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## Food Security in India

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### **Abstract:**

*Food Security for a household means access by all members at all times to enough food for an active, healthy life. The World Food Summit was held in Rome, with the aim of renewing global commitment to fight against hunger. The Food and Agricultural Organization of the United Nation (FAO) called the summit in response to widespread under nutrition and growing concern about the capacity of agriculture to meet future food needs. Food Security exists, when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active and healthy life. (World Food Summit, Rome, 1996). An attempt is made in this paper to analyse the status, further scope and needed strategies for food security in India. Specific objectives were i. to analyze the growth rate of major food grains in India, and also study the demand and supply gap of food sector status in India, ii. To analyse the status of access to food and iii. to suggest suitable policy to implement food security. Secondary data were analyzed for the study. Time series data on area, production, yield of food grains for 50years were used for the analysis. The secondary data has been collected from different sources namely FAO, Food and Public Distribution, Agricultural statistics at a glance 2012, India stat.com, Directorate of Economics and Statistics. Conclusions from the study are - growth rate of food grains area(0.218), production(2.45)and productivity (2.23) are positive; the availability of food grains in India is almost in secure state since the production of food grains was increasing over the years; the increase in Minimum Support Price for Rice and Wheat, did not affect the access to food to the population and zone wise distribution of food grains will minimize the transportation and handling cost over the states. Some suggestions like - focusing on distribution of food grains in an equitable manner, besides increasing food production to ensure success of food security in India, improving the efficiency of public distribution system, need to reduce cost of operations in FCI through PDS by changing the procurement policy and more scientific storage of food grains be made to prevent rotting of food grains - were given.*

### **1. Introduction**

Food Security for a household means access by all members at all times to enough food for an active, healthy life.

#### *1.1. World Food Summit*

The World Food Summit was held in Rome, with the aim of renewing global commitment to fight against hunger. The Food and Agricultural Organization of the United Nations(FAO) called the summit in response to widespread under nutrition and growing concern about the capacity of agriculture to meet future food needs.

#### *1.2. Definition*

Food Security exists, when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preference for an active and healthy life. (World Food Summit, Rome, 1996)

### **2. Indian Scenario**

- India is the second largest producer of rice in the world followed by China.
- Agriculture is the main source of Indian families, our 65 per cent population has depends upon agricultural sector.
- Our majority of farmers are growing rice and wheat, because it is the staple food.
- Food security means the supply of required quantity of food grains to all people in India.
- The required food grains will be distributed to priority households through the Public Distribution System.

### **3. Components**

Food Security has three main components, they are closely related to each other, they are

- Availability of food

- Access to food
- Utilization of food.

#### 4. Objectives

- To analyze the growth rate of major food Grains in India, and also study the demand and supply gap of food sector status in India.
- To analyse the status of Access to Food.
- To suggest suitable policy to implement food security.

#### 5. Review of Literature

- The region with most undernourished people continues to be Asia and the Pacific, 578 million in 2012-2013.
- According to the census report on population census. India ranked 10th largest Economy of world on nominal GDP basis and 3rd largest on economy on purchasing Power Parity basis, 29% of the 872.9 million undernourished people (FAO) (Directorate of Economics and Statistics, 2011-2012)
- According to the latest data on child under nutrition from 2005–10, India ranked second to last on child underweight out of 129 countries— below Ethiopia, Niger, Nepal, and Bangladesh(WHO, 2010).
- According to the population statistics, 21% of India's population undernourished, nearly 44% of below the age of 5 children are underweight and 7% of them dying before they reach fifth birthday (Population Census Report, 2011).

#### 6. Methodology

- Secondary data were analyzed.
- Time series data on area, production, yield of food grains for 50years were used for the analysis.
- The secondary data has been collected from different sources namely FAO, Food and Public distribution, Agricultural statistics at a glance 2012, India stat.com, Directorate of Economics and Statistics.

#### 7. Tools for Analysis

##### 7.1 Compound Growth Rate

$$Y=ab^t e$$

Where,

- a= intercept
- b= regression coefficient
- t = time variable
- e = error term

CGR is obtained using the logarithmic form

$$\ln Y= \ln a + t \ln b$$

The percent CGR is derived using

$$g=(\text{antilog of } b-1)*100$$

##### 7.2 Trend Analysis

It is an aspect of technical **analysis** that tries to predict the future movement of a stock based on past data. **Trend analysis** is based on the idea that what has happened in the past gives traders an idea of what will happen in the future.

Formula:

Linear trend

$$Y_t = \beta_0 + (\beta_1 * t) + e_t$$

##### 7.3 Analyzing Demand and Supply Gap

- Demand for food grains may be calculated by multiplying Population with consumption requirement( as per ICMR) recommendation.
- Supply for food grains may be considered as the production for food grains.
- Therefore the gap can be calculated by subtracting supply from demand. ie, supply- Demand

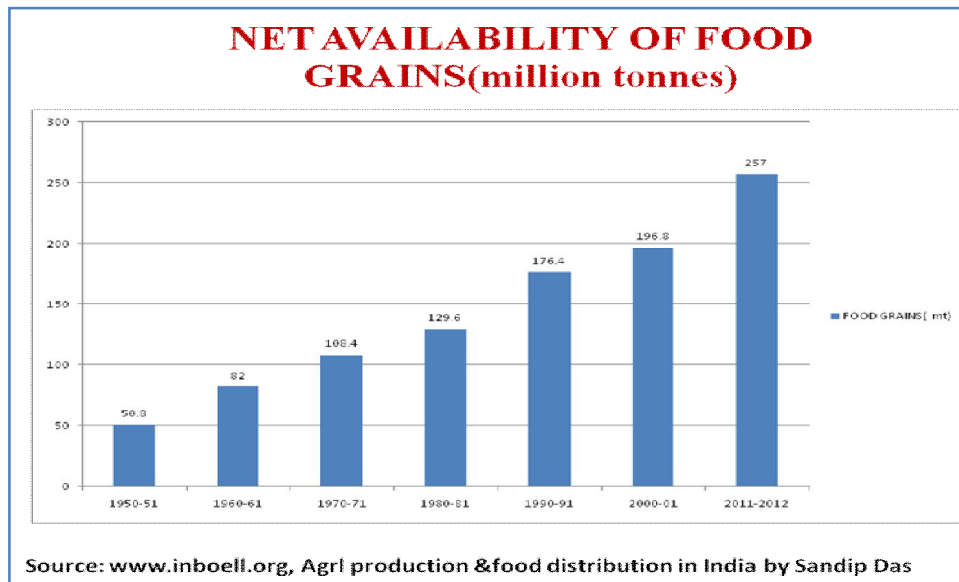


Figure 1: Net Availability of Food Grains

### Growth Rate of Food Grains (India) (Year: 1950-51 to 2011-12)

SLNO	YEAR	AREA	PRODUCTION	PRODUCTIVITY
1.	1950-2012	0.218*	2.45*	2.23*

Figure 2: Growth Rate of Food Grains

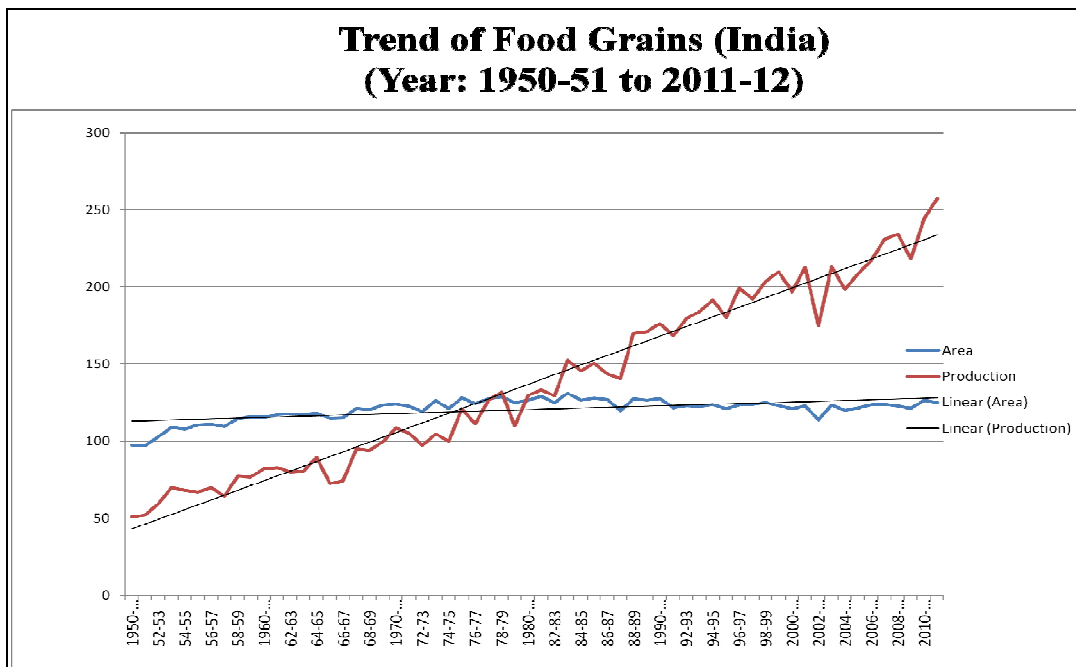


Figure 3: Trend of Food Grains

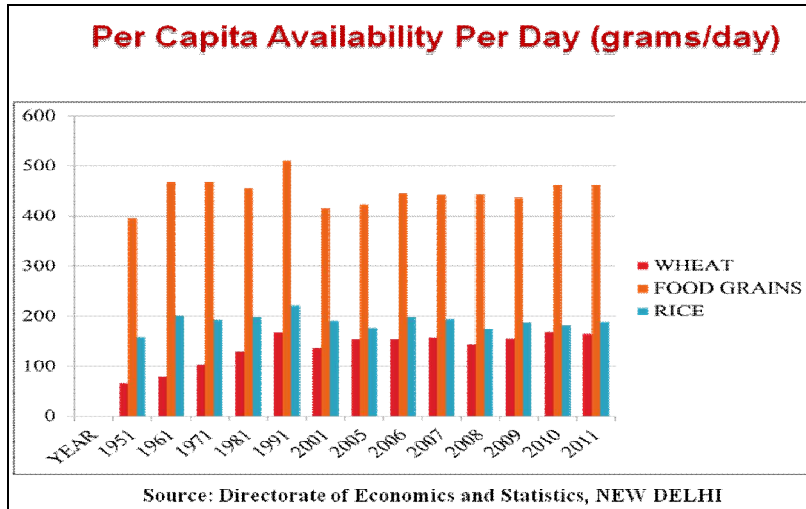


Figure 4: Per Capita Availability per Day

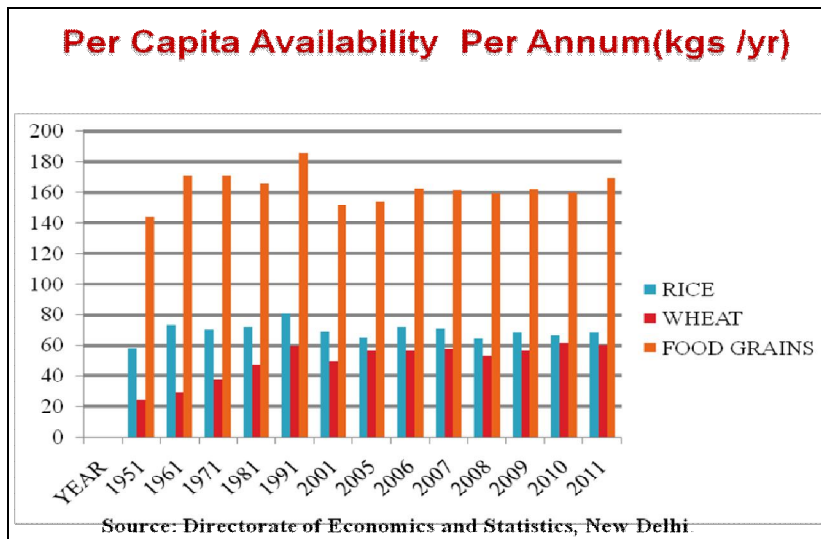


Figure 5: Per Capita Availability Per Annum

### DEMAND AND SUPPLY GAP OF FOOD GRAINS

YEAR	DEMAND	SUPPLY	DEMAND & SUPPLY GAP
1950-51	60.6	50.8	-9.8
1960-61	73.79	82	8.21
1970-71	92.0	108.4	16.4
1980-81	114.79	129.6	15.5
1990-91	142.19	176.4	34.3
2000-01	172.82	196.8	24
2011-12	203.31	257	53.7
2020*	246.10	262	16

Source: Policy Brief on demand for foodgrains during 2020, Ramesh Chand, NCAP, New Delhi

Figure 6: Demand and Supply Gap of Food Grains



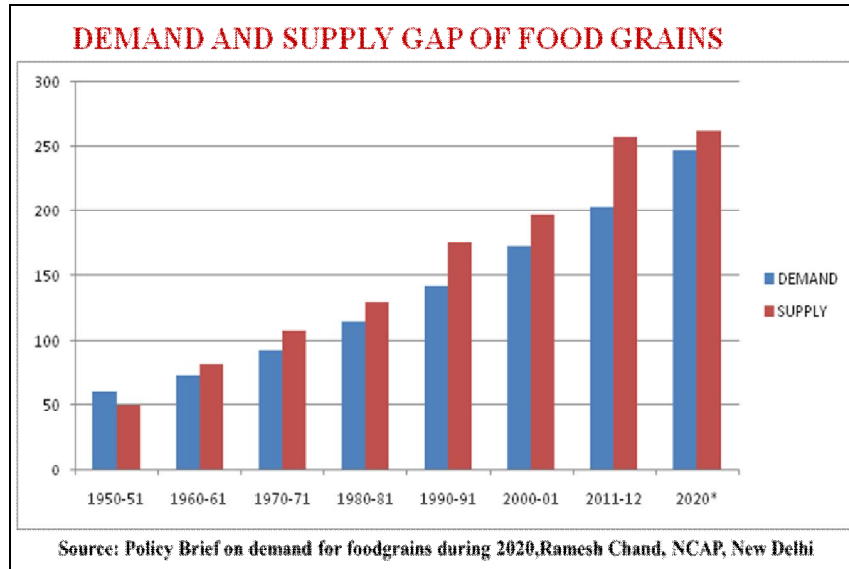


Figure 7: Demand and Supply Gap of Food Grains

**FOOD ACCESS CAN BE DETERMINED THROUGH THE RATIO OF PER CAPITA INCOME WITH MSP**

YEAR	PER CAPITA INCOME (Rs)	MSP OF RICE (Rs/qtt)	MSP OF WHEAT (Rs/qtt)	PCI/ MSP OF RICE (qtt/person/yr)	PCI/ MSP OF WHEAT (qtt/person/yr)
2004-05	24143	560	640	43	38
2005-06	28542	570	650	50	43
2006-07	31206	580	750	53	41
2007-08	35825	645	1000	55	32
2008-09	40775	900	1080	45	37
2009-10	46117	1000	1100	46	42
2010-11	53331	1000	1170	53	45
2011-12	60603	1080	1285	56	47

Source: RBI, Hand book of Indian Economy- 2012

Figure 8: Food Access can be determined through the ratio of per capita income with MSP

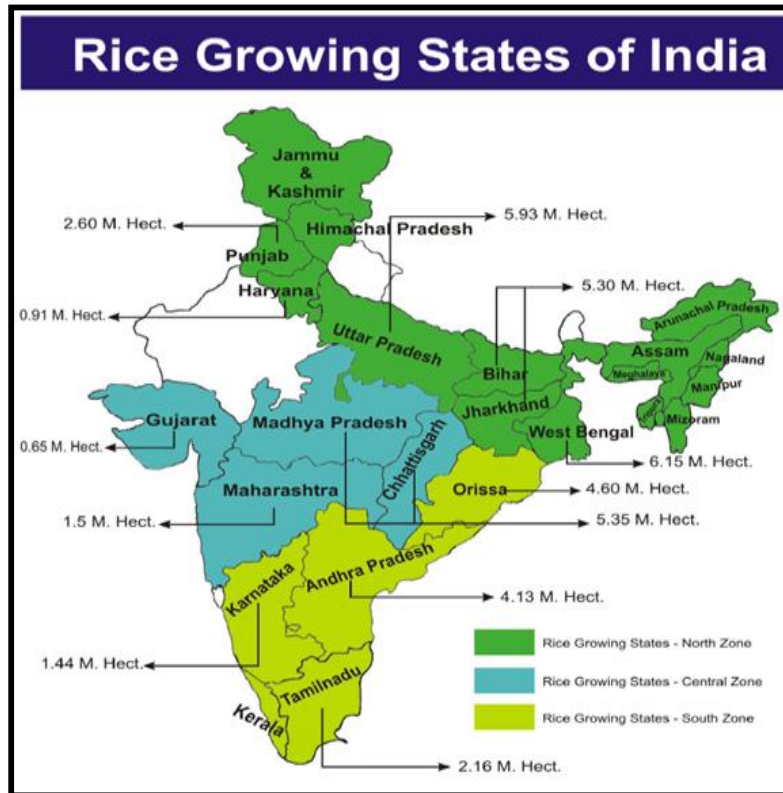


Figure 9: Rice Growing States of India

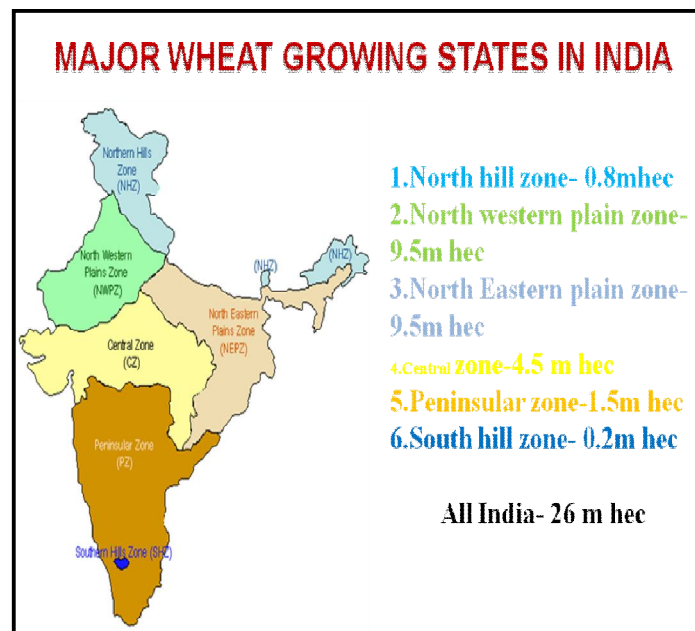


Figure 10: Major Wheat Growing States In India

**DEMAND AND SUPPLY FOR STATES IN  
INDIA(MT)**

Sl.No	STATES	SUPPLY	DEMAND
1	UTTARPRADESH	47.2437	33
2	MAHARASTRA	15.066	19
3	BIHAR	9.884	17
4	WEST BENGAL	13.743	15
5	MADHYA PRADESH	8.035	12.1
6	ANDRA PRADESH	20.182	8.2
7	TAMILNADU	8.313	12.1
8	RAJASTHAN	18.691	12
9	KARNATAKA	13.29	10.2
10	GUJARAT	7.852	10.1

Source : RBI , Hand book in Indian Economy, 2011-2012

*Figure 11: Demand and Supply for States in India (MT)*

**DEMAND AND SUPPLY FOR STATES IN  
INDIA(MT)**

Sl.No	STATES	SUPPLY	DEMAND
11	ORISSA	7.641	7
12	KERALA	0.548	6
13	JHARKHAND	8.696	5.5
14	ASSAM	4.896	5.2
15	PUNJAB	27.224	4.6
16	HARIYANA	16.04	4.3
17	CHATTISHGARH	7.026	4.2
18	JAMMU & KASHMIR	1.371	2.1
19	UTTARKHAND	1.818	1.6
20	HIMACHAL PRADESH	1.531	1.1
21	TRIPURA	0.64	0.6
22	MEGALAYA	0.24	0.04
23	MANIPUR	0.425	0.45

Source : RBI , Hand book in Indian Economy, 2011-2012

*Figure 12: Demand and Supply for States in India (MT)*

**DEMAND AND SUPPLY FOR STATES IN INDIA(MT)**

Sl.No	STATES	SUPPLY	DEMAND
24	NAGALAND	0.52	0.33
25	GOA	0.14	0.24
26	ARUNACHAL PRADESH	0.26	0.23
27	MIZORAM	0.06	0.18
28	SIKKIM	0.11	0.1
UT1- UT7	DELHI TO LAKSHADEEP	2.419	3.3

Source : RBI , Hand book in Indian Economy, 2011-2012

Figure 13: Demand and Supply for States in India (MT)

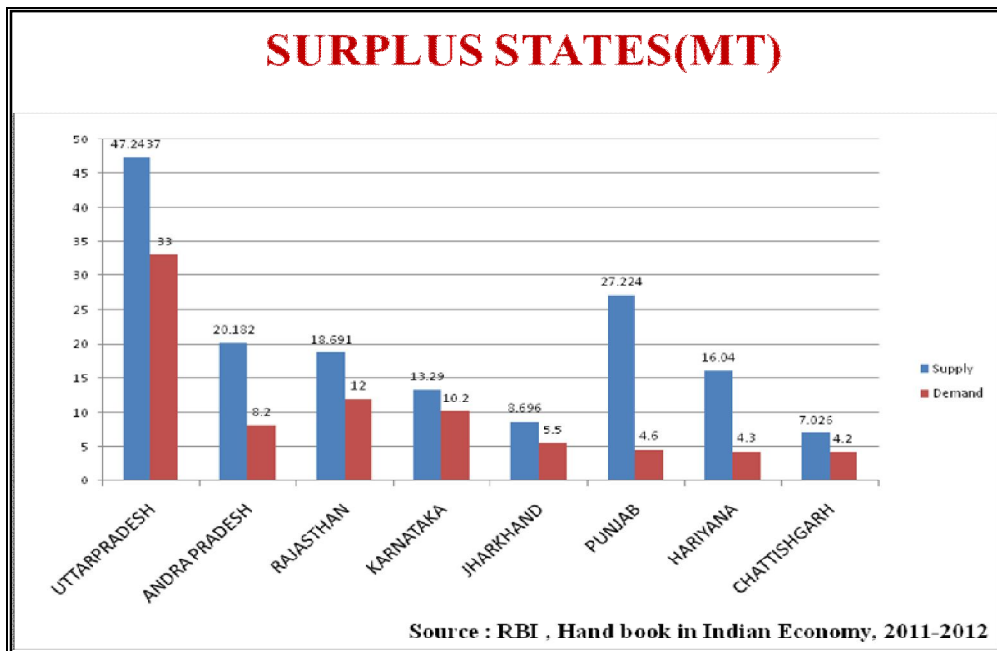


Figure 14: Surplus States (MT)

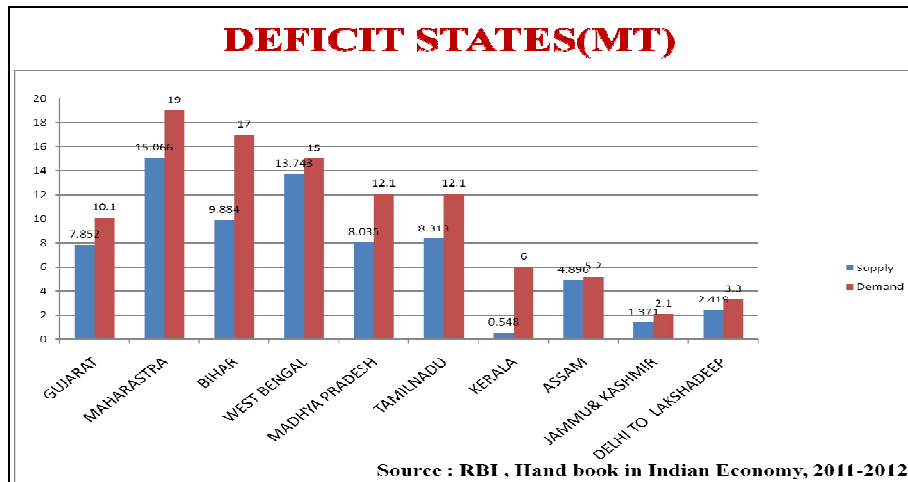


Figure 15: Deficit States (MT)

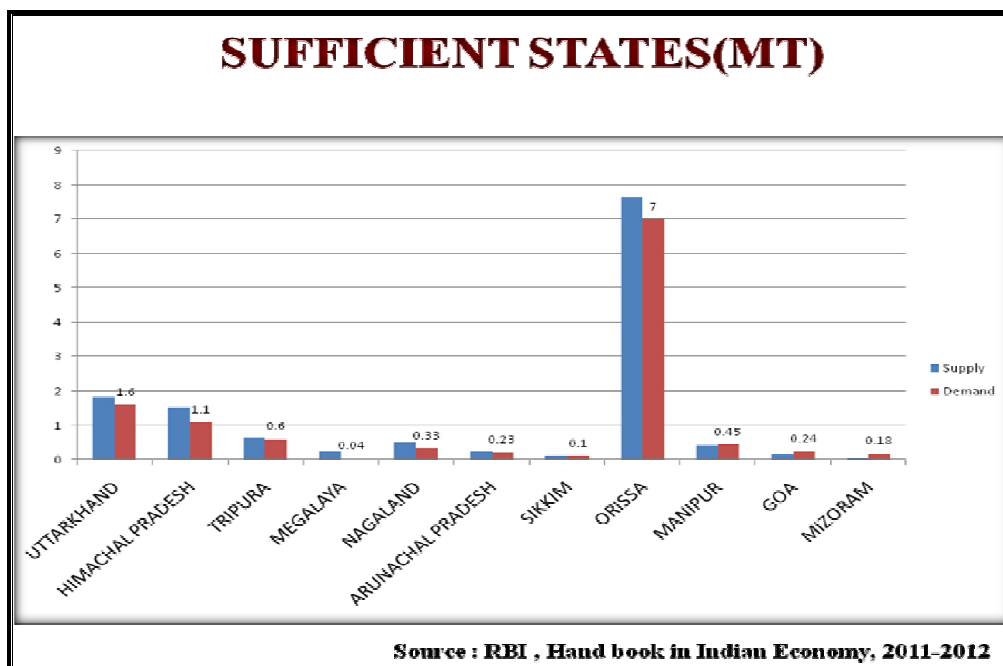


Figure 16: Sufficient States (MT)

**8. Food Utilization**

The food utilization deals with changes in consumption pattern, calorie intake of people in India.

- a. Consumption Pattern
- b. The proportion of expenditure allotted to Rice and Wheat steadily decreasing as the MPCE of individual increases.
- c. The consumption pattern is highly rising among the middle class people in India. The Middle class people are those who gets Rs 3,900 in purchasing power parity items. (Source: Planning Commission, 2011-2012)
- d. Calorie in take

The calorie intake of population of India was around 4.9 per cent or 2,047 kilocalories. (Source: NSSO Report, July 2011)

**9. Steps taken by government to maintain food security**

*9.1 Govt.measures to implemt food security*

Government has under taken several steps to implement food security through,

- Public Distribution System.
- Government Schemes.

- Food Security Act.

#### 9.2 Public Distribution System

- The Public Distribution System is one of the important elements of the Government's 'Food Security' system.
- PDS involves management of supplies of essential commodities and maintenance of their uninterrupted flow at affordable prices to the identified beneficiaries.

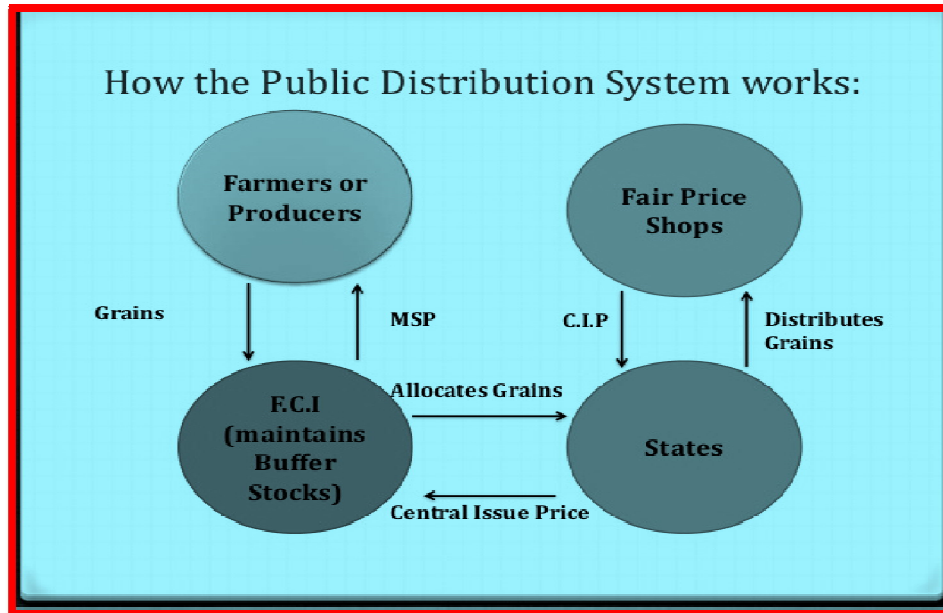


Figure 17: Public Distribution System

#### 10. Government Schemes

- National Food Security Mission
- Mid Day Meal
- ICDS (integrated Child Development Scheme)
- Rashtriya Krishi Vikas Yojana
- National Food Security Act 2013

##### 10.1. National Food Security Mission

- NFSM was launched in Aug,2007 by GOI with an aim of achieving an additional production of 10and 8 million tonnes of Rice and wheat respectively.
- A sum of Rs. 3381 crores has been spent till 31March, 2013. (Source: Economic Survey, 2013)

##### 10.2. Mid Day Meal Scheme

###### Primary Objective

- Eradicating extreme poverty and hunger among children particularly economically disadvantaged so as to improve their nutritional & health status.
- Children in the age group of 5-9 and 10-15 yrs are provided with Nutritious Meal on all School Days (220 days)

##### 10.3. ICDS- Integrated Child Development Scheme

ICDS Mission targets to attain three main outcomes namely:

- Prevent & reduce young child under-nutrition (% underweight children 0-3 years) by 10 percentage.
- Improve care and nutrition of girls and women and reduce anaemia prevalence in young children, girls and women by one fifth.

##### 10.4. Rashtriya Krishi Vikas Yojana

- RKVY Started in 2007-08 for incentivizing states to enhance public investment to achieve 4% growth rate in agriculture

and allied sectors during the 12th five year plan.

- During 2012-17, an amount of Rs.14598 was released.
- The objective of achieving 4% growth rate at the end of 11th five year plan fell short of target by 0.4% points i.e. Growth at the end of 11th five year plan was 3.6.

#### 10.5 Food Security Bill

The National Food Security Act, 2013 aims to provide for food and nutritional security in human life cycle approach, by ensuring access to adequate quantity of quality food at affordable prices to people to live a life with dignity.

- It is also called as Right to Food Act.
- Main aim of FSA was to provide subsidized food grains to approximately two third of India's 1.2 billion people.
- The National Food Security Ordinance on sep 12, 2013 was promulgated by the President of India on July 5th 2013.
- Beneficiaries are able to purchase 5kgs per eligible person per month of cereals at Rice- Rs 3 per kg, Wheat – Rs 2 per kg and Coarse grains- Rs 1 per kg.
- Pregnant women, lactating mother and children below 14 years are eligible for daily meals.
- Subsidy Burden
- The government procurement price would be approximately Rs 13.45 per kg of Rice and Rs 12.85 per kg for wheat, and also the government is spending Rs 1.3 lakh crores per year.
- (Source: www. Money control.com)
- The average procurement of rice of 29.84 mt and Wheat of 24.24 mt from 2001-2012 and the government is spending Rs.1.34 lakh crores per year. The average for Rice and Wheat has been given in the below table.

<b>AVERAGE PROCUREMENT OF RICE &amp; WHEAT</b>					
SLNO	YEAR	Production of Rice(MT)	Production of Wheat(MT)	Procurement of Rice in MT	Procurement of Wheat in MT
1.	2001-2002	93.34	72.77	22.128(23.7)	20.63(28.34)
2.	2002-2003	71.82	65.76	16.422(22.86)	19.054(28.74)
3.	2003-2004	88.52	72.16	22.828(25.78)	15.081(21.89)
4.	2004-2005	83.13	68.64	24.684(29.69)	16.795(24.46)
5.	2005-2006	91.79	69.35	27.656(30.12)	14.787(21.32)
6.	2006-2007	93.36	75.51	25.107(26.89)	9.226(12.16)
7.	2007-2008	96.69	78.57	28.736(29.71)	11.128(14.16)
8.	2008-2009	99.18	80.68	34.104(34.38)	22.689(28.12)
9.	2009-2010	89.09	80.8	32.034(35.95)	25.382(31.41)
10.	2010-2011	95.98	86.87	34.198(35.63)	22.314(25.91)
11.	2011-2012	104.32	93.9	35.026(33.57)	28.335(30.17)
AVERAGE				<b>29.84</b>	<b>24.24</b>

**Note: ()- Procurement/ Production\*100**

Figure 18: Average Procurement Of Rice & Wheat

## 11. Different Zones in India

In order to reduce the Transportation and Handling cost in India, states has been differentiate into three zones namely.

- Northern zone
- Central zone
- Southern zone.
- Amount of food grains produced in Surplus states was around 76.41 million tonnes, among this 28 million tonnes is meant for procurement and 12 million tonnes is for Export of food grains.
- So, from 76.41 million tonnes , 40 million tonnes is meant for procurement and Export, and the remaining 36.41 tonnes is redistributed through Public Distribution System or procured by FCI.
- The allocation of food grains from surplus states to deficit states are as follows.

### 11.1. Southern Zone

- The southern zone covers Karnataka, Andra Pradesh, Tamil Nadu, Kerala and Orissa. Among this states Andra Pradesh and Karnataka are Surplus states where as Tamil Nadu and Kerala are Deficit states.
- Andhra Pradesh can supply food grains to Tamil Nadu – 3.5million tonnes and for Kerala it may supply- 5million tonnes and the remaining of **3.48(balance)** may be given to the near by deficit state.
- So the deficit states may get their food grains from surplus states. Still there is nearly **2.48mt** of food grains is balance in Andra Pradesh.

### 11.2. Central Zone

The Central zone covers Gujarat, Madhya Pradesh, Maharashtra and Chhattisgarh. Among this states Chhattisgarh is the only surplus state and the remaining three are deficit states.

- Maharashtra has meet out its deficit from AP and Karnataka.
- In order to meet the deficit of Madhya Pradesh and Gujarat then it should get food grains from Rajasthan even though it is present in Northern zone it is only nearer.

Even though Rajasthan may be present in northern Zone, Gujarat and Madhya Pradesh are near states of Rajasthan. So the deficit states may get their food grains from surplus states. Still there is nearly **0.57mt** of food grains is balance in Rajasthan.

### 11.3. Northern Zone

• The Northern zone covers Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Assam, Arunachal Pradesh and Union Territories.

• Among this states Punjab, Haryana, Uttar Pradesh, Jharkhand are Surplus and the remaining states like Bihar, West Bengal, Assam, Jammu and Kashmir and Union territories are deficit.

- So the food grains may be supplied to deficit states to surplus states by this way as follows.

The total supply of food grains from Uttar Pradesh was around 10.26mt and the remaining balance of food grains was around 3.98 mt.

## 12. Conclusions

- Growth rate of food grains Area(0.218),Production(2.45)and Productivity (2.23) are positive.
- The availability of foodgrains in India is almost in secure state since the production of food grains was increasing over the years.
- The increase in Minimum Support Price for Rice and Wheat, positively affects the access to food to the population.
- Zone wise distribution of food grains will minimize the Transportation and Handling cost over the states.

## 13. Suggestions

- Rather than focusing more on increasing food production, we must focus on distribution of food grains in an equitable manner.
- To ensure success of Food Security in India we have to achieve the Food Production Targets and improve the efficiency of public distribution system.
- Attempts should be made to reduce cost of operations in FCI through PDS by changing the procurement policy.
- Storage of food grains be made more scientific and prevent rotting of food grains.

## 14. References

1. Consumer Expenditure in India, NSS report 68th round survey,(July 2011-June 2012), June 2013,NSSO, Ministry of Statistics and Programme Implementation, GOI.
2. CHAND RAMESH, Policy Brief: Demand for food grains during 11th Plan and towards 2020, NCAP, New Delhi.
3. Dietary Guidelines for Indians: A manual,2011, National Institute of Nutrition, ICMR, Hyderabad,6.
4. GUPTA S.P. ,Report of Committee on India Vision 2020,December 2002, Planning commission, GOI., New Delhi,30-34.
5. DATT GAURAV AND MAHAJAN ASHWANI,2013,Indian Economy
6. Economic Survey,2013,Ministry of Finance,GOI,174-191.
7. Hand book of Indian Economy, 2011-12, RBI.
8. Statistical Year Book, 2012.
9. [http://articles.timesofindia.indiatimes.com/2012-01-15/india/30629637\\_1\\_anganwadi-workers-ghi-number-of-hungry-people](http://articles.timesofindia.indiatimes.com/2012-01-15/india/30629637_1_anganwadi-workers-ghi-number-of-hungry-people)
10. [http://articles.timesofindia.indiatimes.com/2012-08-05/nagpur/33048504\\_1\\_mdgs-global-hunger-index-millennium-development-goals](http://articles.timesofindia.indiatimes.com/2012-08-05/nagpur/33048504_1_mdgs-global-hunger-index-millennium-development-goals).