

**FOODGRAIN STOCK REQUIREMENT
DURING TWELFTH FIVE-YEAR PLAN**

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September 2011

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FOODGRAIN STOCK REQUIREMENT DURING TWELFTH FIVE-YEAR PLAN¹

1 Background

Public sector foodgrain stocks are an important pillar of India's food policy and food security. These have been used to serve three important societal goals. One, to provide space for effective implementation of minimum support price for rice and wheat through procurement mechanism. Two, to maintain price stability arising out of year to year fluctuations in output or any other exigency. Three, as a source of supply for public distribution system and various other schemes to sustain food and nutrition security particularly of economically weaker sections. Of late, buffer stocks have come under frequent attack on three grounds. The level of stocks is said to be too high in relation to the buffer stock norms which is causing huge cost in terms of storage, interest on value of produce, and wastage. It is made out that price stabilization can be better achieved through trade rather than stocks and the former is found to be much cheaper than latter (Jha and Srinivasan 1999). It is also argued that buffer stocks for absorbing shocks due to production fluctuation were justified when India did not have enough foreign exchange reserve to maintain excessive stocks held by public agencies. The problem is not with the buffer stock per se but with our storage capacity and imprudent management of grains. As shown by Chand (2005) unreasonable accumulation of stocks can even affect food security adversely. However, it is totally wrong to construe from this that public sector grain stocks are a waste or unnecessary.

¹ Paper prepared for the Ministry of Food, Consumer Affairs and Public Distribution, Government of India. The views expressed in the paper are entirely of the authors and need not be attributed to the organization to which they belong or to the Ministry of Food, Consumer Affairs and Public Distribution.

While buffer stock of foodgrains is being attacked in India there is very serious concern about price volatility at global level. International community is seriously engaged in finding ways and means to deal with excessive price volatility. Due to various reasons international trade is turning out to be a costly and unreliable proposition for meeting domestic shortages and for stabilization of market and prices. An important way to deal with price fluctuations is stock. In a country like India where private sector hardly operates beyond intra year transactions or to carry inventory beyond a year or so it becomes state responsibility to assume role of price stabilization through stocks. Another reason for increasing reliance on stocks as a means for price stabilization is rising frequency and severity of supply shocks due to various factors like climate change.

During the period of liberalization that started during mid 1980s many countries have downgraded importance accorded to buffer stock. The role of parastatals involved in buffer stock operations has also been diluted. As a result, such countries have lost their capacity to intervene in the market in the wake of sudden increase in prices. This has been felt strongly during the food price crisis of year 2007-08. Countries like India and China which have strong public sector presence and storage capacity did not face any serious price rise whereas a large number of countries suffered seriously from food price spike and its effect on food and nutrition security particularly of low income groups. Global food prices and also domestic food prices in many countries have not returned to their pre 2005 level. Moreover, prices are showing high volatility around a new level. Private sector neither has capacity nor has interest to bring stability to prices because of strong business orientation. Various international organizations are suggesting global and regional foodgrain stocks to deal with excessive price volatility which is expected to continue. The best way to address domestic price volatility in the wake of global volatility is to develop domestic capacity for price stabilization by maintaining domestic stocks. In the light of such factors there is a need to assess India's need to maintain stock of foodgrain.

Another factor that necessitates fresh look at stock requirement of food grain is to fulfill the obligations that will follow from the right to food contemplated by the Government of India. A draft National Food Security Bill has been prepared which indicates foodgrain requirement for implementation of the proposed bill.

This paper estimates stock requirement of foodgrains for the country under various scenarios as to provide input to policy makers to take informed decisions on appropriate stock norm and plan for creation of required storage capacity in the country.

2 Analytical Approach

Conceptually, grain stocks consist of three components (i) operational stocks, (ii) buffer stocks, and (iii) reserve stocks. Operational stocks are the stocks from current year production meant for the consumption in the year following harvest. Buffer stocks are meant for price stabilization, and reserve stocks are held for meeting shortage in supply over normal demand arising due to fall in production in an agriculturally bad year. In practice, there is some substitutability between buffer stocks and reserve stocks as the food prices are usually higher when supply is in short of demand or in other words, when foodgrain production falls short of normal demand.

While preparing estimates of foodgrain stock we have followed the approach adopted by The Second Technical Group (1981) which took a comprehensive view of the buffer stocking policy and defined the buffer-stocking concept as follows:

- Base level stocks: stocks lying in storage in small quantities and/or in transit, and therefore are not available for issue.

- Operational stocks: stocks required for month to month distribution to the intended beneficiaries.
- Food security stocks/reserve: minimum quantity of foodgrains for ensuring food security during periods when production falls short of normal demand.

Stock norms recommended by earlier Technical Groups set up by the government are provided in table 1. Surprisingly, the levels of total stocks recommended by Technical Groups I to IV were almost of similar magnitude over a period of two decades. Only the Vth Technical Group recommended higher levels of stocks--31 million tonnes. Another important observation that emerges from recommendations of different groups is a gradual decline in the stocks for food security/buffer stock. This was perhaps due to country's complacent position in food production leading to self-sufficiency.

Table 1. Recommended level of foodgrain stock by different technical groups (Million t)

Technical Group	Buffer stock	Operational stock	Total stock
First (1975)	12.0	3.5-8.8	15.5-20.8
Second (1981)	10.0	6.5-11.4	16.5-21.4
Third (1988)	5.5	10.0-16.8	15.5-22.3
Fourth (1997)	-	-	15.8-24.3
Fifth (2003)*	4.0	26.5	30.5

*Refer to minimum level.

A higher level of stock recommended by the Vth Technical Group was due to (i) differences in methodology of estimation, and (ii) a significant shift in PDS policy. In addition, there was a significant emphasis on providing foodgrains to various welfare schemes such as mid-day meal scheme, Swarnajayanti Gramin Rozgar Yojana etc. All these led to significant increase in offtake of foodgrains from the central pool. Further, while estimates of the Technical III and IV were based on past five years trend in offtake and procurement, the Vth group recommended PDS stocks only for the poor, and based on offtake.

As per the practice followed by earlier technical groups stock requirement was worked out on quarterly basis beginning with April to June and ending with January to March. As the procurement of foodgrain is not evenly distributed over months and quarters the procured grain are required to be kept in storage to match with the offtake. Thus, pattern of offtake decides stock level to be kept in different months, quarters to meet requirement of PDS and other welfare schemes. The offtake pattern of last three years viz. 2008-09, 2009-10 and 2010-11 was used to estimate distribution of procurement over different quarters of the year. These patterns were estimated separately for rice and wheat and then aggregated.

2.1 Norms and Scenario

This paper estimates stock requirement under two situations. The first situation refers to foodgrain requirement indicated by Department of Food (DOF) Ministry of Consumer Affairs, Food and Public Distribution, GOI (Annexure 1). This contains two scenarios, one, based on foodgrains allocation during (2010-11) i.e. existing scenario and another based on NFSB requirement. Beside these two scenarios, stock requirement has been estimated for four other scenarios based on historical fluctuations in output of cereals, output of rice and wheat and procurement of rice and wheat.

Scenario 1: Based on existing allocation and requirement indicated by Department of Food

Refers to the requirement of foodgrain as per existing allocation during the year 2010-11. It presumes 100 percent offtake. The details of this requirement are shown in Annexure 1. It includes 47.08 million tone of foodgrain for PDS, 5.60 mt for other welfare scheme and natural calamities. The buffer norm are placed at 5 mt and open market sales scheme (OMSS) requirement is put at 3.2 mt. This gives total requirement of 60.88 mt.

Scenario 2: Based on PDS and other requirement as per the NFSB indicated by Department of Food

This scenario as indicated by Department of Food, Government of India includes 52.59 mt for PDS, 8 mt for other welfare schemes and natural calamities and 5 mt each for buffer stocks and OMSS. The total quantity under this scenario works out to be 70.59 mt.

Scenario 3: Existing offtake + buffer and strategic stock to meet deviation in output in output of cereals

This scenario assumes PDS requirement equal to offtake of allocation made under TPDS during the year 2010-11. Requirement for other welfare schemes is presumed at 3.8 mt, which is same as the actual allocation during 2010-11. The major difference between scenarios 1 and 2 and scenarios 3 to 6 is in respect of buffer and stabilization stocks and base level stocks. Scenario 3 keeps allowance of 2 mt base stocks distributed equally between rice and wheat. Quantity needed for buffer and strategic stocks is proposed after looking at historical deviation in output of total cereals.

Scenario 4: NFSB requirement + buffer and strategic stock to meet deviation in output of all cereals

This scenario is same as scenario 3 except that the PDS requirement corresponds to National Food Security Bill.

Scenario 5: Existing offtake + buffer and strategic stock for drop in procurement of rice and wheat

This scenario is same as scenario 3 except that norms for buffer and strategic stock are based on drop in procurement of rice and wheat instead of decline in output of total cereals.

Scenario 6: NFSB requirement + buffer and strategic for drop in procurement of rice and wheat

This scenario is same as scenario 4 except that norms for buffer and strategic stocks are based on fluctuation in procurement of rice and wheat instead of decline in output of total cereals.

3 Requirement of Foodgrain Stock

Total foodgrain stock consisted of (i) operational stock for PDS and OWS and (ii) buffer and strategic stock or stabilization stock. The operational stock is distributed over different quarters and varies as per the withdrawal for PDS and OWS. However, the stock requirement of second component does not vary over the same year.

3.1 Procurement and offtake pattern

The allocation pattern of PDS over different quarters is shown in Table 2. The offtake of both rice as well as wheat is quite evenly distributed over different quarters, whereas, procurement is highly concentrated in some quarters. Entire quantity of wheat except 1.2% is procured in the month of April and June. Rice procurement is less concentrated compared to wheat. About 46% of total rice procurement takes place in the quarter October to December and 32.2% in the first quarter of calendar year.

Table 2: Procurement and offtake pattern of rice and wheat (%), 2008-09 to 2010-11

Period	Procurement	Offtake	Procurement	Offtake
	Rice		Wheat	
April -Jun	13.37	24.69	98.795	23.69
Jul-Sept	8.57	26.14	1.205	25.18
Oct-Dec	45.85	24.87	0	25.69
Jan-Mar	32.21	24.30	0	25.45

3.2 Fluctuations in output

Strategic and buffer stock are needed to meet any serious shortfall in output. Therefore, level of buffer stock need to be closely linked to level of negative deviation in domestic output. Deviations in domestic output in total cereals and rice+wheat from the underlined trend (filter 6.5) during last two decades are presented in Table 3. These are presented in percent terms for better comparability as the trend has been rising. Highest decline in cereal output was 12.4 percent during year 2002-03. The next level of decline was 5.83 percent during the year 2009-10. These deviations imply that if output fluctuation in future follows the trend of the past, then cereal output will fall up to 12.4 percent once in twenty years. Similarly, in 95% cases cereal output will not fall by more than 5.8% of the normal production. Based on these figures it is inferred that a buffer stock level of 5.83% of normal production is sufficient to meet against any shortfall in output in 95 percent of the future years. This comes to 12.83 mt for the year 2010-11.

Peak fluctuations (negative) in output of rice+wheat was slightly lower than that in total cereals. These shows that buffer stock of 4.5% of total output of rice and wheat is enough to take care of fall in their output in 95% of the years. This corresponds to 8.14 mt of output for the year 2010-11.

Table 3: Deviation in output and procurement from the underlying trend (%)

Year	Deviation in output from trend %		Deviation in procurement from trend %		
	Total cereals	Rice + wheat	Rice	Wheat	Rice+ wheat
1991-92	-3.56	-0.48	12.00	-25.48	-7.09
1992-93	0.49	-3.30	24.11	38.06	31.01
1993-94	0.76	1.23	26.98	18.42	22.85
1994-95	2.39	3.75	11.67	14.64	13.08
1995-96	-4.86	-4.52	-23.99	-28.96	-26.30
1996-97	2.65	1.21	-10.54	-23.88	-16.64
1997-98	-2.39	-2.45	-1.01	-2.30	-1.59
1998-99	1.21	1.22	-25.87	3.37	-12.84
1999-00	4.43	5.70	-0.10	13.46	5.88
2000-01	-1.23	-1.47	9.14	36.25	20.99
2001-02	6.41	6.43	6.66	20.02	12.45
2002-03	-12.44	-11.23	-25.35	-4.84	-16.53
2003-04	5.02	3.09	-1.79	-3.08	-2.34
2004-05	-3.55	-4.05	-2.03	-18.08	-8.84
2005-06	-0.87	-0.56	7.43	-51.06	-17.25
2006-07	0.22	1.52	-6.99	-43.16	-22.17
2007-08	3.77	2.51	1.75	12.05	6.05
2008-09	3.47	3.12	14.22	21.01	17.04
2009-10	-5.83	-4.11	2.32	3.63	2.87
2010-11	1.58	0.69	0.40	26.31	17.17

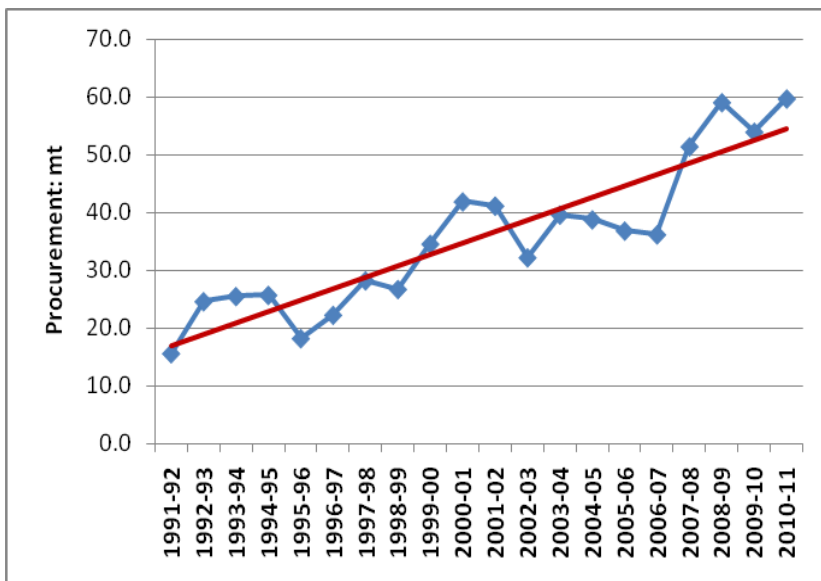
3.3 Drop in procurement

When there is fall in output, it affects procurement adversely. Procurement may fall much more than fall in production. This has been experienced in the case of wheat and rice+wheat in years 1995-96 and 1996-97 and again in 2005-06 and 2006-07. In these years, procurement fell short by 6.5mt and 4.3 mt and 7.7mt and 10.3 mt respectively. Out of these four years, production was not below trend during 2006-7. Historical experience of past two decades show that, in absolute terms, highest fall in procurement from normal level did not exceed the highest fall in production. However, if we are maintaining buffer stock for insulating against the second highest ever decline in production, then we need to look whether the buffer stock level at which production is insulated is sufficient to insulate against highest fall in procurement. If not, than it is the drop in

procurement that should be taken as a basis for buffer stock. Accordingly, in the case of rice+wheat, if we choose highest fall in procurement as the basis for buffer stock, then we need to maintain buffer stock corresponding to 26.3 percent of normal procurement (which comes to 14.3 mt for the year 2010-11).

This level of buffer stocks will be sufficient to take care of shortfall in procurement in any year except when there are consecutive years of procurement shortfall. Historical data show that during the last two decades there were two spells of drop in procurement below normal level for consecutive years (Table 3 and Fig. 1). These are years 1995-96 to 1998-99, and 2002-3 to 2006-7. The buffer-stock needed to make up for the deficiency in procurement comes to 57.67 per cent for the first spell and 67.13 per cent for the second spell, which correspond to 31mt and 36 mt against base level normal procurement (ref year 2010-11). It would be very costly to maintain buffer stock at these levels to completely insulate against drop in successive procurements. The output level in these spells showed relatively much smaller decline, and only once for two consecutive years. Drop in procurement in normal production years can be arranged through better procurement policies. If this is done then buffer stock would be needed to make up for the deficiency in procurement only for those years, when both, production as well as procurement are below normal. During the last twenty years it happened for two consecutive years only once i.e. years 2004-05 and 2005-06. During these two years, cumulative deficiency in production was 4.6 per cent and in procurement it was 26.1 per cent. This deficiency in procurement comes to 14.2 mt for base year 2010-11.

Fig. 1: Procurement of rice and wheat during a crop year compared to trend



3.4 Stock Requirement

Details and particulars of stock requirement for rice, wheat, and total foodgrains for scenarios I to IV are presented in Annexure II to Annexure V. Summary estimates of operational stock and buffer/strategic stocks under various scenarios are presented in table 4.

Scenario I refers to existing requirement of foodgrain indicated by the Department of Food, GOI, for operational stock and for buffer and other purposes. PDS requirement in this scenario is taken equal to actual allocation, implying 100% offtake. This scenario clubs requirement for other welfare scheme and natural calamity and place these at 5.6 mt. Adding these two components together require 52.6 mt of foodgrain. The other category of stock includes buffer stock of 5 mt and OMSS (price stabilization) stock of 3.2 mt.

This scenario requires maximum stock of 21.78 mt of rice, 25.42 mt of wheat and 43.73 mt of total stock or storage capacity. Highest stock is needed at the

end of June or beginning of September and lowest stock is required at the end of March or beginning of April.

Table 4: Operational and buffer/strategic stock requirement for foodgrain under various scenarios (million tonne)

Component	Scenarios					
	I	II	III	IV	V	VI
	Allocation:	NFSB:	Existing:	NFSB:	Existing:	NFSB:
TPDS:	47.1	52.6	43.7	52.6	43.7	52.6
OWS & NC:	5.6*	8.0*	3.8	3.8	3.8	3.8
Buffer:	5.0	5.0	-	-	-	-
OMSS:	3.2	5.0	-	-	-	-
Base stock:	-	-	2.0	2.0	2.0	2.0
Buffer and strategic:	-	-	12.8	12.8	14.3	14.3
Rice						
Apr-Jun	21.78	25.42	23.92	26.79	24.79	27.66
Jul-Sept	18.31	21.43	20.79	23.07	21.66	23.94
Oct-Dec	12.93	15.23	15.93	17.30	16.80	18.17
Jan-Mar	19.35	22.63	21.74	24.19	22.61	25.06
Wheat						
Apr-Jun	8.92	10.50	11.20	12.16	11.83	12.79
Jul-Sept	25.42	29.50	26.09	29.86	26.72	30.49
Oct-Dec	20.15	23.40	21.34	24.21	21.97	24.84
Jan-Mar	14.51	16.90	16.24	18.15	16.87	18.78
Total						
Apr-Jun	30.70	35.92	35.12	38.95	36.62	40.45
Jul-Sept	43.73	50.92	46.88	52.93	48.38	54.43
Oct-Dec	33.08	38.62	37.27	41.50	38.77	43.00
Jan-Mar	33.87	39.52	37.98	42.34	39.48	43.84
* Other welfare scheme and natural calamity Scenario I and II are based on the requirement indicated by Deptt Food, Min CAFPS. III to VI are based on researcher's perception of stock requirement						

Scenario II refers to PDS requirement that would be needed to meet obligation under proposed NFSB. According to the Dept of Food this proposal will also involve 8 mt of operational stocks for OWS and natural calamity. Operational stocks come to 60.59 mt under this scenario. Buffer stocks and stabilization stocks under this scenario are presumed to be 5 mt each. Adding all components

require 70.6 mt foodgrain. The other category of stock includes buffer stocks of 5 mt and OMSS (price stabilization) stock of 3.2 mt.

This scenario requires maximum stock of 25.42 mt of rice, 29.5 mt of wheat and 50.92 mt of total stock or storage capacity. Stocks suggested under this scenario are sufficient to take care of deviation in foodgrain output 85 per cent of the years.

Scenario III treats existing level of foodgrain allocation under PDS and OWS as requirement for operational purposes which is 47.5 mt. PDS requirement in this scenario is taken equal to 92 % of actual allocation. This scenario assume base level of stock of 2 mt divided equally between rice and wheat. Buffer and strategic requirement of foodgrain in this scenario is taken as 5.83 per cent of normal production which is large enough to meet any deficiency in output of cereals except extreme cases which occur once in 20 years. The buffer and strategic stock requirement is taken as 12.8 mt.

This scenario requires maximum stocks of 23.92 mt of rice, 26.09 mt of wheat and 46.88 mt of total stocks or storage capacity. Highest stocks are needed at the end of June or beginning of September and lowest stocks are required at the end of March or beginning of April.

Scenario IV assumes that PDS requirement will rise to 52.59 mt as envisaged in the proposed NFSB. It makes allowance for 3.86 mt of grain for other welfare schemes which is same as the OWS quantity provided in the year 2010-11. The foodgrain requirement for PDS and OWS or requirement for operational purposes is placed at 56.45 mt. Like Scenario III, this scenario assume base level of stocks of 2 mt divided equally between rice and wheat and 5.83 per cent of normal production as buffer and strategic requirement which is large enough to meet any deficiency in output of cereals in 95 per cent cases. The buffer and strategic stock requirement is taken as 12.8 mt.

This scenario requires maximum stocks of 26.79 mt of rice, 29.86 mt of wheat and 52.93 mt of total stocks or storage capacity.

Scenario V treats existing level of foodgrain allocation under PDS and OWS as requirement for operational purposes which is 47.5 mt. PDS requirement in this scenario is taken equal to 92 % of actual allocation. This scenario assumes base level of stocks of 2 mt divided equally between rice and wheat. Buffer and strategic requirement of foodgrain in this scenario is taken as 26.3 per cent of normal procurement of rice and wheat or 11.8 per cent of the normal production of all cereals. This also corresponds to cumulative deficiency of procurement in any spell of consecutive years when production was below normal. This drop in procurement comes to 14.3 mt corresponding to normal procurement level during crop year 2010-11. The buffer and strategic requirement is thus taken as 14.3 mt.

This scenario requires maximum stocks of 24.8 mt of rice, 26.7 mt of wheat and 48.4 mt of total stock or storage capacity (Table 4).

Scenario VI includes PDS requirement of NFSB (scenario IV) and buffer/strategic requirement to meet drop in procurement (Scenario V). This scenario is most relevant if NFSB is implemented. This includes buffer stock to check against default to meet obligation of NFSB in the event of below normal production and below normal procurement. Operation requirement under this scenario is 56.45 mt and buffer stock requirement is 14.3 mt. The scenario also envisages 2 mt of base stock.

This scenario indicates that if India go ahead with grain provisioning as per the NFSB it need to build foodgrain storage capacity and stock of 54.4 mt. In terms of composition stocks it includes around 27.7 mt of rice and around 30.5 mt of

wheat. Distribution of this stock over different quarters in a year is shown in Table 4.

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Annexure: I

**Requirement of Foodgrain indicated by Department of Food, Ministry of
Consumer Affairs, Food and Public Distribution, GOI**

	Existing	Draft NFSB
	2010-11	2011-12
Priority	27.68	40.96
General	19.40	11.63
Total (100%)	47.08	52.59
@85/90% off-take		
OWS + Natural Calamities	5.60	8.00
PDS+OWS+Nat. Calamities	52.68	60.59
Buffer	5.00	5.00
OMSS	3.20	5.00

Annexure II

Scenario I : Existing foodgrain requirement (2010-11) as per Deptt of Food

PDS: 47.08 mt; OWS & natural calamity: 5.60 mt Buffer: 5.0 mt; OMSS 3.2 mt; Total: 60.88 mt

	Patten of procurement and offtake				Stock requirement			
	Percent		Quantity (million t)		PDS, OWS +Natural Calamity		Including buffer and OMSS*	
	Procurement	Offtake	Procurement	Offtake	Opening	Closing	Opening	Closing
	Rice							
Apr-Jun	13.37	24.69	4.10	7.56	16.86	13.39	21.78	18.31
Jul-Sept	8.57	26.14	2.63	8.01	13.39	8.01	18.31	12.93
Oct-Dec	45.85	24.87	14.05	7.62	8.01	14.43	12.93	19.35
Jan-Mar	32.21	24.30	9.87	7.45	14.43	16.86	19.35	21.78
	100.00	100.00	30.64	30.64				
			52.6					
	Wheat							
Apr-Jun	98.795	23.69	21.70	5.20	5.64	22.14	8.92	25.42
Jul-Sept	1.205	25.18	0.26	5.53	22.14	16.87	25.42	20.15
Oct-Dec	0	25.69	0.00	5.64	16.87	11.23	20.15	14.51
Jan-Mar	0	25.45	0.00	5.59	11.23	5.64	14.51	8.92
	100	100.00	21.96	21.96				
	Total							
Apr-Jun					22.50	35.53	30.70	43.73
Jul-Sept					35.53	24.88	43.73	33.08
Oct-Dec					24.88	25.67	33.08	33.87
Jan-Mar					25.67	22.50	33.87	30.70

* 8.2 mt of buffer and OMSS distributed over rice and wheat in the ratio 58:42 as per disbursement

Annexure III

Scenario II: NFSB foodgrain requirement and other requirement as per Deptt of Food

PDS: 52.59 mt; OWS & natural calamity: 8.0 mt Buffer: 5.0 mt; OMSS 5.0 mt; Total: 70.59 mt

	Patten of procurement and offtake				Stock requirement			
	Percent		Quantity (million t)		PDS, OWS +Natural Calamity		Including buffer and OMSS*	
	Procurement	Offtake	Procurement	Offtake	Opening	Closing	Opening	Closing
	Rice							
Apr-Jun	13.37	24.69	4.72	8.71	19.42	15.43	25.42	21.43
Jul-Sept	8.57	26.14	3.03	9.23	15.43	9.23	21.43	15.23
Oct-Dec	45.85	24.87	16.18	8.78	9.23	16.63	15.23	22.63
Jan-Mar	32.21	24.30	11.37	8.58	16.63	19.42	22.63	25.42
	100.00	100.00	35.29	35.29				
			60.59					
	Wheat							
Apr-Jun	98.80	23.69	24.99	5.99	6.50	25.50	10.50	29.50
Jul-Sept	1.20	25.18	0.26	6.37	25.50	19.40	29.50	23.40
Oct-Dec	0.00	25.69	0.00	6.50	19.40	12.90	23.40	16.90
Jan-Mar	0.00	25.45	0.00	6.44	12.90	6.46	16.90	10.46
	100.00	100.00	25.30	25.30				
	Total							
Apr-Jun					25.92	40.92	35.92	50.92
Jul-Sept					40.92	28.62	50.92	38.62
Oct-Dec					28.62	29.52	38.62	39.52
Jan-Mar					29.52	25.88	39.52	35.88

* 10 mt of buffer and OMSS distributed over rice and wheat in the ratio 58:42 as per the offtake

Annexure IV

Scenario III : Existing foodgrain offtake for PDS, plus buffer and strategic reserves based on output deficiency

TPDS: 43.72 mt; OWS:3.80 mt; Base Stock: 2 mt; Fluctuations and stabilization: 12.8 mt; Total: 62.38 mt

	Patten of procurement and offtake				Stock requirement			
	Percent		Quantity (million t)		PDS, OWS+Base		Including buffer & strategic	
	Procurement	Offtake	Procurement	Offtake	Opening	Closing	Opening	Closing
	Rice							
Apr-Jun	13.37	24.69	3.70	6.83	16.22	13.09	23.92	20.79
Jul-Sept	8.57	26.14	2.37	7.23	13.09	8.23	20.79	15.93
Oct-Dec	45.85	24.87	12.68	6.88	8.23	14.04	15.93	21.74
Jan-Mar	32.21	24.30	8.91	6.72	14.04	16.22	21.74	23.92
Full year	100.00	100.00	27.67	27.67				
			47.5					
	Wheat							
Apr-Jun	98.80	23.69	19.59	4.70	6.10	20.99	11.20	26.09
Jul-Sept	1.20	25.18	0.24	4.99	20.99	16.24	26.09	21.34
Oct-Dec	0.00	25.69	0.00	5.10	16.24	11.14	21.34	16.24
Jan-Mar	0.00	25.45	0.00	5.05	11.14	6.10	16.24	11.20
Full year	100.00	100.00	19.83	19.83				
	Total							
Apr-Jun					22.32	34.08	35.12	46.88
Jul-Sept					34.08	24.47	46.88	37.27
Oct-Dec					24.47	25.18	37.27	37.98
Jan-Mar					25.18	22.32	37.98	35.12
* 12.8 mt of buffer stock distributed over rice and wheat in the ratio 58:42 as per disbursement								

Annexure V

Scenario IV: Foodgrain allocation for PDS based on NFSB plus buffer and strategic reserves based on output deficiency

NFSB: 52.59 mt; OWS: 3.86 mt; Base Stock: 2 mt; Fluctuations and stabilization: 12.8 mt; Total: 71.25 mt

	Patten of procurement and offtake				Stock requirement			
	Percent		Quantity (million t)		PDS, OWS+Base		Including buffer & strategic	
	Procurement	Offtake	Procurement	Offtake	Opening	Closing	Opening	Closing
	Rice							
Apr-Jun	13.37	24.69	4.40	8.12	19.09	15.37	26.79	23.07
Jul-Sept	8.57	26.14	2.82	8.60	15.37	9.60	23.07	17.30
Oct-Dec	45.85	24.87	15.07	8.18	9.60	16.49	17.30	24.19
Jan-Mar	32.21	24.30	10.59	7.99	16.49	19.09	24.19	26.79
Full year	100.00	100.00	32.88	32.88				
			56.45					
	Wheat							
Apr-Jun	98.80	23.69	23.28	5.58	7.06	24.76	12.16	29.86
Jul-Sept	1.20	25.18	0.28	5.93	24.76	19.11	29.86	24.21
Oct-Dec	0.00	25.69	0.00	6.06	19.11	13.05	24.21	18.15
Jan-Mar	0.00	25.45	0.00	6.00	13.05	7.06	18.15	12.16
Full year	100.00	100.00	23.57	23.57				
	Total							
Apr-Jun					26.15	40.13	38.95	52.93
Jul-Sept					40.13	28.70	52.93	41.50
Oct-Dec					28.70	29.54	41.50	42.34
Jan-Mar					29.54	26.15	42.34	38.95