# **DEMAND FOR FOODGRAINS IN INDIA**

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#### Introduction

Sustained economic growth, increasing population and changing lifestyles are causing significant changes in Indian food basket, away from staple foodgrains towards high-value horticultural and animal products (Kumar et.al., 2007; Mittal, 2007). While per capita consumption of foodgrains has declined, their total consumption has increased due to increasing population. Also, changes in the dietary pattern towards animal products have led to an increased demand of foodgrains as feed. Nonetheless, foodgrains particularly rice and wheat, continue to be the main pillars of India's food security.

#### **DEMAND FOR FOODGRAINS**

#### **Direct Demand as Food**

The trends in per capita consumption of foodgrains for rural and urban consumers during 1983 to 2004-05 have been depicted in Table 1.1. Per capita consumption of foodgrains (as direct demand) in 2004-05 by region and income group separately for rural and urban population was used as baseline consumption for projecting the future per capita consumption. Cereal consumption has shown a decline in both rural and urban areas. The decline is sharper in the rural than urban areas. Per capita consumption of coarse cereals has shown much steeper decline than by rice and wheat. Per capita consumption of cereals has been projected to decline from 139.9 kg in 2004-05 to 125.3 kg in 2011-12 and 122.6 kg in 2021-22. Consumption of pulses is likely to be around 9.5 kg during the XI<sup>th</sup> Plan and would increase only marginally afterwards. By multiplying the projected per capita consumption with projected population, we arrived at the direct household demand for foodgrains as 181.2 million tonnes (Mt) towards the end of XI<sup>th</sup> Plan (Table 1.1), with a grain mix of 87.4 Mt rice, 67.2 Mt wheat, 14.2 Mt coarse grains, and 12.5 Mt pulses. The direct household demand for foodgrains would increase to 202 Mt by 2021-22, comprising 97.4 Mt of rice; 73.5 Mt of wheat; 15.1 Mt of coarse grains and 16.1 Mt of pulses.

### Table 1.1 : Trends in per capita consumption of foodgrains in India (kg/year

Commodity	Estimated based on NSS			Projected				
1983		1993-94	2004-05	2011-12	2016-17	2021-22		
	Rural							
Rice	80.7	85.4	79.7	72.4	72.2	72.4		
Wheat	54.3	53.5	52.2	47.9	49.0	48.1		
Coarse cereals	45.1	24.3	15.5	14.9	14.7	14.5		
Total cereals	180.1	163.3	147.4	135.2	135.9	135.1		
Pulses	11.07	9.3	8.6	8.7	9.2	9.5		
Foodgrains	191.1	172.5	156.0	143.9	145.1	144.6		
	Urban							
Rice	64.7	64.2	59.0 🌙	48.8	48.2	47.8		
Wheat	58.6	57.4	56.5	51.2	49.8	46.6		
Coarse cereals	14.1	7.7	4.4	4.4	3.9	3.6		
Total cereals	137.5	129.3	<u>1</u> 19.9	104.4	101.9	98.0		
Pulses	12.40	10.5	10.4	11.0	12.3	13.5		
Foodgrains	149.9	139.8	130.3	115.4	114.2	111.6		
Rural+Urban								
Rice	76.9	79.9	73.8	64.8	64.1	64.1		
Wheat	55.3	54.6	53.5	49.0	49.2	47.6		
Coarse cereals	37.8	19.8	12.6	11.5	11.0	10.8		
Total cereals	169.9	154.2	139.9	125.3	124.4	172.6		
Pulses	11.7	9.6	9.0	9.5	10.2	10.9		
Foodgrains	181.6	163.8	148.8	134.8	134.6	133.4		

2004-05 to 2021-22

## Table 1.2 : Total demand for foodgrains as household food:

#### (million tonnes)

Commodity	2004-05	2011-12	2016-17	2021-22
Rice	79.5	87.4	92.0	97.4
Wheat	57.7	67.2	71.9	73.5
Coarse cereals	13.4	14.2	14.5	15.1
Total cereals	150.7	168.7	178.2	185.8
Pulses	9.8	12.5	14.3	16.1
Foodgrains	160.5	181.2	192.6	702.0



#### 2004-05 to 2021-22

## (million tonnes)

Fig. 1.1 : Total demand for foodgrains as household food:



#### **Indirect Demand for Foodgrains**

Besides direct demand, there is also an important component of total demand which includes seed, feed, industrial uses and wastage, and has been termed as 'indirect demand'. Conventionally, the indirect demand is assumed to be 12.5 per cent of the total foodgrain

production - an assumption being used since 1950s for all official estimates. Recently, Kumar et al. (2007) have computed the shares of seed, feed, wastage and other food uses as 9.5 per cent of the total production of rice, 13.5 per cent of wheat, 41 per cent of coarse cereals, and 10.8 per cent of pulses. These parameters were used in the present study, and the seed, feed, industrial use and wastage allowances have been projected as 36.9 Mt in 2011-12; 39.0 Mt in 2016-17 and 41.1 Mt in 2021-22, which constitute about 16 per cent of the total foodgrains production in the country (Table 1.3).

#### Table 1.3 : Projected demand for foodgrains in India

Commodities	2004-05	2011-12	2016-17	2021-22			
Direct household demand for foodgrains							
Rice	79.5	87.4	92.0	97.4			
Wheat	57.7	67.2	71.9	73.5			
Coarse cereals	13.4	14.2	14.5	15.1			
Cereals	150.7	168.7	178.2	185.8			
Pulses	9.8	12.5	14.3	16.1			
Foodgrains	160.5	181.2	192.6	202.0			
	Ind	irect demand					
	Seed, feed &	wastage and o	other uses	NET			
Rice	8.3	9.4	10.2	11.0			
Wheat	9.4	10.6	11.5	12.3			
Coarse cereals	13.9	14.5	14.8	15.1			
Cereals	31.7	34.5	36.5	38.5			
Pulses	2.3	2.4	2.5	2.6			
Foodgrains	34.0	36.9	39.0	41.1			
	Home away demand of foodgrains						
Rice	4.0	4.4	4.6	4.9			
Wheat	2.9	3.4	3.6	3.7			
Coarse cereals	0.7	0.7	0.7	0.8			
Cereals	7.5	8.4	8.9	9.3			
Pulses	0.5	0.6	0.7	0.8			
Foodgrains	8.0	9.1	9.6	10.1			
	Total indirect foodgrain demand						
Rice	12.3	13.8	14.8	15.9			
Wheat	12.3	14.0	15.1	16.0			

#### (million tonnes)

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Coarse cereals	14.6	15.2	15.5	15.9		
Cereals	39.3	42.9	45.4	47.8		
Pulses	2.7	3.0	3.2	3.4		
Foodgrains	42.0	46.0	48.6	51.2		
Total domestic demand for foodgrain						
Rice	91.9	101.1	106.8	113.3		
Wheat	70.0	81.1	86.9	89.5		
Coarse cereals	28.0	29.4	30.1	31.0		
Cereals	190.0	211.6	223.6	233.6.		
Pulses	12.6	15.5	17.5	19.5		
Foodgrains	202.5	227.1	241.2	253.2		

**Note:** Assumption: Seed, feed, wastage and industrial uses were taken as 9.50 per cent of rice, 13.48 per cent of wheat, 41 per cent of coarse cereals and 16.85 per cent of pulses production (Kumar et al., 2007). Home away demand was assumed to be 5 per cent share in total household demand for rice, wheat, coarse cereals and pulses.

Sustained rise in per capita income, fast-growing urban population and increasing employment opportunities for urban women are causing significant rises in 'home away demand' for foodgrains. Though there are no authentic estimates available for 'home away demand', based on some guess estimates we have assumed 5 per cent of the total direct demand as 'home away demand'. The 'home away demand' for foodgrains has been estimated to be 9.1 Mt in 2011-12 and 10.1 Mt in 2021-22 (Table 6). Thus, the total indirect demand for foodgrains, including home-away demand is expected to be around 46 Mt by the end of XI' FYP and 51.2 Mt by the end of XIII<sup>th</sup> FYP. The indirect demand thus constitutes about 21 per cent of the total production which seems quite a credible estimate. According to Chand (2007), the indirect demand for foodgrains would be around 64 Mt in 2011-12 and 101 Mt in 2020-21, which seems to be on a higher side, leading to an overestimation of total foodgrain demand, i.e. around 235 Mt by the end of XP" Plan and 281 Mt by the end of X111<sup>11</sup>" Plan, inspite of a lower estimate of direct household demand by 8.5 Mt as compared to our estimates.

#### **Policy Scenario to Meet Future Demand**

Given the recent trends in production, meeting future demand for foodgrains through domestic production alone appears to be difficult, but not impossible. The incremental demand and thereby production has essentially to come from productivity improvements as the potential for area expansion, by and large, has exhausted. Besides, increasing demand for high-value food commodities like fruits and vegetables is likely to cause a shift in area from staple food crops. Also, agricultural lands are being increasingly diverted towards non-agricultural uses. To meet the future demand, the required levels of yield targets were estimated for the years 2011, 2016 and 2022 and have been presented in Table 1.4.

Base year TE 2005-06		Required yield level (kg/ha)			
Commodities	Area (Mha)	Yield (kg/ha)	2011-12	2016-17	2021-22
Rice	42.7	2056	2368	2500	2651
Wheat	26.5	2645	3036	3282	3380
Coarse cereals	29.6	1183	993	1015	1046
Cereals	98.8	1952	2141	2262	2364
Pulses	22.9	604	677	765	853
Foodgrain	121.7	1698	1866	1981	2080
Increment required to meet future demand					
Rice	42.7	<mark>2056</mark>	15.2	21.6	29.0
Wheat	26.5	2645	15.8	24.1	27.8
Pulses	22.9	604	12.1	26.8	41.2

Cable 1.4 : Yield targets projected for the ye	ears 2011-12, 2016-17 and 2021-22
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To meet the foodgrain demand in 2011-12, the yields of different commodities must be raised to a minimum of 2.37 t/ha for rice, 3.07 t/ha for wheat, and 0.68 t/ha for pulses. By 2021-22, yields must further be improved to 2.65 t/ha for rice, 3.38 t/ha for wheat and 0.85 t/ha for pulses. In terms of percentage increase, by 2011- 12 the average yield of rice and wheat must increase by 15-16 per cent and of pulses by 12 per cent. By 2021-22, further improvements are required in yields of rice and wheat by 28-29 per cent and of pulses by 41 per cent. Improving yield levels would require serious efforts to sustain and improve the total factor productivity through research and development efforts.

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