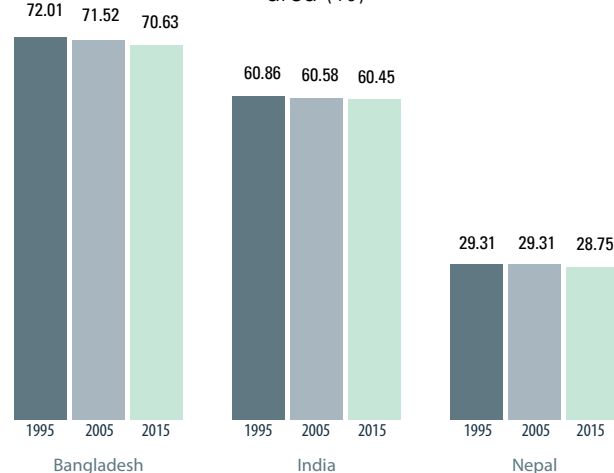
Table 2: Economy and Agriculture in Bangladesh, India and Nepal

		A	B	C	D	E
Country	Year	Agriculture, value added as a % of GDP	Employment in Agriculture (%)	Agricultural value added per worker (constant 2010 USD)	GDP per capita (constant 2010 USD)	Rice as a % of GDP*
Bangladesh	1997	23.24	65.16	408.58	466.77	14.64
	2007	17.81	48.46	653.75	666.40	9.44
	2017	13.41	39.06	990.66	1,093.05	10.06
India	1997	24.63	61.28	860.83	670.61	4.43
	2007	17.33	53.68	1,098.54	1,130.09	2.77
	2017	15.45	42.74	1,672.01	1,963.55	2.63
Nepal	1997	38.78	79.63	408.86	426.17	12.02
	2007	31.16	75.53	477.29	525.08	7.17
	2017	27.03	71.74	549.06	728.40	6.22

*Calculated from table 1(F) and table 2(A) | Source: World Bank and BRIEF's calculations

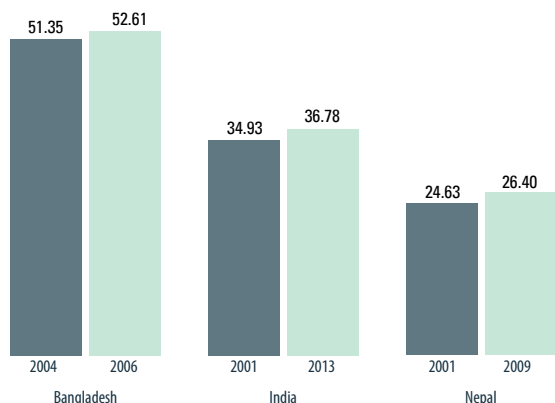
canals, has been declining over the last decade (4 percent in 2015-16). This trend shows a significant shift towards reliance on the the public supply of irrigation. In India, the total area under paddy as well as the total area under foodgrains has reached a threshold, wherein the land use pattern has not undergone any change but the paddy area under irrigation has been increasing by approximately 2 per cent every two years. Similarly, in Nepal, the total area under food grains and the total paddy production area have been hovering at the same level. However, for the same area of paddy, the area of land dependent on irrigation has grown in the last few years from 52 per cent to 70 per cent. Rest of the area remains rainfed.

Figure 1: Area under agriculture vis-a-vis total land area (%)



Source: World Bank

Figure 2: Agricultural land under irrigation (%)



Source: World Bank

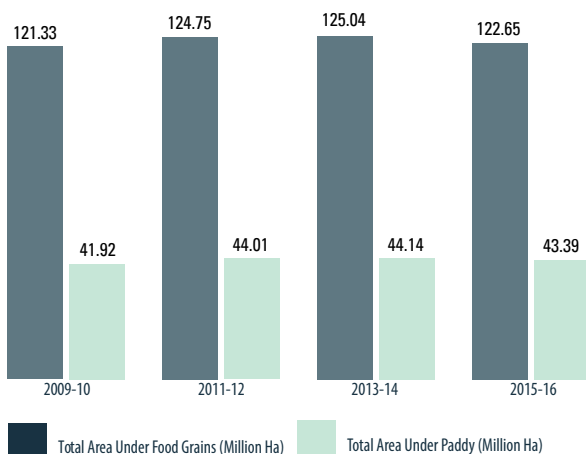
Note: Data has been provided for the earliest and the latest years available with the World Bank for each of the selected countries

Figure 3: Bangladesh: Paddy Statistics



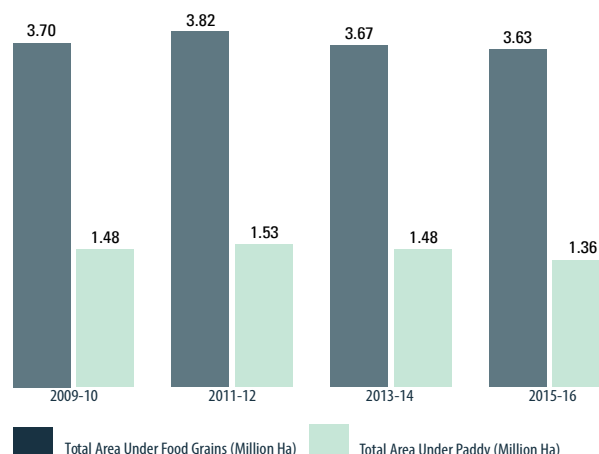
Source: Bangladesh Bureau of Statistics

Figure 4: India: Paddy Statistics



Source: Directorate of Economics and Statistics, Ministry of Agriculture, India

Figure 5: Nepal: Paddy Statistics



Source: Ministry of Agricultural Development, Nepal

3. Production, Import and Consumption of Rice in Bangladesh, India and Nepal

As discussed in Chapter 1, rice provides approximately 30 per cent of the calorific requirement to the population in South Asia. In this section, an analysis of the demand-supply scenario in the BIN economies has been conducted in order to gauge the present status of per capita rice availability and identify future prospects for trade vis-à-vis self-sufficiency in meeting the domestic demand.

3.1. Bangladesh

Bangladesh is a major rice producing economy, wherein rice is the staple food of approximately 135 million people and provides employment to approximately 39 per cent of the populace (Bangladesh Rice

Knowledge Bank). The per capita consumption of rice in Bangladesh is one of the highest in the subcontinent (table 3). Paddy is harvested in three seasons in Bangladesh – Aman (Aug-Sep), Aus (Oct – Jan) and Boro (May-June). Boro paddy has the highest yield, and the Aman paddy has the lowest yield. While the area under paddy production has only marginally increased in the last decade (2007 – 2017), the production has increased by approximately 9 million tonnes. In table 3, it can also be seen that the growth rate of production does not correspond to the growth rate of per capita consumption. As a result, Bangladesh has the potential to export surplus rice. However, even though the country is adequately self-sufficient in rice (table 3), data analysis from last decade sug-

Table 3: Area, Production, Yield and Per Capita Consumption of Rice in Bangladesh

Year	Area ('000 Ha)	Production ('000 tonne)	Yield (tonne/ha)	Per Capita Consumption (milled rice) (kg/yr)	Total Import ('000 tonnes)	Total Export ('000 tonnes)	Self Sufficiency Ratio ⁽ⁱⁱⁱ⁾ (%)
1987	10,320.00	23,120.00	22,399	155.27	259.68	0.00	89.90
1997	10,260.00	28,150.00	27,431	148.56	178.87	0.05	94.03
2007	10,575.00	43,181.00	40,833	174.21	616.00	19.00	98.64
2008	11,279.00	46,742.00	41,441	169.41	838.00	8.00	98.26
2009	11,353.53	48,144.00	42,404	171.11	43.00	5.00	99.92
2010	11,529.00	50,061.20	42,404	176.07	68.00	4.00	98.67
2011	11,528.00	50,627.00	43,917	174.27	1,310.00	1.00	97.48
2012	11,423.00	50,497.00	44,206	173.13	39.000	1.00	99.92
2013	11,372.00	51,534.00	45,317	172.79	260.00	1.00	99.50
2014	11,319.00	52,325.62	46,226	-	889.20	4.99	85.54
2015	11,371.78	51,278.40	45,093	-	1,077.56	3.57	82.68
2016	11,385.95	52,590.00	46,188	-	38.27	5.99	99.39
2017	11,270.00	48,980.00	43,453	-	-	-	-

Source: FAOSTAT, Food and Agricultural Organisation | Self Sufficiency Ratio: This measures the dependency on rice from domestic production. The formula is: $\text{Production} \times 100 / (\text{Production} + \text{Import} - \text{Export})$

gests that in the year 2014 and 2015, the production in Bangladesh has suffered from instability due to external shocks created by floods and other man-made factors. Further, in 2017-18, Bangladesh had been a major rice buyer, importing 2.04 million tonnes (table 12), the highest in the last three decades, after repeated floods washed away huge amounts of crops (The Daily Star, 2018). However, data also suggests that Bangladesh's rice imports from India are dependent on its need because of availability of significant local production that can cater to the consumption needs of its population. As a result, the rice import tariff of Bangladesh also varies – it is lower during times of need, and high during sufficient production. This situation has created a huge competition in West Bengal for trade with Bangladesh.

3.2. India

In India, two varieties of rice are grown – the long grain, aromatic rice known as 'basmati' and the short-grain rice known as 'non-basmati'. There are 29 notified varieties of basmati in India and more than 1000 varieties of non-basmati rice. Basmati finds its origins in the Himalayan foothills of Uttar Pradesh, Bihar and Terai Nepal (Balasubramaniam, 2002), whereas non-basmati rice is cultivated across the country. In the northern part of India, rice is grown during

May-November, whereas in eastern and southern parts of India, owing to the favourable climate, rice is grown throughout the year.

In the last decade (2007-2017), the area under rice cultivation in India has not undergone any major change, ranging between 41.92 million hectares to 45.54 million hectares. However, in terms of production, there has been an increase in paddy production at an average CAGR of 1.65 percent - India's production of rice in 2007 was 144.57 MT, which increased to 168.50 MT in 2017 (table 4). While rice is grown in almost all states in the country, the major rice producing states of India in 2015-16 were West Bengal (15.82 MT), Uttar Pradesh (12.5 MT), Punjab (11.82 MT), Tamil Nadu (7.93) and Andhra Pradesh (7.49 MT). In the last five years, West Bengal has been the leading producer of rice, preceded by Andhra Pradesh prior to 2010. As seen in table 4, with a self-sufficiency ratio above 100 per cent, India's rice production is adequate to meet its domestic demand as well as keep a significant surplus for export.

In the total production area, the agricultural land holdings size is very small. According to the Agricultural Census 2010-11, most of the farmers in the country produce food grains on landholding of average 0.39 Ha. The landholding size has remained constant

Table 4: Area, Production, Yield and Per Capita Consumption of Rice in India

Year	Area ('000 Ha)	Production ('000 tonne)	Yield (tonne/ha)	Per Capita Consumption (milled rice) (kg/yr)	Total Import ('000 tonnes)	Total Export ('000 tonnes)	Self Sufficiency Ratio (%)
1987	38,806.00	85,338.70	21,991	71.61	5.27	388.68	100.45
1997	43,469.80	123,700.00	28,457	74.20	.05	2,388.78	101.97
2007	43,910.00	144,570.00	32,924	71.20	0.15	6,449.00	104.67
2008	45,537.40	148,036.00	32,509	72.24	0.09	2,484.25	101.71
2009	41,918.30	135,672.99	32,366	71.69	0.07	2,148.00	101.61
2010	42,862.40	143,963.00	33,587	72.10	0.10	2,225.35	101.57
2011	44,010.00	157,900.00	35,878	70.82	1.09	5,004.28	103.27
2012	42,754.00	157,800.00	36,909	70.30	0.54	10,470.31	107.11
2013	44,135.95	159,200.00	36,070	69.49	1.32	11,300.10	107.64
2014	44,110.00	157,200.00	35,638	-	1.73	11,092.73	107.59
2015	43,390.00	156,540.00	36,077	-	1.31	10,953.47	107.52
2016	43,190.00	163,700.00	37,902	-	0.99	9,869.28	106.41
2017	43,789.00	168,500.00	38,480	-	-	-	-

Source: FAOSTAT, Food and Agricultural Organisation | Self Sufficiency Ratio: This measures the dependency on rice from domestic production. The formula is: $\text{Production} \times 100 / (\text{Production} + \text{Import} - \text{Export})$

Table 5: All India Consumption of Rice between 2004-05 and 2011-12

		Per capita qty (kg) consumed in 30 days		Percentage of hhs consuming in a 30 day period	
		Rural	Urban	Rural	Urban
Rice PDS	2004-05	0.84	0.53	24.4	13.1
	2009-10	1.41	0.81	39.1	20.5
	2011-12	1.67	0.88	45.9	23.3
Rice: Other Sources	2004-05	5.54	4.18	85.3	89.1
	2009-10	4.59	3.71	84.7	87.4
	2011-12	4.31	3.61	84.6	87.7

Source: National Sample Survey 68th Round, Ministry of Statistics and Programme Implementation Exclusive of rice products | hhs - Households

for the last decade, however, the number of small holdings as a percentage the overall holdings has increased from 62.9 per cent in 2000-01 to 67.1 per cent in 2010-11. Only 0.7 per cent of the landholdings in India have an average size of 17.38 Ha. As a result of the large number of small and marginal holdings, different farmers have different farming and irrigation practices on their land that leads to a difference in the quality of crops harvested. In case of paddy, this leads to a difference in the out-turn ratio (OTR) of rice from paddy.

Rice is an important part of food security in India. Food security does not simply imply availability of food grains, rather is also determined by the purchasing power of the individuals with respect to the demand. Data on per capita consumption of rice in India shows that rice consumption through the Public Distribution System (PDS) is increasing in the rural areas but decreasing in the urban areas (Table 5). However, rice consumption through other sources has been decreasing. Despite this, rice still forms a substantial part of the total cereal consumption in India. In the 68th NSSO Consumer Expenditure Survey, it was revealed that of the total monthly per capita cereal

consumption, rice forms 53.30 per cent of it in rural areas and 48.38 per cent in urban areas (2011-12).

3.3. Nepal

In Nepal, rice is cultivated in approximately 1.55 million hectares (2017), which is about 46 per cent of the total land cultivated (Mishra, Pudel, & Mishra, 2016). However, the domestic production is not adequate to meet the consumer demand in Nepal. As seen in table 6, the rice production of Nepal is only able to meet 88.89 per cent of the demand, a figure that has been declining over the last three decades. India features in Nepal's top 4 countries of import for rice. Despite Indian rice being more expensive than local rice, Nepal has been importing huge quantities of non-basmati rice from India. Of late, Nepal has also increased import of basmati rice from India. One of the potential reasons for this is rise in the average household income of Nepal (the GNI per capita has increased from USD 540 in 2010 to USD 730 in 2016), and hence preference for better quality of rice. Given that Nepal's rice production has shown a sluggish growth in the last decade (Table 6), its dependency on India's rice to meet domestic demands remains intact.

Table 6: Area, Production, Yield and Per Capita Consumption of Rice in Nepal

Year	Area ('000 Ha)	Production ('000 tonne)	Yield (tonne/ha)	Per Capita Consumption (milled rice) (kg/yr)	Total Import ('000 tonnes)	Total Export ('000 tonnes)	Self-Sufficiency Ratio (%)
1987	1,423.29	2,981.78	20,950	96.57	31.31	2.27	99.04
1997	1,506.34	3,640.86	24,170	91.66	29.50	0	99.20
2007	1,439.53	3,680.84	25,570	86.55	226.26	0	94.21
2008	1,549.26	4,299.26	27,750	82.59	92.40	0	97.90
2009	1,555.94	4,523.69	29,074	86.99	102.95	2.02	97.82
2010	1,481.29	4,023.82	27,164	87.39	98.16	0.36	97.63

2011	1,496.48	4,460.28	29,805	86.73	161.10	0.30	96.52
2012	1,531.49	5,072.24	33,120	88.11	367.31	0.27	93.25
2013	1,420.57	4,504.50	31,709	87.75	325.47	0.17	93.26
2014	1,486.95	5,047.05	33,942	-	526.52	0	90.55
2015	1,425.35	4,788.61	33,596	-	531.99	0	90.00
2016	1,362.91	4,299.08	31,543	-	537.70	0.24	88.89
2017	1,552.47	5,230.33	33,690	-	-	-	-

Source: FAOSTAT, Food and Agricultural Organisation | Self Sufficiency Ratio: This measures the dependency on rice from domestic production. The formula is: $\text{Production} \times 100 / (\text{Production} + \text{Import} - \text{Export})$

4. Paddy Procurement, Marketing System, Trade and Policy Implications

The path followed for achieving food security in the BIN economies is broadly similar – based on public distribution of food grains, minimum support price, and protected, yet flexible import tariff. This chapter takes in to account the role of food subsidies, the process of procurement, marketing and trade of rice. The field study for the same has been conducted in Gorakhpur and Sonauli in Uttar Pradesh, and Kolkata and Petrapole in West Bengal. These markets are important for the traders exporting rice to Nepal and Bangladesh.

4.1. Food Subsidies in India and their Impact on Trade

Two types of food subsidies are provided in India – the distribution of food grains through PDS and minimum support price to the farmers. Both subsidies have evolved over time in order to maintain food security in India.

4.1.1. Public Distribution System (PDS)

An important aspect of food security in India is the food subsidy provided in the form of Public Distribution System (PDS) and the Targeted Public Distribution System (TPDS) (Table 7). The Food Corporation of India (FCI) procures the food grains for the TPDS, at a minimum support price for the producers. The rice procured for TPDS is distributed through a network of 5.27 lakh fair price shops in India.

In the past, many instances of leakages from the TPDS system have been reported and studies have been conducted to measure the loss, estimating the amount to be around 40-50 per cent of the total food grain procured (Drèze & Khera, 2015). Much of this 'leaked' rice from the TPDS finds its way in the open market or is exported to neighbouring states such as Nepal and Bangladesh at much lower prices, both through proper and informal channels. This has led to development of an unfair competition in trade and paved way for distrust from the importers as the gap between the price of 'leaked rice' and export becomes higher.

In 2017-18, initiatives have been taken to check the

diversion of food grains from the FCI storage sites. The Government of India (GoI) is implementing end-to-end computerisation of TPDS operations on a cost co-sharing basis with the states and UTs. Under this, approximately 2.84 lakh fair price shops have been equipped with electronic Point of Sale (ePOS) devices for authentication of beneficiaries and electronic record keeping of transactions (Department of Food and Public Distribution, 2018).

Table 7: Evolution of the PDS

Year	Category	Features
1947-1992	Public Distribution System (PDS)	Entitlement scheme for all consumers without any specific target
June, 1992	Revamped PDS	To improve the reach of PDS in hilly, remote and other inaccessible area with a substantial poor population
June, 1997	Targeted PDS	Launched with a specific focus on the poor; 72 lakh tonnes of food grains marked for 6 crore poor families annually; while BPL families are priorities, the programme also extends to APL families at relatively higher rates.

4.1.2. Minimum Support Price (MSP)

MSP is the price at which the government procures/purchases the food grains from the farmers for the central or state pool. The Cabinet Committee on Economic Affairs (CCEA), Government of India, determines the MSP, based on the recommendations of the Commission for Agricultural Cost and Prices (CACP). For calculation of the MSP, the CACP takes into account factors such as cost of production, changes in the input prices, input-output price parity, trends in market prices, demand and supply, effect on industrial cost structure, effect on general price level, international price situation, parity between prices paid and prices received by the farmers, and

effect on issue prices, and implications for subsidy.

In case of paddy, the MSP is applicable only on the non-basmati variety. The type of MSP levied is dependent upon the quality of paddy – Common and Grade 'A'. Over the last decade, the MSP of Common grade paddy has risen at a CAGR of 8.54 per cent and that of Grade 'A' paddy has increased at a CAGR

of 8.31 per cent. The annual change in the MSP has been at par with the annual change in the cost of production (Table 8).

On one hand, the price support policy has backed the farmers from the influence of the market price crash on their production, and on the other hand, it has discouraged the farmers from crop diversification as

Table 8: Cost of Production, MSP of Paddy, and price in the Mandi

Year	MSP		Cost of production (Input cost) (INR per quintal)	Price in Mandi	
	Common Paddy (INR per quintal)	Grade 'A' Paddy (INR per quintal)		Modal price of Common Paddy in mandi [§] (INR per quintal)	Modal Price of Grade 'A' Paddy in mandi [§] (INR per quintal)
2006-07	580 (+INR 40 bonus)	610 (+INR 40 bonus)	594.00*	-	-
2007-08	645 (+INR 100 bonus)	675 (+INR 100 bonus)	650.77	-	-
2008-09	850 (+INR 50 bonus)	880 (+INR 50 bonus)	784.45	-	-
2009-10	950 (+INR 50 bonus)	980 (+INR 50 bonus)	912.71	-	-
2010-11	1000	1030	957.97	-	1129
2011-12	1080	1110	1038.82	-	1039
2012-13	1250	1280	1167.21	1229	1157
2013-14	1310	1345	1233.24	13971	14682
2014-15	1360	1400	1335.54	1296	1452
2015-16	1410	1450	1449.69	1190	1236
2016-17	1470	1510	-	1415	1461
2017-18	1550	1590	-	1592	1555
2018-19	1750	1770			

Source: Food Corporation of India & Directorate of Economics and Statistics | *Only 4 states | [§]The mandi analysed for this purpose is the Bardhaman Mandi in West Bengal. It is the largest paddy mandi in India. | ¹ Refers to the Swarna Masuri (old) quality of rice, ² Refers to the modal price of long grained IR-36 | From 2006-2010, data was unavailable for price of paddy in mandi.

the food policy is skewed towards wheat and rice as opposed to other crops like oilseeds and pulses. The rate of increase of MSP for paddy and wheat has been more than that of the other food-grains.

While MSP is incentive price given to the farmer for his produce; in practice, it has been observed to become the maximum price that is being paid to the farmer. This is purportedly due to the dynamics that exist between the agents/consolidators and the procurement centres. As per the agricultural census 2010-11, most farmers have small land holdings, and in turn, smaller quantity of produce. Therefore, a consolidator's role comes in to play wherein he collects the produce from many smaller farmers and sells them at the procurement centres. Nonetheless, the importance of MSP lies in the fact that it acts as a benchmark for the price that a farmer should be getting for his produce. Table 8 indicates the price of common and grade 'A' variety of paddy in mandi as compared to the MSP in the corresponding year. It can be observed that barring 2013-14, the MSP has been higher than the price of paddy in the local mandi. Furthermore, it has also been reported that MSP is being used as a political tool without accounting for its calculation on the actual factors of production. For instance, in the Union Budget 2018, it had been proposed to raise the MSP to 1.5 times the cost of production in a step towards doubling the farmer's income. However, the calculation does not consider the farmer inputs such as the rental value of the land and the interest on own capital invested by the farmer, rather is only calculated on the cost of inputs, interest on borrowed capital and family labour (Hussain, 2018).

4.2. Paddy Procurement, Milling, and Marketing System in India

In the BIN economies, rice is procured and marketed by two entities – government and private – for different purposes, such as for building food stock for the PDS, G2G trade, providing income support to the farmers, export etc. Given that India is the largest supplier of rice to both Bangladesh and Nepal, it is important to study the procurement and marketing mechanism in India that has an impact on export. The price is an important factor here because the consumption in both Bangladesh and Nepal is primarily of the non-basmati rice variety, which is much lower in cost than the basmati variety. This chapter highlights the various modes of procurement in India to include both government and private procurement. The government procurement is important here because it keeps the market prices in check.

4.2.1. Government Procurement

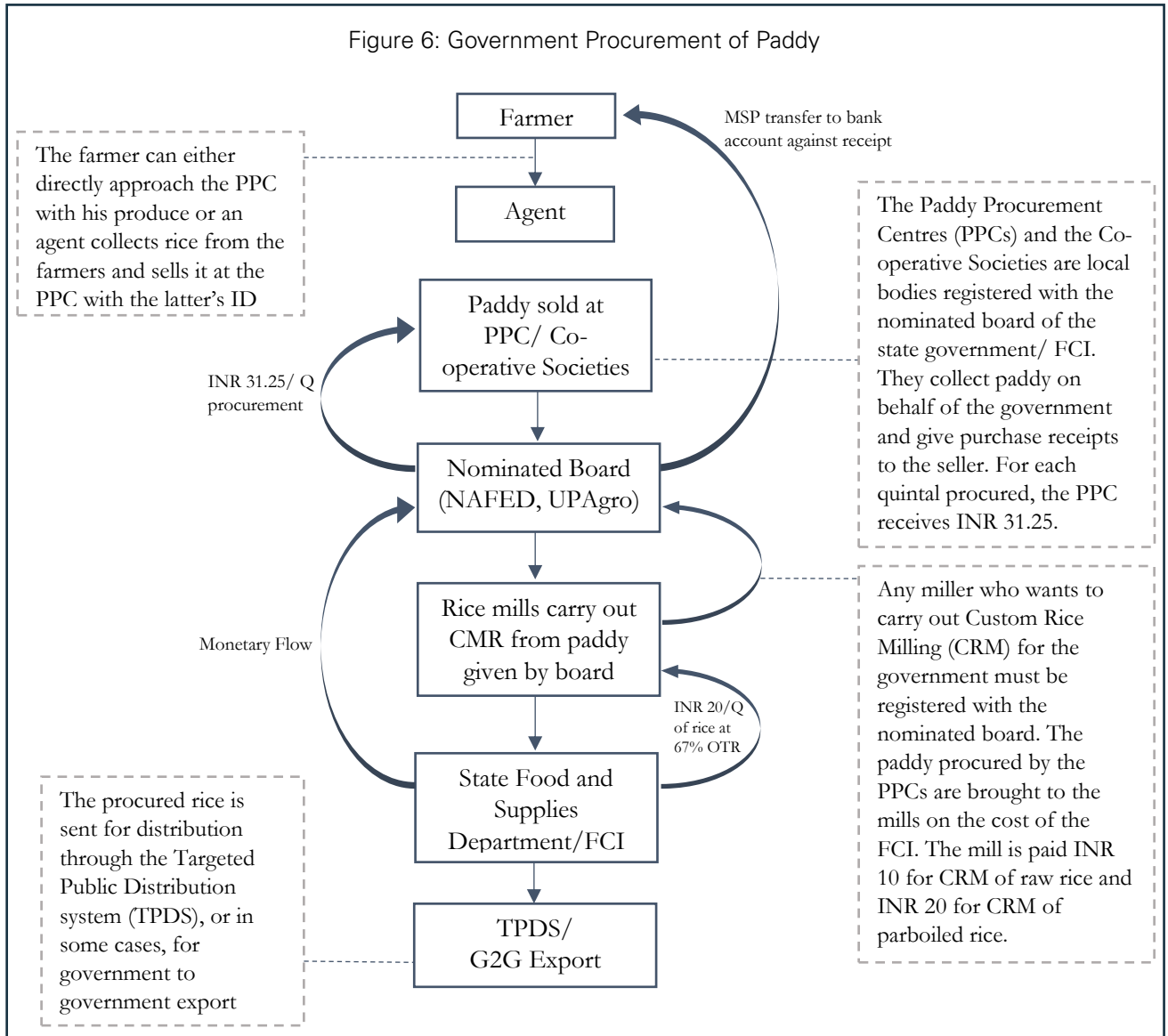
Government procurement is undertaken with the objectives of meeting the requirement of the Targeted

Public Distribution System (TPDS), to ensure remuneration for the farmers, and to maintain stock for food security (Comptroller and Auditor General of India, 2015) at an MSP fixed prior to the sowing season. The government procurement of paddy is done through the Food Corporation of India (FCI), a body formed in 1964 to oversee procurement, movement and storage of food grains. Within this, paddy procurement takes place at three levels: directly through the FCI, through the state government as delegated by the FCI and through the private players in mandis. Figure 6 represents the mechanism of procurement of paddy and milling it into rice for FCI's stocking. FCI also stocks rice with millers, rented warehouses and with the food and supplies department of the state government.

Further, there are two systems operational for procurement of paddy: the mandi system and the non-mandi system. A mandi is an entity of the state government, overseen by a mandi samitee. The largest food grain mandi in India is the Bardhaman/Burdwan mandi in West Bengal. The mandi samitee works under the state government. For every sale made from the mandi, various charges are applicable – 2 per cent as mandi tax, 2 per cent as rural development fees, 2 per cent as purchase fee, and 1 per cent as agent fees. In states like Uttar Pradesh, there are no mandis for sale and purchase of food grains. In this case, the farmers sell their paddy at the Paddy Procurement Centres (PPC) or the registered cooperative societies authorised by boards such as NAFED, UP Agro, FCI etc. (Figure 6). In government procurement, different levels of interactions take place for procurement – (i) between the farmers, PPCs, and the co-operative society, and (ii) between the FCI and the millers. A detailed analysis of this relationship is given in Figure 6.

The FCI and the State Government's Food and Supplies Department have registered co-operative societies under them in order to delegate the responsibility of collecting paddy. Within some of the co-operative societies, there are district level PPCs where the farmer takes his produce for selling against the MSP. However, given that most farmers in India have a marginal land holding, and in turn smaller quantity of produce, the selling at PPCs is done by an agent/consolidator who collects paddy from different farmers. It was observed in West Bengal and Uttar Pradesh that, in a number of situations, the agent has provided a loan/pesticides/fertilizers to the farmer during the sowing period of the crop at a certain interest rate. The agent uses the farmer's ID to make sale at the PPCs. The cooperative society gives a receipt in the farmer's name and the MSP is transferred to the farmer's account. The farmer, in turn, pays the agent in cash in order to return the loan amount with interest (figure 7). This working mechanism leaves the farmer in a vulnerable position despite the provision

Figure 6: Government Procurement of Paddy



of subsidies and MSP.

(a) Between the FCI and the millers

In the rice supply chain, the miller plays an essential role of milling paddy into rice (figure 8). The miller is registered with the FCI's nominated board such as

NAFED, UP Agro, BENFED, WBECSC etc. for carrying out the process known as Custom Rice Milling (CRM). The FCI pays the miller **INR 10** per quintal for CRM of raw rice and **INR 20** per quintal for CRM of parboiled rice at an **Out-turn Ratio (OTR)** of 67 per cent. The OTR is the paddy conversion ratio that defines the kilograms of rice that one quintal of paddy

Figure 7: Supply Chain between the Farmer, PPC and Cooperative Society

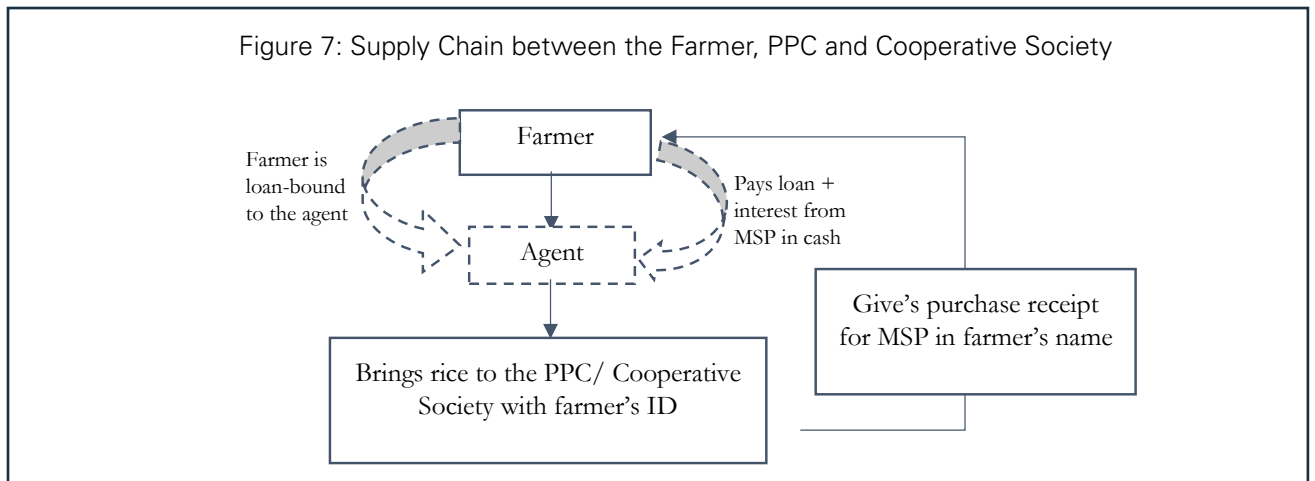
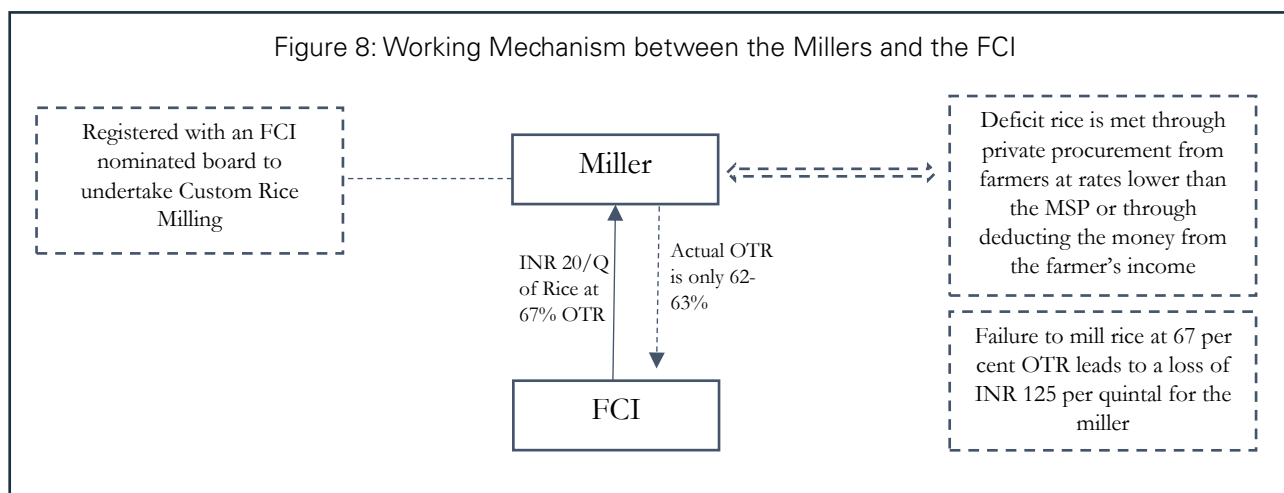


Figure 8: Working Mechanism between the Millers and the FCI



can yield. According to the field interactions with the millers, the actual OTR of paddy received by them through the PPCs is only 62-63 per cent. In this case of shortage of 5 per cent, the FCI deducts INR 25 for every percent shortage, translating to INR 125, per quintal rice from the miller. In order to mitigate this, the millers either privately procure extra paddy from the farmers at much lower rates than the MSP through the agents or deduct this amount from the

farmers or their agents. The FCI's mandated OTR from paddy is 70 per cent, however, they also take into account the damage at 3 per cent and hence, maintain the OTR at 67 per cent.

There are several reasons why the OTR is low – (i) excessive use of fertilizers by the farmers affects the seed productivity, (ii) the quality of seeds is inferior, (iii) as most farmers have small land holding, they do

Figure 9: Private Procurement of Paddy

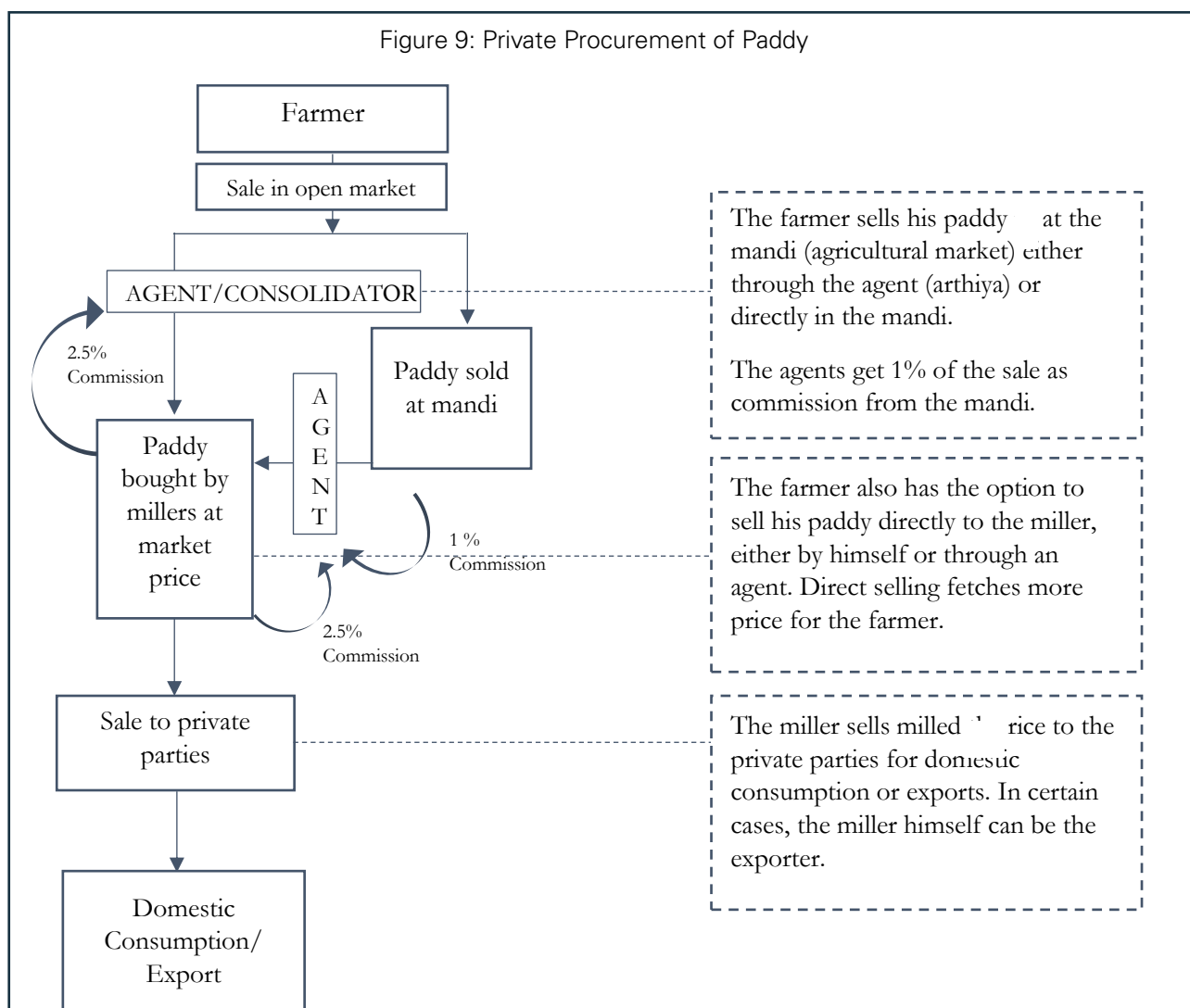
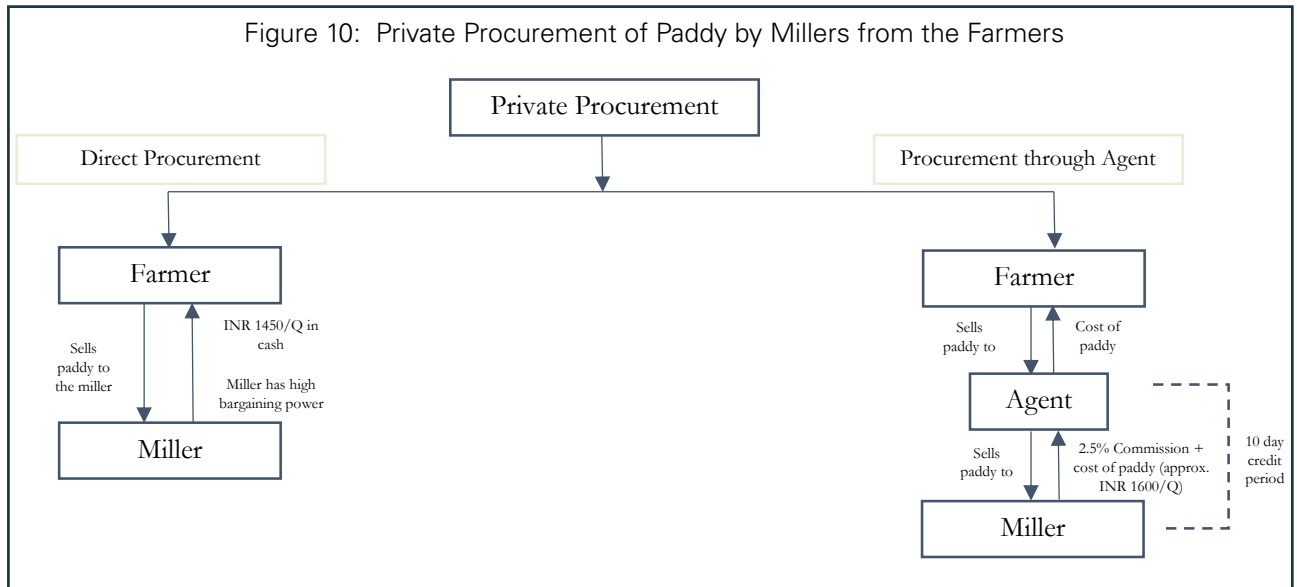


Figure 10: Private Procurement of Paddy by Millers from the Farmers



not have a uniform practice of sowing and harvesting, wherein different farmers would sow and harvest during different times in the cycle, resulting in a lower productivity, and (iv) at the mill there are also damages due to equipment (2 per cent) and elevator (2 per cent), taking the actual loss to 7 per cent (including the 3 per cent damages).

4.2.2. Private Procurement and Export

Private procurement of paddy comprises of a larger share of procurement than the government procurement. It is done for domestic sale and export. It is a market-driven procurement – wherein the price of paddy/rice in the market determines the remuneration given to the farmer. Here, the interaction that takes place between the farmer and miller has an effect on the farmer remuneration and on the market price of rice. Furthermore, multiple agents play a key role in the export process, wherein the role of a customs broker is important. The subsequent section details the interaction between stakeholders.

(a) Paddy Procurement by the Millers from the Farmers

There are two ways through which the millers procure paddy for private selling: direct purchase from the farmer, and procurement through an agent. In the former, the miller has the advantage of a higher bargaining power, however, in the latter, the miller does not have to make payment on an immediate basis and gets the benefit of a credit period (usually negotiable, however in a number of reported cases it was fixed at 10 days). Furthermore, the miller finds it more convenient to deal with an agent who in turn has his network of farmers, instead of directly approaching multiple farmers. In such cases, the agents takes 2.5 per cent of the sale as commission from the miller (figure 1).

(b) Customs brokers and export

The Customs House Agent (CHA)/ Customs Broker (CBR) plays a major role in sending the goods across the border. From documentation to customs clearance, the CBR oversees the movement of goods from the place of export to the place of import (Figure 11). Particularly in India-Bangladesh and India-Nepal land trade, the CBR plays a major role in managing the dwell time of the trucks at the border by facilitating movement of the trucks. For instance, at the Petrapole-Benapole border between India and Bangladesh, the CBR plays a significant role in facilitating movement of trucks from the mafia parking in Kalitala to the trade gates.

4.3. Rice trade between India-Nepal and India-Bangladesh

India exports rice under two categories: Basmati and Non-basmati. The Basmati variety is sent to the countries in the middle-east such as Saudi Arabia, Iran, UAE and Kuwait. Whereas, the non-basmati variety of rice is exported to countries like Bangladesh, Senegal, Benin and South Africa (Table 9). While India has an open export policy for rice, the import restricted due to surplus domestic production and the need for avoiding price fluctuations in the market.

4.3.1. Export Policy

India allows free export of rice by private parties and privately held stocks. However, the export of rice of seed quality and other rice in husk (paddy) is under the Restricted category vide DGFT's notification no. 23/2015-20 dated 7th October 2015. In November 2018, the Gol has also extended a subsidy of 5 per cent to non-basmati exporters under the Merchan-

Table 9: Overall Rice Export of India

A	B	C	D	E	F	G	H	I
Year	Basmati Export (USD Mn)	Percentage of total export	Top countries of B's export	Non-Basmati Export (USD Mn)	Percentage of total export	Top countries of E's export	Total Export (USD Mn)	Y-o-Y Growth
2008-09	2,071	84.39	Saudi Arabia, UAE, Kuwait	383	15.61	Bangladesh, Sierra Leone, Madagascar	2,454	-19.23
2009-10	2,289	96.79	Saudi Arabia, Iran, UAE	76	3.21	Saudi Arabia, Maldives, Malaysia	2,365	-3.76
2010-11	2,494	98.00	UAE, Saudi Arabia, Iran	51	2.00	Nepal, South Africa, Maldives	2,545	7.07
2011-12	3,217	65.12	UAE, Saudi Arabia, Iran	1,723	34.88	Nigeria, Senegal, Cote D'Ivoire	4,940	48.48
2012-13	3,564	57.34	Iran, Saudi Arabia, UAE	2,652	42.66	Senegal, Cote D'Ivoire, Nigeria	6,216	20.53
2013-14	4,865	62.45	Iran, Saudi Arabia, UAE	2,925	37.55	Bangladesh, Benin, Senegal	7,790	20.21
2014-15	4,516	57.51	Iran, Saudi Arabia, UAE	3,337	42.49	Bangladesh, Senegal, Nepal	7,853	0.80
2015-16	3,478	59.48	Saudi Arabia, Iran, UAE	2,369	40.52	Senegal, Nepal, Cote D'Ivoire	5,847	-34.31
2016-17	3,209	55.96	Iran, Saudi Arabia, UAE	2,525	44.04	Senegal, Guinea, Nepal	5,734	-1.97
2017-18	4,170	53.42	Iran, Saudi Arabia, UAE	3,636	46.58	Bangladesh, Senegal, Guinea	7,806	0.36
2018-19 (Apr-Nov)	2,684	57.41	Iran, Saudi Arabia, UAE	1,986	42.59	Senegal, Cote D'Ivoire, Guinea	4,670	

Source: DGCI&S,
Ministry of Commerce and Industry, India

HS Code	Item	Policy	Bound duty	Standard duty	Applied duty
1006.10.10	Of Seed Quality	Restricted	80	80	80
1006.10.90	Other	Import allowed through FCI	80	80	80
1006.20.00	Husked (brown) rice		80	80	80
1006.30.10	Rice, Parboiled		70	70	70
1006.30.20	Basmati Rice		70	70	70
1006.30.90	Other		70	70	70
1006.40.00	Broken rice		80	80	80

Source: DGFT, Department of Revenue, and WTO

dise Exports from India Scheme (MEIS). The scheme will continue till March 2019. Under this, the exporters will get a certificate or scrip for 5 per cent from the DGFT that can be used for trade.

4.3.2. Import Policy

India imports negligible amount of rice. Import of paddy seeds is restricted. Whereas, import of rice for human consumption is permitted through State

Trading Enterprises. However, the duty structure of the import is very high, as given in the table below.

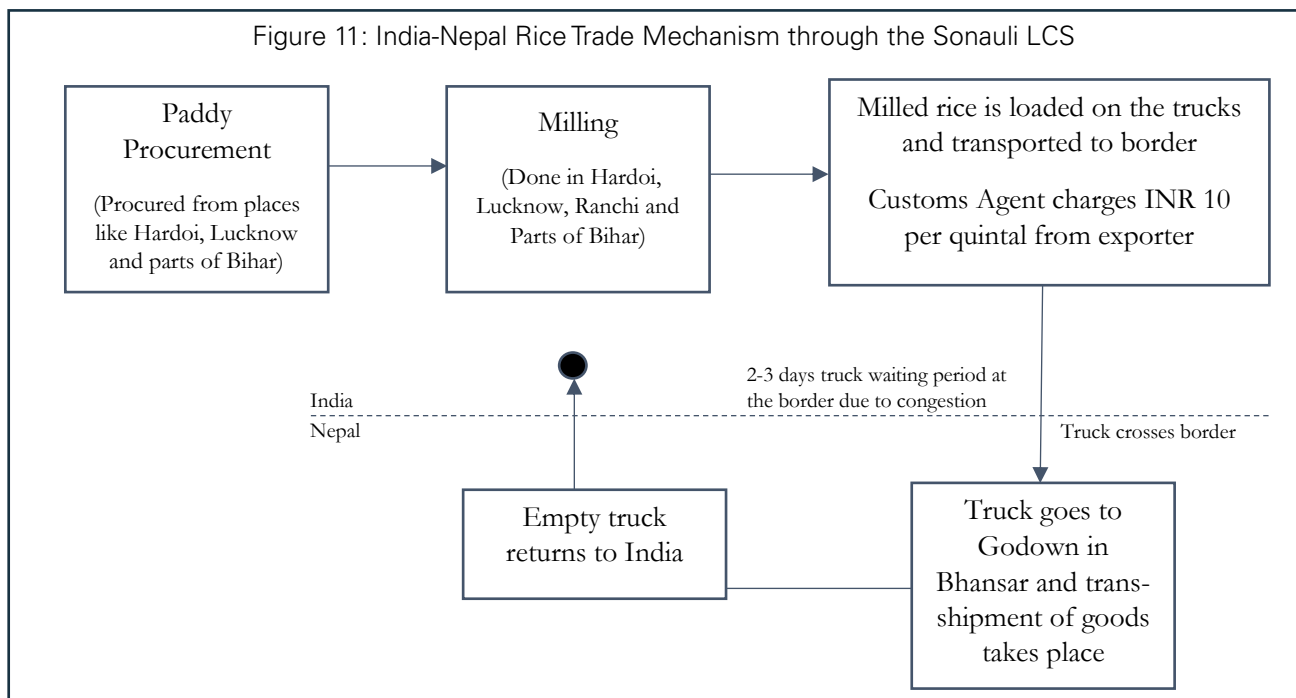
4.3.3. India-Nepal Rice Trade

Within the non-basmati rice variety, two varieties of rice are exported from India to Nepal – steam and half steam. These varieties are low in sugar, hence, are in much demand in Nepal. A substantial amount of rice going to Nepal consists of Sambha steam rice. It is hay boiled, and economical. It is available at INR

Year	Basmati		Non-Basmati		Non-basmati port of highest export (2018-19 (Apr - Nov))
	Million USD	Tonne	Million USD	Tonne	
2009-10	11.13	1,365.00	6.50	20,814.00	Nautanwa (Sonauli), Nepalganj, Raxaul
2010-11	0.76	349.00	92.65	396,586.00	
2011-12	0.06	134.00	422.86	140,862.00	
2012-13	0.32	349.00	106.18	396,586.00	
2013-14	0.55	60.00	119.80	396,153.00	
2014-15	0.20	269.00	216.76	630,489.00	
2015-16	0.84	763.00	193.52	534,142.00	
2016-17	1.60	2,038.00	209.73	583,737.00	
2017-18	2.61	2,881.00	240.40	624,860.00	
2018-19 (Apr-Nov)	2.67	2,874.00	166.46	438,628.00	

Source: DGCI&S, Ministry of Commerce and Industry, India

Figure 11: India-Nepal Rice Trade Mechanism through the Sonauli LCS



3000-3200 per quintal. During fresh season, the prices go down to INR 2700 – 2800 per quintal. By October, the cost escalates to INR 3500 per quintal. Apart from this, Swarna Masuri variety is also in demand in Nepal.

Formal rice trade takes place through Sonauli, Birganj, Biratnagar and Nepalganj borders. According to the traders and millers, approximately 50 per cent of the rice going to Nepal is from Uttar Pradesh and 30-40 per cent is from Bihar.

The border between India and Nepal is porous, through which rice is traded both formally and informally. Through the formal means, the highest quantity of rice is exported from Sonauli in Uttar Pradesh (Table 11). There are various payment means while trading with Nepal – Letter of Credit, T.T, and Draft. The documents required include: Declaration Form, LC/T.T/ Draft, ARE 1 Form, Document of Insurance, Packing List, Bill of Export, Certificate of VAT Registration, Certificate of Registration of firm or company, Certificate of Industry Registration in case of an Industry. Apart from these documents, two additional documents from DGFT are required – a registration certificate and a bill of export for duty free goods. These documents are issued manually in Lucknow. Post completion of documentation, the truck can cross border.

In Nepal, the Indian truck unloads the rice at the godown in Bhansar, following which the empty truck returns to India. At the Sonauli LCS, two challenges are faced by the traders:

- *High waiting period for trucks:* Due to insufficient warehousing facilities on Nepal's side, a truck

has to wait 2-3 days in queue in order to be able to cross the border. This waiting period translates to increase in transportation cost and affects the quality of the rice on the trucks.

- *Manual collection of documents issued by DGFT:* As mentioned above, in order to export non-basmati rice to Nepal, two certificates are required – a registration certificate of goods, and a bill of export for duty free goods. These documents are issued physically at the DGFT office in Lucknow and Kolkata. A trader based in Gorakhpur has to travel to Lucknow to procure the documents, which is a cumbersome and time-consuming process. The documentation process should be made electronic.

4.3.4. India-Bangladesh Rice Trade

A large portion of the rice sent to Bangladesh is procured from Borisha (in case of swarna rice), and Bardhaman and Mednapur (in case of minikit rice). In Bangladesh, rice currently goes to Jessore, Khulna, East Dinaspur. Indian non-basmati rice in Bangladesh is sold at TK 50 per kg, whereas as local rice is sold at TK 45 per kg. However, Indian rice is preferred due to its quality. India's major non-basmati export varieties to Bangladesh include, IR-36 parboiled rice, Swarna, Minikit, Ratna and Sela rice. IR36's per tonne FOB for export is USD 420, whereas the FOB⁽ⁱⁱⁱ⁾ for Swarna ranges between USD 401-412 per tonne.

It is also pertinent to point that Bangladesh's rice imports from India are dependent on its need (mostly due to seasonal natural calamities in the country) because of availability of significant local production. Bangladesh also has a strong lobby of domestic rice

producers that plays a role in restricting imports from India. As a result of this, the import duty on rice was increased to 28 per cent in 2016, which was subsequently reduced to 10 per cent. Post the Budget 2018 announcement, the import duty was again raised to 28 per cent. The Government of India then reduced the export price of rice by USD 10 per ton such that the exports remain unaffected.

The Government of Bangladesh is also providing higher subsidy for rice production to local farmers. This is expected to increase local production of rice in Bangladesh and decrease the dependence on India. It has been reported that the Government of Bangladesh has been planning increase in food related subsidies at approximately 20.10 per cent year-on-year to sell rice and wheat at lower prices in the upcoming fiscal year, as it is doing in the current one. Each kg of rice and wheat sells under the government's Open Market Sale programme at Tk15 and Tk17 respectively, while the government's procurement price for rice is Tk 32 per kg.

(a) Mode of Transportation

The trade takes place through both rail and road and through the many borders between West Bengal and Bangladesh – namely, Petrapole-Benapole ICP, Hili, Malda-Rajshai via Madaipur crossing, Chandrabhanga integrated check post and Ghojadanga crossing. One rake has the capacity of carrying 2400-2500

MT in its 42 wagons. Rice is also being sent via the Kolkata Dock Trust and Kandla Port (Basmati) to Chittagong port.

(b) Border Trade through Petrapole- Benapole Integrated Check Post

A significant quantity of India-Bangladesh trade takes place through the Petrapole (India) – Benapole (Bangladesh) border. Petrapole is located 82 Kms from Kolkata, and Benapole is located 231 Kms from Dhaka. Post inauguration of the Integrated Check Post (ICP) at Petrapole in 2016, the border was mandated to be operational 24 hours for trade of goods. India exports heavy volumes of rice through Petrapole (Table 13). Figure 12 represents the movement of paddy from the paddy mandis, till it reaches Benapole. A detailed process and cost analysis is given in the Annexure.

While the border is strategically located for trade, there are a number of non-tariff barriers that affect the export of rice through Petrapole, causing congestion and affecting the quality of goods:

- *Limited working hours:* Although the border is mandated to operate 24 hours, it has been observed that the operations cease at 10pm. The working hours do not correspond with the number of trucks crossing the border, leading to congestion of trucks.

Table 12: India's Export of Basmati and Non-basmati rice to Bangladesh

Year	Basmati		Non-Basmati		Non-basmati port of highest export (2018-19 (Apr - Nov))
	Million USD	Tonnes	Million USD	Tonnes	
2009-10	0.39	25.00	0.26	65.00	Petrapole Land, Hili (West), Kakinada Sea, Ghajandanga (land)
2010-11	2.33	190.00	24.02	5,499.00	
2011-12	0.82	69.00	543.71	144,704.00	
2012-13	1.23	101.00	153.96	31,334.00	
2013-14	6.08	502.00	250.62	660,594.00	
2014-15	1.04	818.00	450.07	1,268,343.00	
2015-16	0.88	745.00	134.10	325,050.00	
2016-17	1.80	1,658.00	296.71	82,689.00	
2017-18	3.40	4,602.00	835.39	2,037,980.00	
2018-19 (Apr-Nov)	1.59	1,213.00	148.50	345,068.00	

Source: DGCI&S, Ministry of Commerce and Industry, India

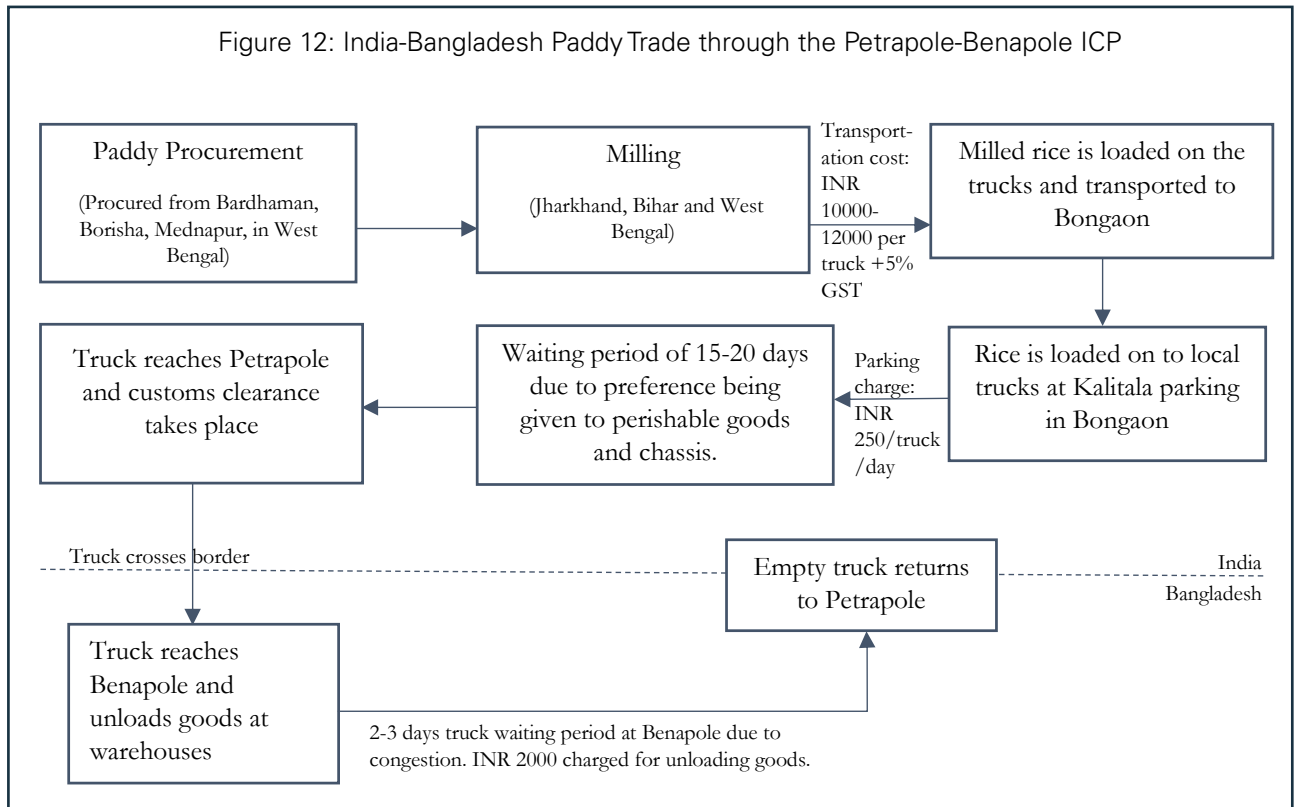
Table 13: Non-basmati Rice Export to Bangladesh through Trade Borders in West Bengal ('000 USD)

Year	Petrapole Land	LCS Fulbari road	Hili (west) road	Kotwaligate (Mohedipur) road/railway	Chengrabandha railway station	Ghajadanga
	Non-basmati rice					Rice (except parboiled and except basmati), parboiled rice
2010-11	0.41	-	-	-	-	
2011-12	20.48	-	0.16	-	-	
2012-13	6.60	-	7.47	0.46	-	
2013-14	51.53	9.32	34.70	6.01	0.02	
2014-15	112.68	15.51	75.21	22.84	-	275.58
2015-16	68.11	0.85	20.47	8.56	0.02	35.44
2016-17	5.21		17.10	0.96	-	5.70
2017-18	169.70	4.01	260.01	-	26.76	82.97
2018-19 (Apr - Nov)	53.03	0.03	51.05	-	0.49	13.63

Source: AgriXchange

- Restriction in truck movement:* Currently, Bangladesh allows approximately 500 trucks to enter Benapole via Petrapole per day. Out of the 500, 250 are chasis, and the other 250 trucks are given priority in movement on the basis of perishable cargo, semi-perishable cargo and general cargo. This delays the movement of rice as it is categorised in the general cargo. For instance, out of the 250 trucks, 150 trucks consist of perishable goods such as fresh fruits and vegetables, and approximately 80-90 trucks consist goods of semi-perishable nature. This leaves only 10 general cargo trucks' movement on a given day. As a result, the truck detention time at Petrapole is approximately 15-20 days.
- Prevalence of parking mafia at Kalitala parking in Bongaon:* As a result of limited number of working hours, paucity of parking space at the ICP, and prioritisation of truck movement, a parking mafia has become operational at Bongaon wherein any truck going to Petrapole has to stop at the Kalitala parking and trans-ship goods into local trucks. Post this, the truck waits at the parking at a daily charge of INR 250 per truck till its turn is clear for export. While the parking plays a role in easing congestion at the ICP, it has led to escalation of transportation cost for the truck. In normal conditions, the transportation cost per truck is INR 10000-12000 from Kolkata to Petrapole, however, with the presence of the mafia and the waiting period, the cost escalated to approximately INR 30,000 per truck.
- Receiving payment from the importers in Bangladesh has become a matter of contention:* It has been reported in a number of cases that after export of rice to Bangladesh, the buyer generally delays payment. Furthermore, a significant amount of trade with Bangladesh takes place in cash. There are two ways in which this takes place – (a) exchange of cash near the border, or (b) half of the export payment is made in cash at the exporter's office or at a common meeting place and the rest through L/c, leading to undervaluing the rice sent. This practise of cash transaction is prevalent because of the high import duty of rice in Bangladesh. Such practices have resulted in a trust deficit between the traders.
- Deterioration in quality of rice due to high waiting period:* The long detention period at Bongaon parking also affects the quality of rice. The moisture content allowed in rice is around 14-15 per cent. However, with the increase in detention, this moisture content increases. When the importer in Bangladesh receives rice of a quality inferior than what was ordered, then he delays the payment or does not give full payment.

Figure 12: India-Bangladesh Paddy Trade through the Petrapole-Benapole ICP



Conclusion and the Way Forward



Achieving self-sufficiency in agriculture is an important target for all South Asian countries towards food security. Agriculture continues to be the mainstay of the population and it is an important contributor to the GDP, accounting for approximately 16 per cent of the total GDP of the region. Particularly in major rice consuming economies, such as Bangladesh, India and Nepal, (BIN) agriculture constitutes 13.41, 15.45 and 27.03 per cent of the GDP (2017), respectively. Within this, a significant proportion is attributed to rice production, consumption and trade. In spite of the decreasing numbers, a large portion of the population in Bangladesh, India and Nepal is dependent on rice as their staple food. Except India, none of the selected countries are self-sufficient in their domestic production and hence, depend on imports to fill the gaps. India is the net exporter of rice in South Asia, whereas Bangladesh and Nepal import significant quantities.

In South Asia, the total area available for paddy production has become stagnant over the last decades, whereas the production has increased owing to technological advancement and advent of high-yielding

paddy. Over the decades, the dependence on irrigation has also increased. Among the three selected economies, Bangladesh has the least reliance on irrigation (48 per cent), followed by India (59 per cent) and Nepal (70 per cent) for paddy production through tube-wells.

There are a number of factors that affect the procurement and pricing of rice in the market. The government procurement for TPDS and G2G trade on MSP is an important factor of consideration here because the latter acts as the minimum price that a farmer should get for his produce after due consideration of all the input factors. However, as noted in the report, it often becomes the maximum price given to the farmers when compared with the sale price in the mandi. Increase in the MSP is inversely proportional to the export of rice from the country. In June-July 2018, the rice exports from India also slowed as the government hiked the MSP by 13 per cent – a reportedly common trend in an election year (Vasudeva & Jebaraj, 2018). Furthermore, the reported leakages of rice from the TPDS also bring in unfair competition to the trade and affects importer trust because of the

significant difference in price.

In intra-regional rice trade, there is one factor that binds the three economies – need-based flexible trade policies. Recently, the decline in India's export due to a higher MSP was addressed with a 5 per cent subsidy in the agricultural export of rice; similarly in 2017, due to the destruction of crops from floods, the Government of Bangladesh reduced the import tariff to 5 per cent; with resumption in production and due to elections in the country, the tariff has again been increased to 28 per cent.

Tariff barriers are not, however, the only barriers to trade. A number of non-tariff barriers also exist along the land borders between India-Nepal and India-Bangladesh that affect the time and cost of trade. High-waiting period at the Sonauli trade centre, lack of warehousing facilities, and manual documentation process (for registration certificate and bill of export) for trade with Nepal are the main issues that lead to an increase in dwell time of trade. At the Petrapole ICP, limited working hours, prevalence of parking mafia, and restriction in truck movement per day are responsible for the high export time and cost. Lack of warehousing facilities leads to increase in moisture content of the rice, thereby degrading its quality. When the quality of rice ordered by the importer does not match the quality of rice sent, the exporter faces loss in recovering the price. With Bangladesh, India and Nepal's commitment towards food security and the need for trade of rice in the region, a number of steps can be undertaken for reforms. From this study, a number of takeaways have been identified that warrant further exploration and action:

- Given that maximum proportion of the farmers operate on small land holdings, uniform information dissemination to the farmers with respect to the farming practices becomes important for maintaining the quality of rice such that the OTR of paddy can be standardised in a particular region. This would reduce losses to the millers.
 - There is a need for increasing transparency, traceability and accountability in the procurement and supply chain module between the various entities in the chain – farmers, millers, warehouses and the fair price shops.
 - At the border points, infrastructure is a major challenge. There is a need for warehouses for semi-perishable commodities such as rice in order to control any deterioration in the quality
 - Steps need to be taken for digitisation of the documentation process (registration certificate and bill of export) by the DGFT for trade with Nepal in order to make the documents easily accessible, and save the time and cost of trade
- At the Petrapole ICP, rice needs to be categorised as 'semi-perishable cargo' instead of 'general cargo' in order to expedite its movement across the border
 - There is also a need to address the trust deficit between the trading communities in Bangladesh, India and Nepal to ensure regular trade. The trade federations can play a leading role in addressing this.

Notes

ⁱValue added per worker is a measure of labour productivity—value added per unit of input. Value added denotes the net output of a sector after adding up all outputs and subtracting intermediate inputs. Data are in constant 2010 U.S. dollars. [World Bank]

ⁱⁱSelf-sufficiency ratio (SSR): In the context of food security, self-sufficiency ratio is often taken to indicate the extent to which a country relies on its own production resources. The higher the SSR ratio, greater is the self-sufficiency. It is calculated as, $SSR = \text{Pro-}$

$\text{duction} * 100 / (\text{Production} + \text{Import} - \text{Export})$. [FAO]

ⁱⁱⁱFreight on Board or Free on Board is a shipping term that indicates the point at which the cost of the shipped product is shifted from the seller to the buyer. It is a commercial law term published by the International Chamber of Commerce.

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Quantitative Data Sources

International Organisations

- Food and Agricultural Organisation (www.fao.org)
- The World Bank (www.worldbank.org)
- World Trade Organisation (www.wto.org)
- International Rice Research Institute (www.irri.org)

Bangladesh

- Bangladesh Bureau of Statistics (www.bbs.gov.bd)

- National Board of Revenue (www.nbr.gov.bd)

India

- Agri Xchange, Agriculture and Processed Food Products Export Development Authority (agrixchange.apeda.gov.in)
- Department of Revenue, Ministry of Finance (www.dor.gov.in)
- Directorate General of Commercial Intelligence and Statistics, Ministry of Commerce and Industry (www.dgciskol.gov.in)
- Directorate General of Foreign Trade, Ministry of

Commerce and Industry (www.dgft.gov.in)

- Directorate of Economics and Statistics, Ministry of Agriculture (www.eands.dacnet.nic.in)
- Food Corporation of India (www.fci.gov.in)
- Ministry of Statistics and Programme Implementation (www.mospi.gov.in)

Nepal

- Ministry of Agricultural Development www.moad.gov.np
- Department of Customs, Ministry of Finance (www.customs.gov.np)

Annexure

(I) Export and Import Process through Petrapole-Benapole ICP

Table 14: Export Process through Petrapole-Benapole ICP				
Process	Agencies Involved	Documents Required	Time Involved	Cost Involved (INR)
Goods Registration (GR)	C&F Agent / Customs	Invoice Packing List	1 hour	No
Truck Park to CWC Parking zone	C&F Agent	LC Copy Contract Paper	½ hour	No
Export Document Upload to EDI System and Bill of Export Generated	Customs	(Between Exporter and Importer) Tax Invoice/ Purchase Bill Weighment	1 hour	INR 70
Risk Management Assessment and Weighment	Customs	Certificate PQ Certificate/ Fumigation Certificate	1 hour	No
Goods Verification by Customs and Export Order	Customs	GR Certificate Bill of Export Car Pass Export Manifest CWC Parking Challan	3-4 hours	No
PQ Test and clearance Certificate	PQ Department		Up to 24 hours	INR 2/ton
Vehicle Registration	C&F Agent / Customs		½ hour	No
Documents submitted to BD Customs	C&F Agent		1 hour	No
Issue Car Pass	BD Customs			INR 40
Issue of Performa (Newly arrived under File no. 11 (26) 322/PTPL/ Miss Cores/2015/9944)	C&F Agent/ Customs		½ hour	No
Move towards Export	C&F Agent		10 minutes	INR 78/truck as parking fees
Final Verification by Customs Preventive and Despatch	Customs (Preventive)		10 minutes	No

Source: CUTS Survey

Table 15: Import Process through Petrapole-Benapole ICP

Process	Agencies Involved	Documents Required	Time Involved	Cost Involved (INR)
Import cargo entry	BSF	Invoice	½ hour	No
	C&F Agent	Packing List	½ hour	INR 68
IGM File	C&F Agent	BSTI Certificate, Certificate of Origin	2 hours	INR 70
Documents Upload to EDI	C&F/ Customs	SAFTA Car Pass Import Report Form (Annexure - B)		INR 68
BD Truck park to NML area	C&F Agent	Import Report	10 minutes	No
Transshipment to Indian Truck	C&F Agent	Cargo Declaration	1 hour	INR 800/ton
Indian Truck move towards CWC parking	C&F Agent	Bill of Entry Customs Order for Import Test Memo Laboratory Fit Certificate	10 minutes	INR 78/truck/day
Import Truck release	BSF		10 minutes	No
Weighment & Sample collection	Customs		1 hour	No
Send for sample Testing	Customs/ C&F		Up to 10 days	INR 3000/sample
Laboratory Fit Certificate				
Despatch	C&F		1/2 hr	No

Source: CUTS Survey



Disclaimers

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