

1. What are the main objectives of maintaining a buffer stock of food grains? Discuss. What are the key issues and challenges associated with the storage of buffer stock? Examine.

Introduction

The Buffer norms are the minimum food grains the Centre should have in the Central pool at the beginning of each quarter to meet requirement of public distribution system and other government schemes related to food grains. FCI is the nodal agency to hold buffer and operational stocks of food grains.

Body

Objectives of maintaining buffer stock:

- Government schemes: Procurement of food grains and ensuring its availability for effective implementation of public distribution system and other nutrition schemes for economically weaker sections.
- Price level: To maintain price stability arising out of year to year fluctuations in output or any other exigency.
- MSP: To provide space for effective implementation of minimum support price for rice and wheat through procurement mechanism.
- Food security: Ensuring food security during the periods when production is short of normal demand during bad agricultural years.

Issues and challenges:

- Excess of buffer stocks: Open ended grain procurement has increased food grain stockpiles beyond the needs of food security. E.g. By June 2019, FCI and state agencies stockpiled 76.1 million tonnes of staples (wheat and rice) against the requirement of 61 million tonnes. This is due to reasons like
- Oversupply of food grains due to skewed cropping pattern. Excess production of food grains due to higher MSPs, additional bonuses offered on food crops by the states and no viable export outlets.
- Lack of coordination between FCI and Consumer Ministry which decides buffer norms.
- Open ended procurement i.e. procures all food grains supplied to it by farmers, state agencies etc.
- No automatic liquidation rule: Ideally, FCI should sell all grains above buffer stocks in open markets. But there is no such rule and offtake happen only on the directive of the ministry
- Lack of storage: Due to inadequate number of godowns for storage, a part of procured grains is maintained as outdoor stacks ('Cover-and-Plinth' system), which face high risk of rain damage and pilferage.
- Poor quality of food grains & high wastage: Due to insect infestation, microbiological contamination, physiological changes due to sprouting and

ripening etc., the shelf life of food grains remain poor. Lack of irradiation facilities also impedes long term storage.

- High costs for government: Fiscal load of procuring, carrying & maintaining excess stock is over ₹1 trillion and adds to the food subsidy bill.
- Countercyclical procurement policy: In drought years, when the production is low, Government increases MSP and stock uptake from farmers. This reduces the supply of grains in open market and pushes the prices high.
- Marginalization of private trade: Existing system of food grain management in India is dominated by the Government, right from production (as cropping pattern is influenced by MSPs) to stocking (FCI) and marketing (APMCs).
- Even in traditionally high producing states like Punjab and Haryana, private trade been marginalized due to open ended procurement by FCI.
- Further, limitations on private stock holding and additional state levies make private participation unviable.
- Economic Burden on FCI: FCI incurs the cost of around Rs. 23 per kg for wheat, which then gets sold at Rs. 2/kg under the National Food Security Act. However, Ministry of Finance constantly underpays FCI to keep in check food subsidy numbers and as a result, it has to borrow money commercially leading to an extra interest burden (Rs. 35,700 cr between 2011-16).
- Government subsidy to farmers may encourage inefficiency amongst farmers. There may be less incentive to cut costs and respond to market pressures.
- Some goods cannot be stored in buffer stocks, e.g. fresh milk, meat etc.
- The present mechanism of buffer stocks is skewed towards farmers aimed at minimum support price than on reducing inflation (counter cyclical policy).

Conclusion

Amartya Sen observed that, in India poor die not because of lack of food, but because of lack of entitlement to food. The issues vis a vis policies regarding storage of buffer stock are main reasons. Buffer stocks being integral part of food security needs reforms to make it both practical and viable for government as well as beneficial to consumers and farmers. Shanta Kumar and Ashok Dalwai committee recommendations like FCI reforms, technological upgradation, using metal containers(reduce wastage) etc., needs to be implemented.

2. It is an irony that despite having a huge buffer stock, one of the largest public distribution systems and excessive subsidisation, India performs poorly on the Global Hunger Index. Comment.

Introduction

The Global Hunger Index (GHI) is a tool that measures and tracks hunger globally, by region, and by country. The GHI is calculated annually, and its results appear in a report issued in October each year.

Body

The GHI is based on four indicators:

- Undernourishment: the share of the population that is undernourished (insufficient caloric intake)
- Child wasting: the share of children under the age of five who are wasted (low weight for their height, reflecting acute undernutrition)
- Child stunting: the share of children under the age of five who are stunted (low height for their age, reflecting chronic undernutrition)
- Child mortality: the mortality rate of children under the age of five (in part, a reflection of the fatal mix of inadequate nutrition and unhealthy environments).

The reason for mapping hunger is to ensure that the world achieves “Zero Hunger by 2030” — one of the Sustainable Development Goals laid out by the United Nations. It is for this reason that GHI scores are not calculated for certain high-income countries.

GHI 2019 puts India at 102 out of 117 countries. In 2018, India was 103 out of 132. In 2017, due to a change in methodology, 44 more countries had been included and India was at 100 out of 119. So while the rank is one better this year, in reality, India is not better off in comparison to the other countries. The GHI slots countries on a scale ranging from “low” hunger to “moderate”, “serious”, “alarming”, and “extremely alarming”. India is one of the 47 countries that have “serious” levels of hunger.

Why poor performance

- With an overall score of 30.3, India finds itself sandwiched between Niger (score 30.2, rank 101) and Sierra Leone (score 30.4, rank 103). In 2000, India’s score was 38.8 and its hunger level was in the “alarming” category. Since then, India has steadily improved on most counts to reduce its score and is now slotted in the “serious” category. But the pace of India’s improvement has been relatively slow.
- For one, notwithstanding the broader improvements, there is one category — Child Wasting, that is, children with low weight for their height — where India has worsened. In other words, the percentage of children under the age of 5 years suffering from wasting has gone up from 16.5 in 2010 to 20.8 now. Wasting is indicative of acute undernutrition and India is the worst among all countries on this parameter.
- The report also took note of open defecation in India as an impacting factor for health. It pointed out that as of 2015–2016, 90% of Indian households used an improved drinking water source while 39% of households had no sanitation facilities.
 - Open defecation jeopardizes the population’s health and severely impacts children’s growth and their ability to absorb nutrients.

- Around 90 per cent of children aged between 6 and 23 months in the country don't even get minimum required food.
- When it comes to stunting in children under five, India saw a dip, but it's still high — 37.9 per cent in 2019 from 42 per cent in 2010.
- One of the main reason is the lack of awareness among rural population about nutritional intake.

Conclusion

Though India has demonstrated an improvement in other indicators that includes, under-5 mortality rate, prevalence of stunting among children, and prevalence of undernourishment owing to inadequate food. The National Food Security Act, 2013, aims to achieve the objective of food security by providing affordable food grains to families living below the poverty line. In this way, the government seeks to achieve food security. The intent of the statute is laudable, but it still doesn't take the fuller picture of nutritional challenge into account. Malnutrition is the reason behind 69% of deaths of children in India. The situation is serious and calls for policy changes. Food security, in a complete sense, is the need of the hour. Unless a radical shift in policy approach doesn't come through, we will continue to stare at embarrassing statistical graphs and indices.

3. Addressing hunger and malnutrition both should be accorded top priority in any food security program. In this regard, critically evaluate the design, performance and limitations of the National Food Security Act.

Introduction

According to the 'Food and Nutrition Security Analysis, India, 2019' report authored by the Government of India and the United Nations World Food Programme hunger and malnutrition continues to reel India –

- Chronic malnutrition was 38.4% in 2015-16.
- The percentage of underweight children was 35.7% over the same period.
- Anaemia in young children was 58.5% during this period.

India ranks 102 out of 117 countries in the Global Hunger Index 2019. The Food and Agriculture Organization (FAO) estimates that 194.4 million people in India (about 14.5% of the total population) are undernourished.

According to the Global Burden of Disease Study 2017, malnutrition is among the leading causes of death and disability in India.

In this regard National Food Security Act assumes huge significance.

Body

National Food Security Act – design

- Coverage of upto 75% of the rural population and upto 50% of the urban population.

- The eligible persons will be entitled to receive 5 Kgs of food grains per month at subsidised prices of Rs. 3/2/1 per Kg for rice/wheat/coarse grains.
- Besides meal to pregnant women and lactating mothers during pregnancy and six months after the child birth, such women will also be entitled to receive maternity benefit of not less than Rs. 6,000.
- Children upto 14 years of age will be entitled to nutritious meals as per the prescribed nutritional standards.
- Food security allowance in case of non-supply of entitled food grains.
- The Act also contains provisions for grievance redressal mechanism.

National Food Security Act – Performance

As per government data, around 80 crore persons have been covered under NFSA at present for receiving highly subsidized food grains. However,

- State food commission and vigilance committee has not been set by many states.
- Social audit machinery postulated by section 28 of the NFS Act is not operational in almost all states.
- Overall efficiency of the entire process, right from the time of purchase of food grains till its distribution, is very low due to corruption and low transparency.
- There is no seamless flow of information online between the FCI and States.
- There is no portal to provide information about the quality of food grains at the time of purchase, storage conditions in the warehouse among others.

National Food Security Act – Limitations

- Use of Information Technology right from the time of purchase of food grains till its distribution is very limited.
- In absence of One Nation One Ration Card all beneficiaries especially migrants cannot access PDS across the nation.
- Coverage of Integrated Management of PDS (IMPDS) is limited to few states.

Conclusion

National Food Security Act marks a paradigm shift in addressing the problem of food security – from the current welfare approach to a right based approach. But as observed by SC, “combined effort, both by the Centre and states, needs to be taken for effective implementation of the Act”.

4. What are the limitations of the current methodology for targeting households for the public distribution system? Discuss. Can you suggest a more suitable targeting methodology?

Introduction

Public distribution system is a government-sponsored chain of shops entrusted with the work of distributing basic food and non-food commodities to the needy sections

of the society at very cheap prices. Wheat, rice, kerosene, sugar, etc. are a few major commodities distributed by the public distribution system.

Body

Limitations of the current methodology for targeting households for the public distribution system

- **Wrong classification of economic status:** Studies have shown that targeting mechanisms such as TPDS are prone to large inclusion and exclusion errors. This implies that entitled beneficiaries are not getting food grains while those that are ineligible are getting undue benefits. An expert group was set up in 2009 to advise the Ministry of Rural Development on the methodology for conducting the BPL census. It estimated that about 61% of the eligible population was excluded from the BPL list while 25% of non-poor households were included in the BPL list. Below Table categorizes states according to varying levels of errors of exclusion (of BPL families).

Table: Categorization of states according to high and low exclusion of BPL families from TPDS

<ul style="list-style-type: none"> • Low exclusion (less than 20%) 	<ul style="list-style-type: none"> • Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, Punjab, Rajasthan, Tamil Nadu
<ul style="list-style-type: none"> • High exclusion (more than 20%) 	<ul style="list-style-type: none"> • Assam, Bihar, Gujarat, Haryana, Karnataka, Maharashtra, Odisha, Uttar Pradesh, West Bengal

Source: "Performance Evaluation of Targeted Public Distribution System", Planning Commission,

- **Ghost Cards:** Another indicator of inaccurate classification of beneficiaries is the existence of ghost cards in several states. "Ghost cards" are cards made in the name of non-existent people. The existence of ghost cards indicates that grains are diverted from deserving households into the open market. Below Table shows states grouped according to the level of leakage of grains due to the existence of ghost cards.

Table: Leakage through ghost cards

<ul style="list-style-type: none"> • Moderate Leakage (less than 10%) 	<ul style="list-style-type: none"> • Andhra Pradesh, Haryana, Kerala, Punjab, Rajasthan, Tamil Nadu
<ul style="list-style-type: none"> • High Leakage (10% - 30%) 	<ul style="list-style-type: none"> • Bihar, Gujarat, Karnataka, Maharashtra, Odisha, Uttar Pradesh, West Bengal
<ul style="list-style-type: none"> • Very High Leakage (more than 30%) 	<ul style="list-style-type: none"> • Assam, Himachal Pradesh, Madhya Pradesh

Source: “Performance Evaluation of Targeted Public Distribution System”, Planning Commission,

- **Double Counting Error:** Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tamil Nadu and Uttar Pradesh have issued a large number of excess ration cards over the number of households. If the overall APL-BPL break-up of the ration cards in circulation is assumed, it is possible to arrive at estimates of leakages of BPL quota of grains through this mode of corruption.
- **Missing Households Error:** Assam, Bihar, Himachal Pradesh, Punjab and West Bengal have exhibited high Missing Households Error. Since no cards have been issued to these households, Missing Households Error implies welfare loss to the extent the BPL households have been left out of purview of TPDS.

More suitable targeting methodologies

- **Digitization of ration cards**
 - Allows for online entry and verification of beneficiary data.
 - Online storing of monthly entitlement of beneficiaries, number of dependents, off take of food grains by beneficiaries from FPS, etc.
- **Computerized allocation to FPS**
 - Computerizes FPS allocation, declaration of stock balance, web-based truck challans, etc.
 - Allows for quick and efficient tracking of transactions
- **Issue of smart cards in place of ration cards**
 - Secure electronic devices used to store beneficiary data
 - Stores data such as name, address, biometrics, BPL/APL category and monthly entitlement of beneficiaries and family members
 - Prevents counterfeiting
- **Use of GPS technology**
 - Use of Global Positioning System (GPS) technology to track movement of trucks carrying food grains from state depots to FPS
- **SMS based monitoring**
 - Allows monitoring by citizens so they can register their mobile numbers and send/receive SMS alerts during dispatch and arrival of TPDS commodities
- **Use of web-based citizens" portal**
 - Publicizes grievance redressal machinery, such as toll free number for call centers to register complaints or suggestions
- **Cash Transfers:** The National Food Security Act, 2013 includes cash transfers and food coupons as possible alternative mechanisms to the PDS. Beneficiaries would be given either cash or coupons by the state government, which they can exchange for food grains. Such programmes provide cash directly to a target group – usually poor households.
- **Food coupons** Food coupons are another alternative to PDS. Beneficiaries are given coupons in lieu of money, which can be used to buy food grains

from any grocery store. Under this system, grains will not be given at a subsidised rate to the PDS stores. Instead, beneficiaries will use the food coupons to purchase food grains from retailers (which could be PDS stores). Retailers take these coupons to the local bank and are reimbursed with money.

Conclusion

Public Distribution System is a crucial resource for the food security of the poor people, particularly the urban poor, and women, who manage household food supplies. It is a major challenge for government to increase food availability to the poor. Public Distribution System has played vital role in serving the poor people as many people earlier died because of malnutrition. When analysing in Indian context, India's Public Distribution System is the major distribution network of its kind in the world.

5. What role can technology play in addressing the challenges of food security in India? Illustrate.

Introduction

Food security will remain a worldwide concern for some time in future. In words of FAO, '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 preferences for an active and healthy life.'

Body

There has been no significant jump in crop yield in many areas stressing the need for higher investments in research and infrastructure, as well as addressing the issue of water scarcity.

Challenges of food security:

- Availability of food grains at affordable price: Total food grain production in India is estimated at 281.37 million tonnes during 2018-19. Considering the continuous increase in the population of India, will require 333MT of food grains by 2050 to maintain food security. Land and water resources are limited hence remains one of the major challenge.
- Crop diversification: It reduced the area under food grains and pulses where as there is increase in area under the fruits, vegetables and oil seeds.
- Climate change: Climate change is a crucial factor affecting food security in many regions including India. The changing climate will influence the food grain production in different ways. For example, deficit rainfall or flooding. Similarly, extreme high or low temperatures result in variations in the length of crop growing season.

- Land and Water resource Utilisation: The mismatch between the expanding demand for and supply of water emerging and spreading steadily over space and time.
- Dietary Patterns: It was reported that ever increasing human population coupled with their changing dietary preferences significantly increased global demand for food and thereby generating tremendous pressure on native vegetation and ecosystems.
- Bio fuels and Medicinal plants: One of the main reasons for food security crisis at global level is the diversion of agricultural lands that were used for cultivating maize and wheat to bio-fuel and medicinal plants.

Role of technology for food security in India:

One of the best ways to ensure food security in future is investing in new technologies that enable farmers to connect with information and institutions that can decrease uncertainty and mitigate risk.

- Connectivity and Information dissemination: The Gramin Krishi Mausam Seva of Earth System Science Organisation-Indian Meteorological Department has been successful in providing the crop specific advisories to the farmers through different print/visual/Radio/IT based media including short message service (SMS) and Interactive Voice Response Service (IVRS) facilitating for appropriate field level actions.
- Alert and real time weather forecast: Promotion of conservation farming and dry land agriculture, with each village provided with timely rainfall forecasts, along with weather-based forewarnings regarding crop pests and epidemics in various seasons, is necessary. With adoption of drought-tolerant breeds that could reduce production risks by up to 50%.
- Government initiatives: Krishi Vigyan Kendra organizes programs to show the efficacy of new technologies on farmer fields. It tests seed varieties or innovative farming methods, developed by ICAR institutes. This allows new technologies to be tested at the local level before being transferred to farmers.
- GM crops to increase production: Genetically modified organisms, or GMOs, are another important innovation in helping to increase agricultural productivity and to meet food demand.
- Secure seeds and fertilisers: The concepts of integrated nutrient management and integrated pest management have attained significance in the context of sustaining soil fertility and environmental protection. However, the realization of crop yields may take longer under these sustainable agricultural technologies.
- Geo tagging of rural infrastructure projects will help to reduce the corruption and in way money can be used for increasing production and ensure food security.
- Financial inclusion of farmers via JAM trinity: Enabling the quick and secure transfer of funds, mobile-banking services allow producers to access markets

more efficiently, reduce their transaction costs, and tap into higher-value market sectors.

- The options for combining crop component with animal component such as integrated rice-fish farming may be explored which would result in additional net returns to the farmers without affecting the food security.

Conclusion

Global Hunger Index of 2019, India ranked 102nd out of 117 countries and this report is quite disturbing because India is one of the largest producers of food in the world. To achieve Sustainable development goal of ending hunger by 2030, food security in India can be achieved by paying higher attention to technology driven solutions with farmer as central pivot.

