

# ECONOMIC SURVEY OF INDIA 2021-22

## KEY HIGHLIGHTS FOR UPSC CSE

### PRELIMS AND MAINS 2022

#### PART-5

#### Table of Contents

<b>1. Chapter-7: Agriculture and Food Management</b>	<b>2</b>
1) Introduction	2
2) Investment in Agriculture and Allied Sector	3
3) Agri-Production	3
a) Edible Oil	3
b) Extra Gyan on Palm Oil (not from ESI)	5
c) Sugar Sector	6
4) Minimum Support Price	6
5) Crop Diversification	7
6) Water and Irrigation	7
7) Agri-Marketing	8
a) Steps to link the farmers with markets	8
8) Sweet Revolution: National Beekeeping and Honey Mission	8
9) Situation Assessment Survey	9
10) Natural Farming	10
11) Allied Sector: Animal Husbandry and Dairying	10
a) Dairy Sector	11
b) Egg and Meat Production	11
12) Recent Initiatives in Animal Husbandry and Dairy Sector	11
a) National Animal Disease Control Program (NADCP)	12
b) Animal Husbandry Infrastructure Development Fund (AHIDF)	12
13) Fisheries	12
a) Extension of KCC facilities to fisheries in addition to animal husbandry farmers	12
b) Pradhan Mantri Matsya Sampada Yojana (PMMY)	12
14) Agriculture Research and Education	12

15)	Farm Mechanization.....	13
16)	Role of R&D in Agriculture.....	14
17)	Food Processing Sector .....	14
a)	Prime Minister-Formalization of Micro Food Processing Enterprise (PM-FME) .....	15
b)	Pradhan Mantri Kisan Sampada Yojna .....	15
c)	Operation Green Scheme.....	15
18)	Food Management .....	16
19)	Fortification of rice and its distribution.....	16
20)	One Nation One Ration Card .....	16
21)	Open Market Sale Scheme.....	17
22)	Food Subsidy .....	17
23)	Ethanol Blended With Petrol (EBP) Program.....	18
24)	Storage.....	18
25)	Fertilizers .....	19

# 1. CHAPTER-7: AGRICULTURE AND FOOD MANAGEMENT

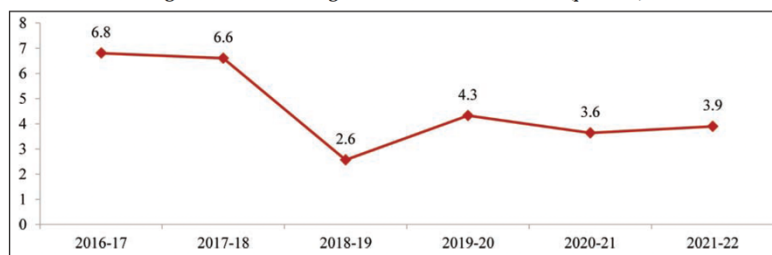
## 1) INTRODUCTION

- **Growth rate of agriculture and allied sector** -> **3.6% in 2020-21** and **3.9% in 2021-22**.

a) **Factors:** Good Monsoon; various government measures to enhance credit availability, improve investments, create market facilities, promote infrastructure development, in the agriculture and increase provision of quality input to the sector (including various initiatives under ANBA)

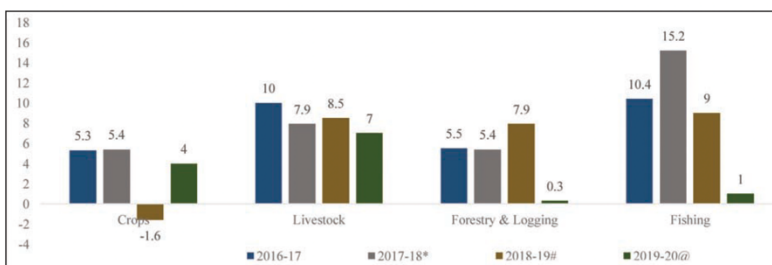
- **Livestock and fishery sector** have been experiencing buoyant growth and has helped overall sector perform well (for e.g., see the data for 2018-19)

Figure 1: Growth of Agriculture and Allied Sectors (per cent)



Source: First Advance Estimates of National Income, 2021-22

Figure 2: Growth of GVA of Agriculture & Allied Sector (at 2011-12 prices)

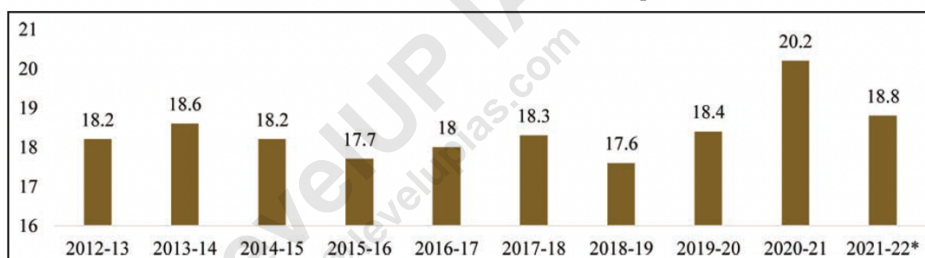


Source: Based on data received from Department of Agriculture & Farmers Welfare (DAFW).

\*Third revised estimate, #second revised estimate, @ First Revised Estimates released on 29th January, 2021.

- **Percentage share of Agriculture and allied sectors to Total GVA** of the economy at current price is **18.8%** in 2021-22 (as per first advanced estimate).

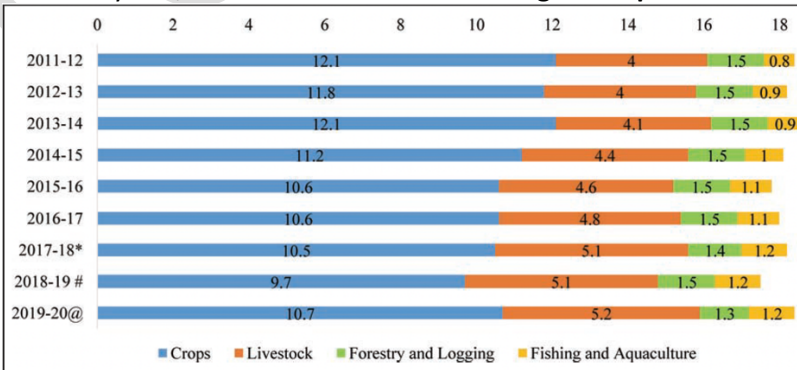
Figure 3: Percentage Share of GVA of Agriculture & Allied Sector to Total GVA (at current prices)



Source: Based on data of DAFW.

\*As per 1st Advance Estimates of National Income, 2021-22.

- Over the years, **share of Livestock and Fishing and Aquaculture** sector has been going up.

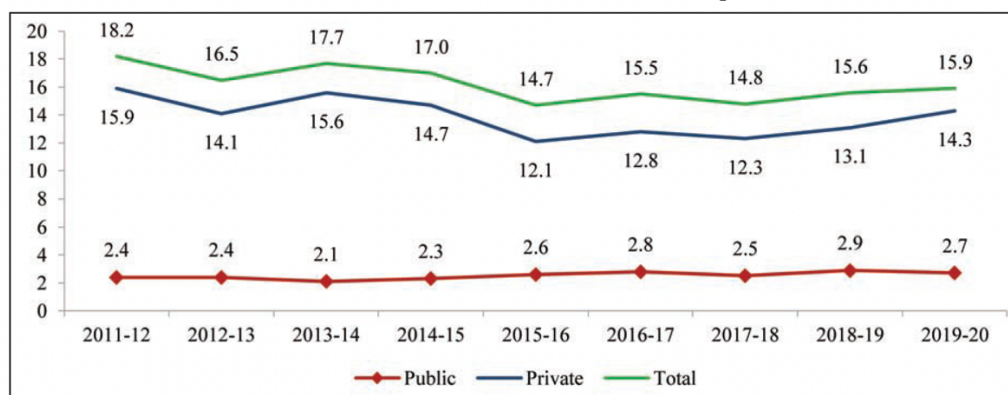


Source: Based on data of DAFW.

## 2) INVESTMENT IN AGRICULTURE AND ALLIED SECTOR

- The Gross Capital Formation (GCF) in agriculture and allied sectors relative to GVA in the sector has shown a **fluctuating trend**. It is mostly because of fluctuation of private investment. Public investment has remained stabled between 2-3% over the years.

Figure 5: Percentage Share of GCF in Agriculture and Allied Sectors Relative to Its GVA (at 2011-12 basic prices)



Source: Based on data of DAFW and Agricultural Statistics at a Glance, 2020.

- **Way forward:** Since there is correlation between capital investments in agriculture and its growth rate, there should be **focused and targeted approach** to ensure higher public and private investment in the sector.
  - a) Higher access to concessional institutional credit to farmers and greater participation of private corporate sector (whose investment rates are currently as low as 2-3% in agriculture), may help in improving private investment in agriculture.
  - b) Private corporate investments can be **attracted** by appropriate policy framework and increasing public investment along the entire agri-value system.

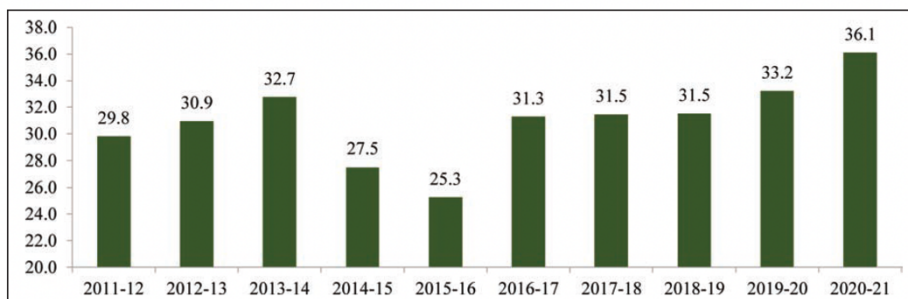
## 3) AGRI-PRODUCTION

- Total Agri-production in **2020-21** (as per the fourth advanced estimate): **record 308.65 million tonnes**.
  - a) As per the First Advanced Estimates for 2021-22 (**kharif only**), total foodgrains production in the country is estimated at a record level of 150.50 million tonnes which is higher by 0.94 million tonnes than 2020-21 Kharif production.
- The production of **rice, wheat and coarse cereals** has increased at compound annual growth rate (CAGR) of 2.7%, 2.9%, and 4.8% respectively during last six years i.e., 2015-16 to 2020-21.
- The **CAGR for pulses, oilseeds, and cotton** has been **7.9%, 6.1% and 2.8%**, respectively during the same period.

### A) EDIBLE OIL

- India is one of the major oilseeds growing country in the world. The production was fluctuating earlier, but since 2016-17 it has continuously grown. The production has increased to **36.1 million tonnes in 2020-21** which is 43% higher than the 2015-16 production.

Figure 7: Trend in Production of Oilseeds (Million Tonnes)



Source: Based on data of 4th Advanced Estimates as on Directorate of Economics & Statistics Website.



- But still, India is the largest importer of vegetable oil as the production has lagged behind consumption (India is the **second largest consumer**).

- **Vegetable oil consumption in India** is expected **increase further**:

- Increasing population
- Increasing urbanization (more consumption of processed food – which have high content of vegetable oil)

- As per the OECD-FAO Agriculture Outlook 2021-2030, India is projected to maintain a high per capita vegetable oil consumption growth of 2.6% per annum reaching **14 kg/capita by 2030** necessitating a **high import growth** of 3.4% per annum.

- **Government Initiatives** to reduce the import dependency has been focused on increasing the production and productivity of oilseeds:

- National Food Security Mission – Oil Seeds (NFSM-Oilseeds)**

- A centrally sponsored scheme
- Focused on **production of foundation and certified seeds** and **distribution** of certified seeds and seeds minikits of latest high yielding varieties.
- Under NFSM-Oilseeds, government of India has set up **36 oilseeds seed hubs** during 2018-19 and 2019-20 with an **objective to increase the availability of high yielding quality seed**.
- For **Kharif 2021**, a total of **9.25 lakh number of oilseed mini kits of high yielding varieties** have been allocated for distribution in all major oilseed growing states.

- Incentivization of oilseeds through MSP regime.**

- National Mission on Edible Oils – Oil Palm (NMEO-OP)** has been launched in **Aug 2021** to increase availability of edible oil in the country by harnessing area expansion and through price incentives.

- **Need of the scheme:**

- Currently, **98% of Crude Palm Oil (CPO) is being imported** (production and import of palm oil).

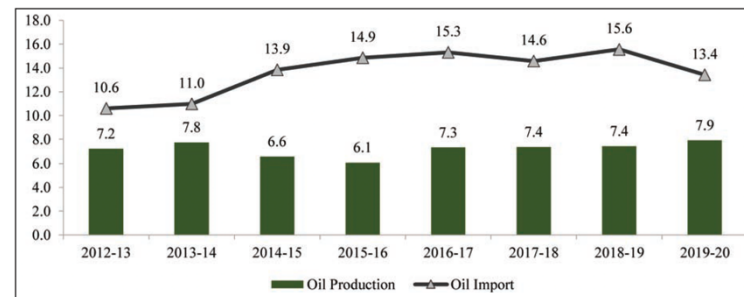
- Though India has **enormous potential** for cultivation of oil palm, at present **only 3.7 lakh hectares is under palm cultivation**.

- Oil palm **produces 10 to 46 times more oil per hectare** compared to other oilseed crops and has **yield of around 4 tons of oil per ha**.

- **AIMS AND TARGETS:**

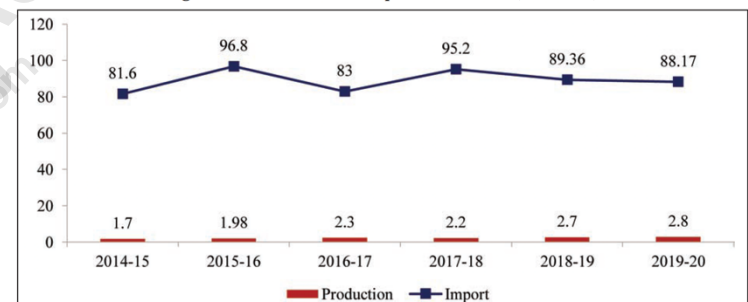
- An additional area of **6.5 lakh hectares** for oil palm till 2025-26 (thereby reaching a total area of 10 lakh hectare under oil palm)
- Increase **production of CPO to 11.20 lakh tonnes by 2025-26** and upto **28 lakh tonnes by 2029-30**.

Figure 8: Production & Import of Oil (Million Tonnes).



Source: Based on data of Agriculture Statistics at Glance, 2020.

Figure 9: Production and Import of Palm Oil (Lakh Ton)



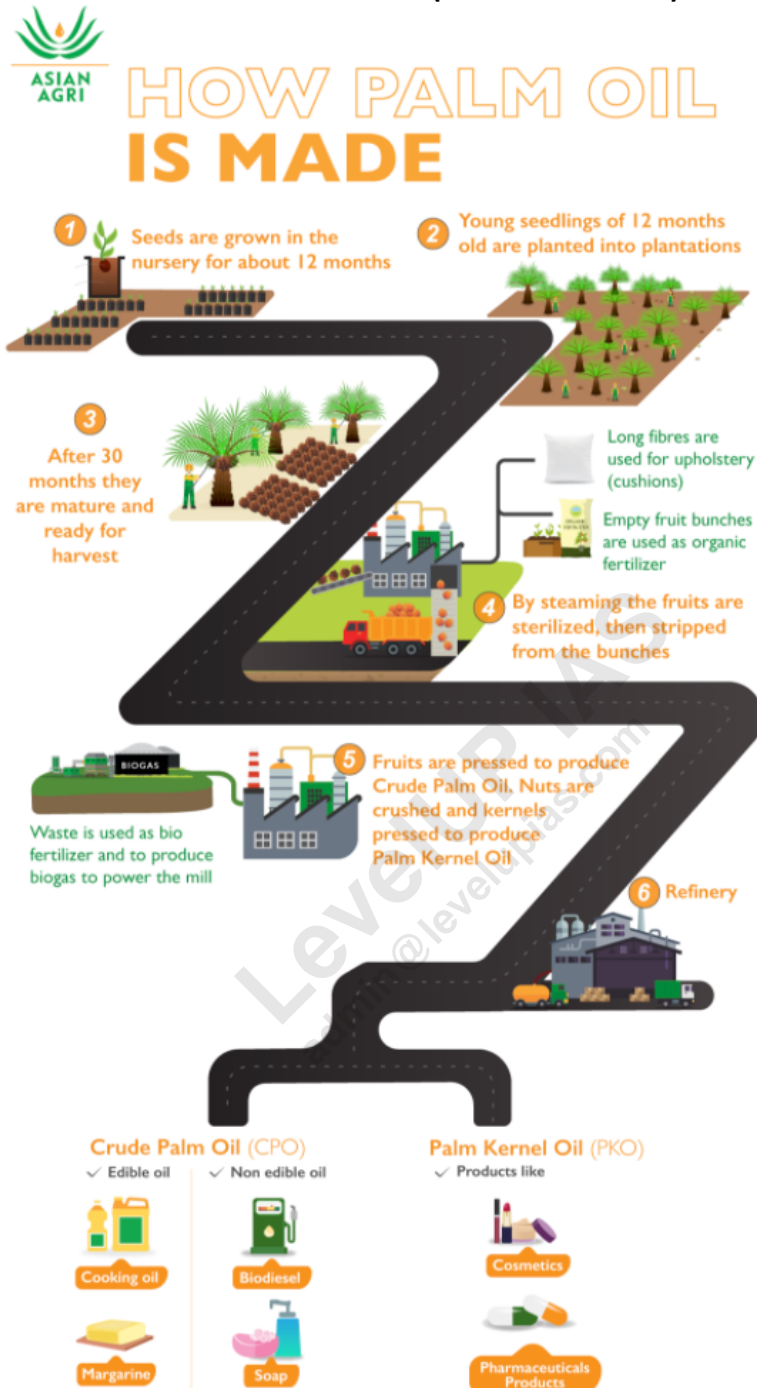
Source: Based on data of Agriculture Statistics at Glance, 2020 and DAFW.

- Under this, for the first time, Government will give a **price assurance to the oil palm farmers for the Fresh Fruit Bunches (FFBs)**. This will be known as the **Viability Price (VP)** which will protect the farmers from the fluctuation of the international **crude palm oil (CPO)** prices.

**Extra Notes about FFBs:**

Palm oil fruit grow in dense bunches known as **Fresh Fruit Bunches**. To harvest the FFB, the harvester uses a long sickle to remove it from the palm tree. FFB which are ready to be harvested can be easily identified due to the bright red-orange color of their palm fruit.

## B) EXTRA GYAN ON PALM OIL (NOT FROM ESI)



### C) SUGAR SECTOR

- Sugar industry is India's 2<sup>nd</sup> largest agro-based industry, next to cotton. It impacts 5 crore farmers and their families.
- India is the largest consumer and the 2<sup>nd</sup> largest producer of sugar in the world (Brazil ranks 1 and China ranks -3)
- **Average annual production of sugarcane is 350 million tonnes** which is used to produce around **30 million tonnes of sugar**.
- Over the year (since 2010-11, except 2016-17), India has become a **sugar surplus country**. India consumes around 26 million tonnes of sugar.
- **Factors behind high production:**
  - a) **Fair and Remunerative Price (FRP):** The interest of sugarcane farmers is protected by FRP which has doubled in a span of 10 years. (Rs 145/quintal in 2011-12 to Rs 290 per quintal in 2021-22)
  - b) **State advised Price (SAP):** Some states announce SAP at levels higher than FRP.
  - c) **Cane Reservation Area (CRA):** Sugar mills that buy sugarcane are mandated to purchase crops from farmers within a specified radius known as CRA. In this way, sugarcane farmers are insured and protected against price risk.
  - d) **Various steps to help sugar mills:**
    - **Excess sugar** can be diverted for ethanol production.

### 4) MINIMUM SUPPORT PRICE

- **What does MSP achieve?**
  - Remunerative prices for farmers
  - Incentivize growing of crop in short supply -> benefit consumers
- **Which agri crops are covered under MSP?**
  - Government fixes **MSP for 22 crops** (FRP for sugarcane) on the recommendation of Commission for Agriculture Costs & Prices (CACP) and after due consideration of the views of state governments and concerned ministries/departments.
    - **14 Kharif Crops:** Paddy, jowar, bajra, maize, ragi, tur (Arhar), moong, urad, groundnut, soybean (yellow), sunflower seed, sesamum, nigerseed and cotton.
    - **6 Rabi Crops:** Wheat, barley, gram, masur (lentil), rapeseed and mustard, and safflower.
    - **2 commercial crops:** Jute and Copra
  - In addition, MSP For Toria and de-husked coconut are fixed on the basis of MSPs of rapeseed & mustard, and Copra respectively.
- **How does CACP determine MSP/ What are the factors considered by it?**
  - CACP considers important factors like cost of production, overall demand-supply conditions, domestic and international prices, inter-crop price parity, terms of trade between agri and non-agri sector, the likely effect on the rest of the economy, ensuring rational utilization of the land, water and other production resources and a minimum of 50% as the margin over cost of production.
- **Budget 2018-19** announced the predetermined principle to keep MSP at the level of one and half times of the cost of production.
- In 2021-22, MSP increase was announced for all the mandated Kharif crops. The highest absolute increase in MSP over the previous year has been recommended by sesamum (Rs 452 per quintal) followed by Tur and urad (Rs 300 per quintal).
- The **expected return (over cost of production)** for various crops are -> **Bajra (85%), Urad (65%), Tur (62%)** and at least 50% for rest of the crops.
- In **2021-22**, Rabi season also MSP was increased for all mandated crops. Highest increase was for lentil, mustard & rapeseed (Rs 4,00 per quintal).

## 5) CROP DIVERSIFICATION

### - Introduction

- Crops diversification refers to shift in cropping pattern from one or a few crops to other crops which are more profitable, sustainable or less resource intensive.

### - Advantages:

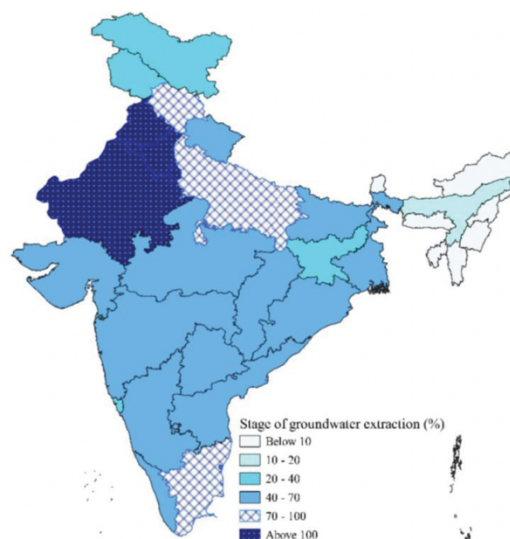
- Crop diversification improves soil health, productivity and thereby profitability of cultivation.
- It provides better resistance against price fluctuations.
- Improves the availability of fodder for livestock animals.
- Reduce dependence on off-farm input like fertilizer, water etc.
- Decrease farm vulnerability from insects, pests, weed etc.
- Diversification into high value crops and horticulture crops is important for food security and increasing farmer's income.
- **Monoculture as seen in Haryana, Punjab and Odisha is associated with high risk:** It leads to declining productivity, lower fertilizer response ratio, degradation of soil health, and declining profitability of cultivation.
- diversification also leads to **better nutritional security.**
- The existing cropping pattern is skewed towards cultivation of sugarcane, paddy and wheat which has led to depletion of fresh ground water resources at an alarming rate in many part of our country.

### - Steps taken to promote diversification

- **Crops Diversification Program** (a sub scheme under RKVY) is being implemented by government in **original green revolution states** viz. Punjab, Haryana, and in Western Uttar Pradesh to diversify paddy areas towards less water requiring crops like oil seeds, pulses, coarse cereals, agro-forestry, and **shifting of tobacco farmers** to alternative cropping system in tobacco growing states viz. Andhra Pradesh, Bihar, Gujarat, Karnataka, Maharashtra, Odisha, TN, Telangana, Uttar Pradesh and West Bengal wef from 2015-16.
  - Under CDP, assistance is provided to states for conducting cluster demonstration on alternate crops, promotion of water saving technologies, distribution of farm machineries, setting up of value addition facilities, awareness through training etc.
- **Crop Diversification through Price Policy** -> Increasing MSP for crops which need to be promoted

## 6) WATER AND IRRIGATION

- **Water** is a critical input for agriculture which accounts for about 80% of the current use in the country. The share of net irrigated area accounts for about 49% of the net sown area in the country and out of the net irrigated area 40% is irrigated through canal systems and 60% through groundwater.
- The **overall stage of ground water development** (ratio of annual ground water draft and net annual ground water availability) in the country is **63%.** This ratio, which signifies the rate of extraction of ground water, is very high in the States/Uts of Delhi, Haryana, Punjab, and Rajasthan. Himachal Pradesh, Tamil Nadu, Uttar Pradesh and UTs of Chandigarh and Puducherry falls in the **medium category** with the ratio ranging between **70-100 per cent** (Map 2). These States may need to focus on both medium- and long-term ground water recharge and conservation plans.
- **Solution:**



- To promote micro-irrigation a **Micro Irrigation Fund (MIF)** with corpus of Rs 5,000 crore was created with NABARD during 2018-19. As of 1st Dec 2021, loans under MIF amounting to Rs 3,970.17 crores have been approved for 12.81 lakh ha of Micro Irrigation area.
- Micro irrigation is also being promoted through the **Per Drop More Crop component** of PMKSY (PMKSY-PDMC) from 2015-16. Under this, as on 14.12.2021, total area of 59.37 lakh ha has been covered under micro irrigation in the country from 2015-16.

## 7) AGRI-MARKETING

### A) STEPS TO LINK THE FARMERS WITH MARKETS

- **APMC Mandis strengthening:** Wholesale agri marketing is undertaken by the network of 6946 regulated wholesale markets, set up under the provisions of respective State APMC Acts.
  - **Key Steps taken:**
    - **Recognition of APMCs as one of the eligible entities under Agriculture Infrastructure Fund (AIF):** To further strengthen the infrastructure in APMC mandis.
    - **All loans under the AIF have interest subvention of 3% per annum upto a limit of Rs 2 crores.** This subvention is available for a maximum period of 7 years.
    - **APMCs** are eligible for multiple projects (of different infrastructure type) within their designated market area. In such cases, interest subvention for a loan upto Rs 2 crores will be provided for each project of different infrastructure types e.g., cold storage, sorting, grading and assaying units, silos, etc. within the designated market area of the APMC.
- **E-NAM Scheme** was launched in 2016 with the objective of creating online transparent competitive bidding system to facilitate farmers with remunerative prices for their produce. Under this, government provides free software and assistance of Rs 75 lakh per APMC mandi for related hardware including quality assaying equipment and creation of infrastructure like cleaning, grading, sorting, packaging, and compost unit.
  - **As of Dec 2021**, 1,000 Mandis of 18 states and 3 Uts have been integrated with e-NAM platform.
- **Central Sector Scheme of “Formation and Promotion of 10,000 Farmer Producer Organizations (FPOs)”**.
  - To form and promote 10,000 new FPOs till 2027-28.
  - Under the scheme, formation and promotion is based on Produce Cluster Area approach and specialized commodity-based approach. While adopting cluster-based approach, formation of FPOs focuses on “One District One Product” to enable product specialization.
  - The objective is to enhance productivity through efficient, cost effective and sustainable resource use and realize higher returns through better liquidity and market linkages for their produce and to become sustainable through collective action.
  - As of **Jan 2022**, a total of 1963 FPOs have been registered under the scheme.

## 8) SWEET REVOLUTION: NATIONAL BEEKEEPING AND HONEY MISSION

- Beekeeping is very crucial for integrated farming system. To promote beekeeping, government has approved the allocation of **Rs 500 crore for National Beekeeping & Honey Mission (NBHM) for three years (2020-21 to 2022-23)**. The mission was announced as part of the **ANB scheme**.
  - As of Dec 2021, total 45 projects for assistance of Rs 88.7 have been approved/sanctioned.
- **Aim:** Overall promotion & development of scientific beekeeping in the country to achieve the goal of “Sweet Revolution” which is being implemented through National Bee Board (NBB).
- **Some basics about beekeeping:**
  - Beekeeping is an agro-based activity undertaken by farmers/ landless labourers in rural area as part of the IFS.



- **Advantages of Beekeeping:**
  - Useful in pollination of crops
  - Increased income for farmers/beekeepers – by way of increasing crop yield, and providing honey and other high value beehive products, viz.; bee wax, bee pollen, propolis, royal jelly, bee venom, etc.
  - Diversified agro-climatic conditions of India provide great potential and opportunities for beekeeping/honey production and export of honey.
  - **Export:** India's export of honey has increased by about 110% between 2013-14 to 2019-20.

## 9) SITUATION ASSESSMENT SURVEY

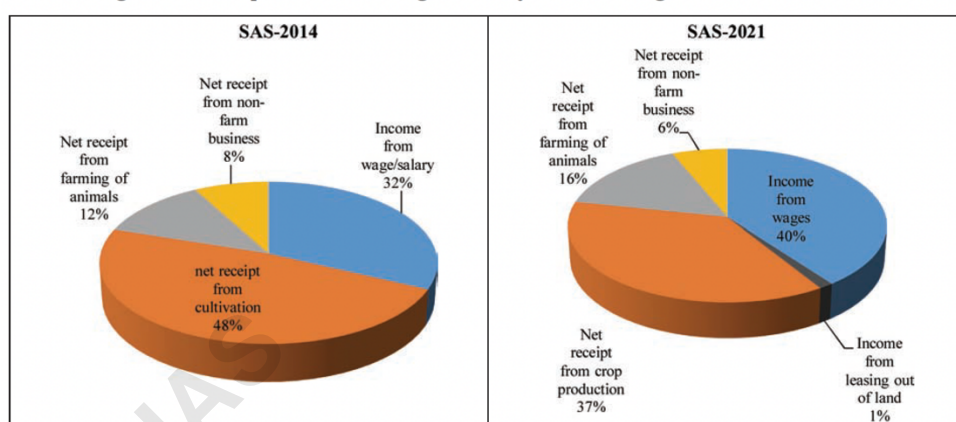
### ▫ What is Situation Assessment Survey?

- The National Statistical Office (NSO) in its 77<sup>th</sup> round of survey, conducted during the period 1st January 2019 to 31st December 2019, carried out a **survey on “Land and Livestock Holdings of Households and Situation Assessment of Agricultural Households”** (henceforth referred as SAS) in the rural areas of India. The Report was released in September 2021. The last SAS was published in 2014.
- The SAS survey reveals various socio-economic aspects of agri households:

- **Average monthly income** per **agricultural households**, as per the paid-out expenses approach, was **Rs 10,218** (it was Rs 6426 in 2014 survey).

- **The net receipts from the crop production** alone have increased by 22.6% as compared to previous SAS report. The net receipts from other sources increased by 92.6% with increase in overall net receipts at 59 percent.

Figure 16: Composition of Average Monthly Income of Agricultural Households

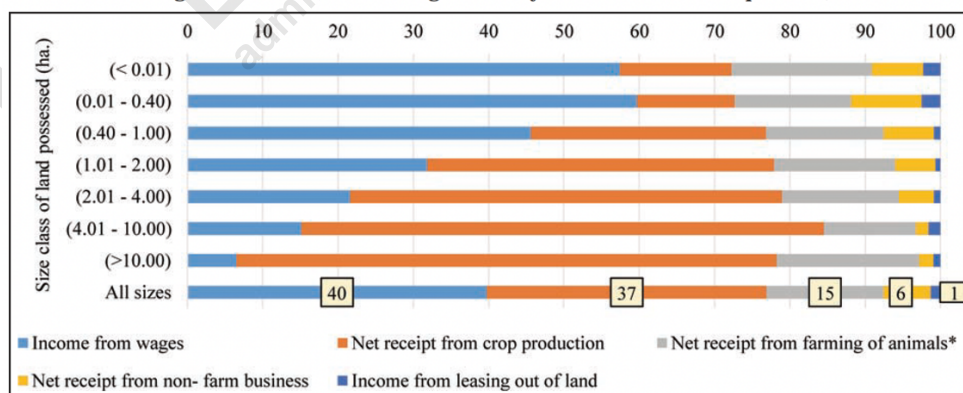


Source: Based on data of SAS, 2014 and SAS, 2021.

- The sources of incomes as per the two SAS reports is given below: The crop income with a share of 37% continues to be an important source of farmer's income although there is a visible diversification in the sources of income of the farmers.

### • Class-wise distribution of income among agri-households

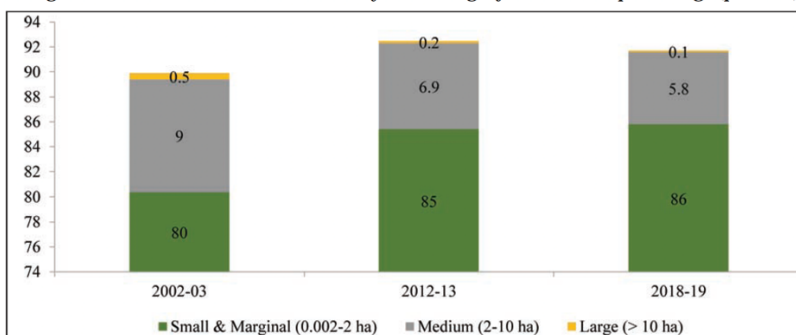
Figure 17: Sources of Average Monthly Income Class-wise (per cent)



Source: Based on data of SAS, 2021.

- The report also shows that there is an increasing fragmentation of holdings as is evident from the increasing share of small farmers. The **average size of household ownership holdings** has **declined** from 0.725 hectare in 2003 to 0.592 ha in 2013 and further to **0.512 ha** in 2019.

Figure 18: Distribution of Households by Size Category of Ownership Holdings (per cent)



Source: Based on data of SAS, 2021.

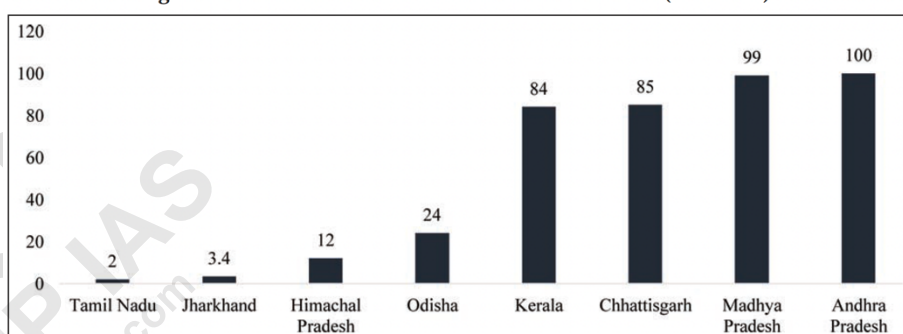
- **Implications:** Increasing number of small farmers and increasing importance of livestock sector requires increased focus on the measures like development of small farm technology, boosting non-farm businesses and development of allied activities including animal husbandry, dairying, and fisheries.

## 10) NATURAL FARMING

### - Advantages of natural farming:

- **Eliminate chemical fertilizer and pesticides**
- Promotes good agronomic practices
- Sustain agri-production with eco-friendly processes in tune with nature
- Restore soil fertility and soil organic matter
- Water efficient and climate friendly.

Figure 19: Area Covered under BPKP as on 07.12.2021 (in '000 ha).



Source: Based on data of the Ministry of Agriculture and Farmers Welfare

### - Scheme to promote natural farming: Bhartiya Prakritik Krishi Paddhati Program (BPKP).

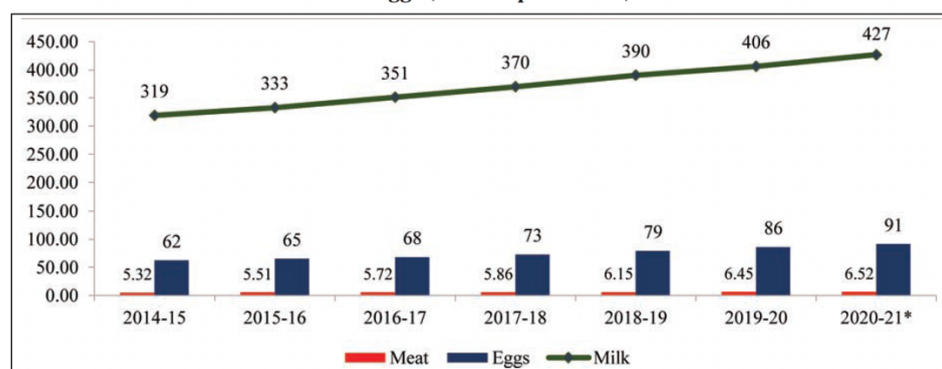
- It is a sub-scheme under Paramparagat Krishi Vikas Yojna (PKVY).
- It promotes on farm biomass recycling with major stress on biomass mulching.
- Use of on-farm cow dung-urine formations
- Periodic soil aeration
- Exclusion of all synthetic chemical input.

- Under BPKP, financial assistance of Rs 12200/ha for 3 years is provided for cluster formation, capacity building and continuous handholding by trained personnel, certification, and residue analysis.

## 11) ALLIED SECTOR: ANIMAL HUSBANDRY AND DAIRYING

- **Livestock sector** is an important sub-sector of agriculture. It grew at a **CAGR of 8.15%** during 2014-15 to 2019-20 (at constant prices).
- **Contribution of livestock** in total agriculture and allied sectors GVA has **increased from 24.32% (2014-15) to 29.35% (2019-20)**. The sector contributed to **4.35%** of India's total GVA in 2019-20.
- The development of livestock sector has led to an increase in per-capita availability of milk, eggs, and meat.

Figure 20: Per Capita Availability of Milk (gram per day), Meat (kg per year) and Eggs (number per annum)

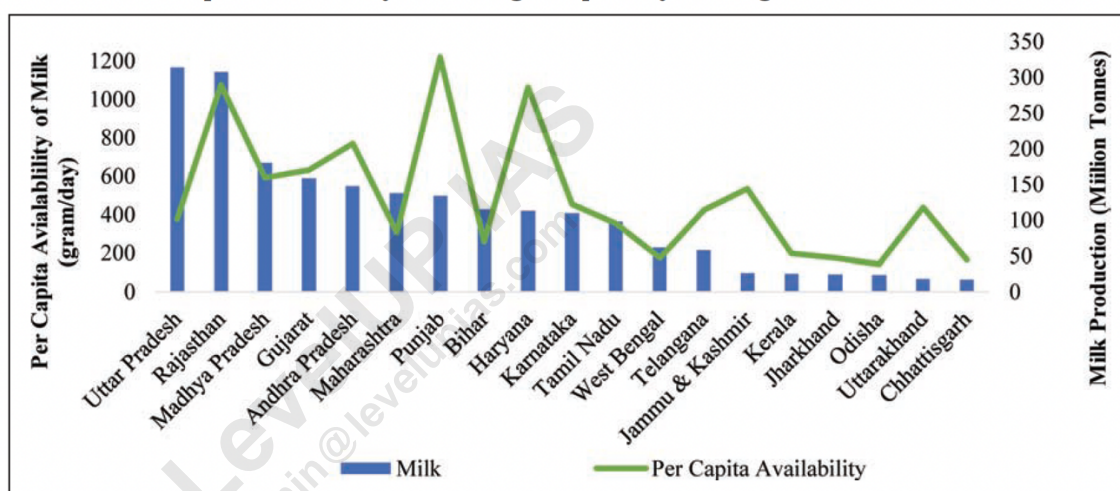


Source: Based on data received from Department of Animal Husbandry & Dairying

## A) DAIRY SECTOR

- Dairy is the single largest agri-commodity contributing to 5% of national income and employing more than 8 crore farmers.
- In terms of **milk production**, India is **ranked one**. India's milk production has **consistently increased** from 146.31 million tonnes in 2014-15 to **209.96 million tonnes** in 2020-21 (compound AGR of about **6.2%**).
- The all India, **per capita availability** of milk is **427 g per day** in 2020-21.
- **Inter-state variation in milk production and per-capita availability:**

Figure 22: Inter-State Variability in Milk Production (in million tonnes) & Per Capita Availability of Milk (gram per day) during the Year (2020-21\*).



Source: DAHD.

\*Data is provisional

## B) EGG AND MEAT PRODUCTION

- According to FAOSTAT production data (2020), India ranks 3 in Egg production and 8<sup>th</sup> in meat production in the world.
- **Egg Production:** The current (2020-21 – provisional) egg production in India is **122.11 billion** (i.e. per capital availability of 91 eggs per annum).
- **Meat Production** in the country has increased from 6.69 million tonnes in 2014-15 to **8.80 million tonnes** in 2020-21.

## 12) RECENT INITIATIVES IN ANIMAL HUSBANDRY AND DAIRY SECTOR

#### A) NATIONAL ANIMAL DISEASE CONTROL PROGRAM (NADCP)

- It is the largest ever vaccination program carried out either for human or animal vaccination in the world. It is aimed at controlling and eventually eradicating the FMD and Brucellosis by 2030.
- Vaccination under NADCP was started in 31<sup>st</sup> Jan 2020 but then got disrupted by COVID-19.
  - o **FMD vaccination** had so far been completed in 11 states.

#### B) ANIMAL HUSBANDRY INFRASTRUCTURE DEVELOPMENT FUND (AHIDF)

- Launched as part of ANB.
- The fund is **worth Rs 15,000 crore**.
- It facilitates investment in the establishment of infrastructure, for dairy and meat processing and establishment of animal feed plants by the FPOs, individual entrepreneurs, MSME, Section 8 companies, and private companies.
- Government provides 3% interest subvention to the borrower and credit guarantee upto 25% of total borrowing.

### 13) FISHERIES

- India is the **second largest fish producing country** in the world accounting for **7.56 per cent of global production**. It contributes about 1.24 per cent to the country's GVA and over 7.28 per cent to the agricultural GVA.
- **Growth:** outstanding, double digit average annual growth of **10.87%** since 2014-15 with record fish production of **145 lakh tons in FY 2020-21**.
- **Employment:** It supports the livelihood of over 28 million people especially the marginalized and vulnerable communities.
- **Export earnings** from fishery sector was of more than 46,000 crores during 2019-20.
- **Steps taken by government:**

#### A) EXTENSION OF KCC FACILITIES TO FISHERIES IN ADDITION TO ANIMAL HUSBANDRY FARMERS

- Done in 2018-19

#### B) PRADHAN MANTRI MATSYA SAMPADA YOJANA (PMMY)

- Flagship scheme of Rs 20,050 crores under ANB package
- Key interventions include enhancing fish production and productivity, modernizing and strengthening the value chain, creating fisheries and post-harvest infrastructure, and developing robust fisheries management and regulatory frameworks.
- Emphasis is laid on addressing critical gaps in the value chain through technology infusion, optimal water management to achieve 'more crop per drop', improved quality and hygiene of fish and fish products, insurance, value addition, demand-based branding and marketing and promotion of initiatives bringing economic returns for stakeholders.
- Prioritizes **sustainability and traceability from 'catch to consumer'** for augmenting fisheries exports and maintaining competitiveness in the global markets.
- The scheme **aims** to create a conducive environment for private sector participation and promotes the dynamic development of innovative entrepreneurial ventures and viable business models in the fisheries sector.

### 14) AGRICULTURE RESEARCH AND EDUCATION



- Agricultural research and education has a key role in the development of an environmentally sustainable global food system, ensuring food and nutritional security and increasing farm income by cost minimization and yield maximization.
- **Key achievements of National Agriculture Research System** of India in Agri Research and Education:
  - a) In 2020, and 2021, ICAR notified/released a total of 731 new varieties/hybrids of field crops and 98 of horticulture crops.
  - b) Department of Agriculture Research and Education (DARE) has developed 35 special trait varieties including biofortified and stress tolerant. Total number of biofortified varieties have now increased to 87.
  - c) ICAR has also designed and developed an Agri-Voltaic system with an average photovoltaic (PV) generation of 1,29,266 kWh annual power output and a total revenue of about Rs 6 lakh.

## 15) FARM MECHANIZATION

- **Introduction**
  - Farm/Agri mechanization is the process of replacing human and animal labour with machines in agriculture sector. The use of tractors, threshers, harvesters, pump sets etc. are all steps towards farm mechanization.
- **Advantages of Farm Mechanization-** Increased Productivity - Reduced time and labor - Reduced Cost - Increased soil fertility - reduced water use - Reduced post-harvest losses - no labor bottlenecks - create skilled jobs - Overall increased income for farmers.
- **Other reasons why farm mechanization should be promoted** - Future shortage of workforce; making our agri-exports more competitive; Boost to India's power sector
- **Some Limitations/disadvantages of farm mechanizations** -> Reduced employment; More energy use (fossil fuels -> GHGs -> Climate Change)
- **Status of farm mechanization in India**
  - As per NABARD, penetration of mechanization in farm activities is between 40-45%. Countries like USA (95%) Western Europe (95%), Brazil (75%), and China (57%) have higher level of mechanization.
  - Mechanization in farm operations for major crops in India in 2019-20 has been 70, 38, 31 and 32 % in seed bed preparation, sowing/planting/transplanting, weeding-interculture and plant protection and harvesting & threshing, respectively.
  - But still there are a **number of factors which hinder mechanization** - small landholdings, Expensive equipment, Less use of equipment (only during harvesting or sowing), custom duties, lack of trained workforce, electricity issues in rural areas etc.
- **Schemes for Agriculture Mechanization**
  - **Sub-Mission on Agriculture Mechanization (SMAM)**
    - Launched in 2014-15
    - Ministry: MoA&FW
    - Objective
      - To promote agricultural mechanization among small and marginal farmers.
    - Under the scheme, assistance is provided to state governments to:
      - Impart training and demonstration of agriculture machinery.
      - provide assistance to farmers for procurement of various agri-machineries and equipment and.
      - for setting up of Custom Hiring Centers.
  - **The Scheme for CRM (Crop Residue Management): 'Promotion of Agriculture Mechanization for In-situ management of Crop Residue in the State of Punjab, Haryana, Uttar Pradesh and NCT of Delhi'**
    - Initiated in 2018
    - **Ministry:** MoA&FW, Central Sector



- Farmers are provided machinery for in-situ management of crop residue through establishments of **Custom Hiring Centers**. **80% subsidy** is provided for establishment of CHCs.
- **Individual farmers** are provided subsidy (50%) for procurement of machinery.
- **In Budget 2020-21** a total allocation of Rs 600 crore has been provided of which Rs 548.20 crore has already been released.

### 3. Multilingual Mobile App - "CHC - Farm Machinery"

- It connects farmers with CHCs situated in the locality.
  - It facilitates agri-mechanization in the country by encouraging small and marginal farmers to take machines on rental basis for agri-practices.
  - The app has been further modified and now has been given the acronym of "**FARMS-App**" (Farm Machinery Solutions - App). This version is more user friendly, and the scope of the app has been enhanced.
- **Sale of tractors and power tillers may be used as an indicator of farm mechanization**
- Indian tractor industry is the largest in the world accounting for one-third of the total production.
  - The farm equipment market in India is estimated at USD 8.8 billion in 2017 and it is expected to reach USD 12.5 billion by 2022. The Tractor market is expected to grow at a CAGR of 7% by 2022.

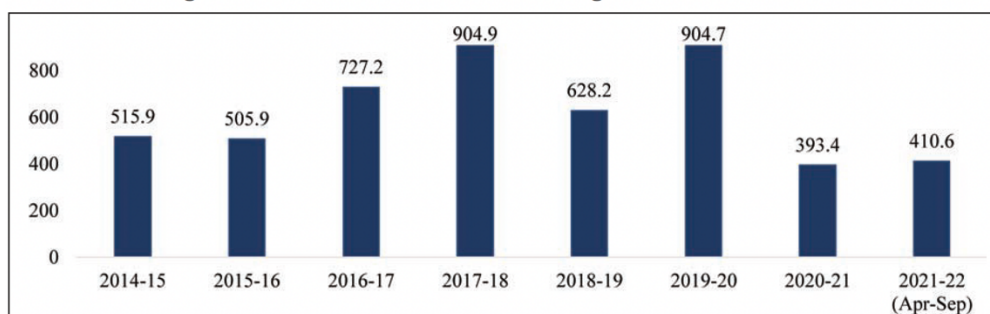
## 16) ROLE OF R&D IN AGRICULTURE

- Studies/research show that every rupee spent on agricultural research and development, yields much better return (11.2), compared to return on every rupee spent on fertilizers subsidy (0.88), power subsidy (0.79), education (0.97) or on roads (1.10).

## 17) FOOD PROCESSING SECTOR

- **Growth Rate:** Average **11.8% in last five years** ending 2019-20.
- **Contribution** to economy: the sector contributes as much as 9.87% to the manufacturing GVA.
- **Employment:** FPI is an employment intensive sector. It contributed to 12.38% of all employment generated in all registered factory sector in 2017-18. As per ESI 2021-22 more than 70 lakh workers are engaged in registered FPIs and unorganized Food processing industries.
- **Foreign Direct Investment:**
  - In Food Processing Industries, 100% FDI is permitted through automatic route.
  - For Trading with respect to food products manufactured and/or produced in India including through e-commerce, 100% FDI is allowed under the Government approval route.
  - FDI inflows in the sector has been fluctuating.

Figure 25: FDI Inflows in Food Processing Sector (in US \$ million)



Source: Based on data received from Ministry of Food Processing Industries (MoFPI).

- **Schemes to promote Food Processing Industries:**

## A) PRIME MINISTER-FORMALIZATION OF MICRO FOOD PROCESSING ENTERPRISE (PM-FME)

- Launched under ANB with a total outlay of Rs 10,000 crores over the period 2020-25.
- Centrally sponsored (60:40 (90:10)) – Centre: State
- The scheme is expected to benefit 2 lakh micro food processing units through credit linked subsidy.
- **Key Steps Planned:**
  - **Credit Linked Subsidy @35%** to micro food processing enterprises, FPOs, SHGs, Producer Cooperatives etc.
  - **Seed capital @Rs 40,000 per SHG member** would be provided for working capital and purchase of small tools.
  - **Support for development of Common infrastructure** - through **credit linked grant @35%** for development of common infrastructure including common processing facility, lab, warehouse, cold storage, packaging and incubation centre through FPOs/SHGs/ cooperatives or state owned agencies or private enterprises to use by micro units in the cluster.
  - **Support for marketing and branding** would be provided to develop brands for micro units and groups with 50% grant at State or regional level which could benefit large number of micro units in clusters.
  - **Special focus on Capacity Building and Research**
  - **NIFTEM and IIFPT**, the two academic institutions under MoFPI along with state level technical institutions selected by state would be provided support for training of units, product development, appropriate packaging, and machinery for micro units.
- The scheme adopts **one district one product approach** (ODOP) to reap **benefit of scale** in terms of procurement of inputs, availing common services, and marketing of products.
  - The state will identify the food product for a district keeping in view the existing clusters and availability of raw material.
  - ODOP product could be cereal based, perishable or a food product widely produced in a district and their allied sector. E.g., mango, potato, litchi, bhujia, petha, papad, fisheries, poultry, meat, animal feed etc.
  - Preference would be given to ODOP product, but other units would also be supported.
  - But support of common infrastructure, branding, marketing etc. would be available for ODOP only.
- The scheme also places focus on waste to wealth products, minor forest products and **Aspirational districts**.

## B) PRADHAN MANTRI KISAN SAMPADA YOJNA

- Under the **umbrella central sector scheme PMKSY**, the Ministry is implementing various component schemes, inter-alia, including (i) Mega Food Parks, (ii) Integrated Cold Chain and Value Addition Infrastructure, (iii) Infrastructure for Agro-processing Clusters, (iv) Creation of Backward and Forward Linkages (v) Creation / Expansion of Food Processing & Preservation Capacities, (vi) Operation Greens and (vii) Food Testing Laboratories.

## C) OPERATION GREEN SCHEME

- Announced in Budget 2018-19 to improve growth, production and supply chain management of Tomato, Onion and Potato
- It was launched with **two components**:
  - a) **Long term: Value Chain Development Projects** - Under this, support is provided to capital investment projects for TOP crops. In pursuance of Budget announcement 2021-22, the scope of this scheme has been expanded from TOP to Twenty-Two Perishable products.

- b) **Short term: Price Stabilization Measures** - Under this, subsidy is provided at the rate of 50 per cent on transportation and storage at the time of harvest for evacuation of surplus production of TOP crops from the producing area to the consumption centres.
- Transportation subsidy under the scheme was also extended to Kisan Rail Scheme w.e.f. 12.10.2020.
  - The scope of short-term measures under the scheme was extended from TOP to TOTAL (41 notified fruits and vegetables) w.e.f. 11.06.2020 as a part of ANB announcement.

## 18) FOOD MANAGEMENT

- **Objectives of Food Management:**
  - Procurement of food grains from farmers at remunerative prices.
  - Distribution of food grains to consumers, particularly vulnerable sections of society at affordable prices
  - Maintenance of buffer stock for food security and price stability.
- **Instruments of Food Management**
  - **Procurement at MSP**
  - Sale at **Central Issue Price (CIP)** under the TPDS.
  - The distribution of foodgrains is undertaken primarily under NFSA and other welfare schemes of Gol.
- The nodal agency which undertakes procurement, distribution, and storage of food grains is the **Food Corporation of India (FCI).**

## 19) FORTIFICATION OF RICE AND ITS DISTRIBUTION

- The Government of India approved the Centrally sponsored Pilot Scheme '**Fortification of Rice and its Distribution under PDS**' in Feb 2019 for a period of 3 years beginning 2019-20.
- The Pilot Scheme is being implemented in 15 districts (1 district per state). Eleven States including Andhra Pradesh, Gujarat, Maharashtra, Tamil Nadu, Chhattisgarh, Uttar Pradesh, Odisha, Telangana, Madhya Pradesh, Uttarakhand and Jharkhand have started distributing the fortified rice in their identified districts under the pilot scheme.
- Government have also started distributing fortified rice under ICDS and PM Poshan Schemes across the country during 2021-22 in an effort to scale up distribution of fortified rice in the country to fight malnutrition and micronutrient deficiencies among pregnant women, lactating mothers, children etc.

## 20) ONE NATION ONE RATION CARD

- Under the scheme "**Integrated Management of Public Distribution System (PDS)**" which was started during 2018-19 and 2019-20, ONORC system has been launched.
- Under this system, the migratory beneficiaries will be able to buy subsidized food grains **from any FPS shop in the country**, by using the same ration card after biometric/Aadhar authentication on electronic Point of Sale (ePoS) devices at FPS.
- **How will it work?**
  - The beneficiary will be identified through biometric authentication on electronic Point of Sale (ePoS) devices installed at the FPSs. This will enable her to purchase the entitled food grains under the NFSA.
  - **Integrated Management of Public Distribution System (IM-PDS)** portal, launched in 2018, provides the technical platform for the inter-state portability of ration cards, enabling migrant workers to buy food grains from any FPS across the country.

- **Annavitran.nic.in** hosts the data of distribution of foodgrains through E-PoS devices within a state.
    - It allows availing of PDS benefit outside the district but within the home state.
- **How much foodgrains can be procured?**
  - Only the migrants' entitlement, the rest of the grains would be procured by the family back home.
- **Steps being taken**
  - **Seeding of Ration Cards** with Aadhaar numbers, **Installation of ePOS devices** at all FPS
  - Once 100% target of both these are reached, the all-India portability of ration cards will become a reality.
- **Needs/Advantages of One Ration Card**
  - Enable **migrant families to access PDS benefits** from any Fair Price Shop in the country.
  - **End Discrimination and Improve the quality of service**
  - **Aadhaar seeding** would also **weed out duplicate ration cards**
- **Progress so far:**
  - The facility of national/inter-state portability is enabled in 34 states/UT covering nearly 75 crore beneficiaries (94.3 % of the total NFSA population)

## 21) OPEN MARKET SALE SCHEME

- After making provisions for TPDS, other welfare schemes and buffer stocks, FCI on the instructions of government sells excess stocks out of Central Pool through **Open Market Sale Scheme (domestic)**[OMSS (D)] in the open market from time to time at predetermined prices called **reserve prices**.
- Under OMSS (D) 2020-21 policy, a **special dispensation for supply of foodgrains to all the charitable or non-governmental organizations etc.** engaged in relief or running community kitchens for migrant labourers/vulnerable groups due to the present lock down condition was introduced since 08.04.2020. Under this scheme, wheat at the uniform rate of ₹ 21 per kilogram and rice at the uniform rate of ₹ 22 per kilogram is issued to charitable institutions/NGO. There is no upper limit of allocation of foodgrains to each of such organizations from any FCI depot. This special dispensation was initially till June 2020 but was further eventually **extended till 31st March 2022** or till further order, whichever is later, at the same rate, terms, and conditions.

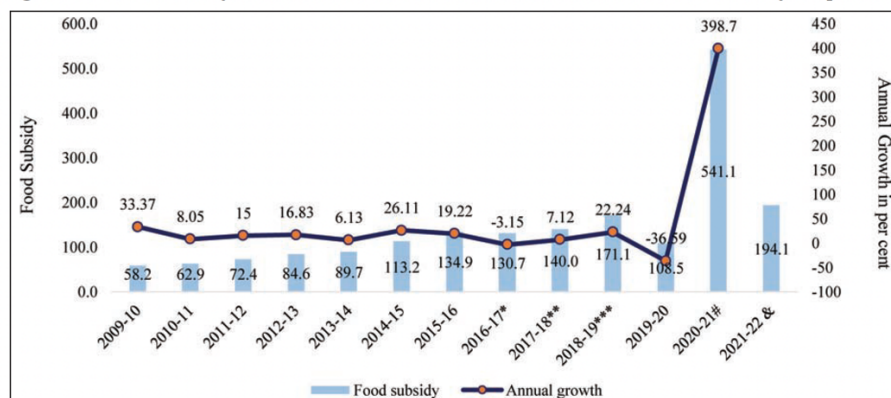
## 22) FOOD SUBSIDY

- The difference between the per quintal economic cost and the per quintal Central Issue price (CIP) gives the quantum of per quintal food subsidy.
- **Economic Cost of Wheat and rice have increased a lot in last 7 years:**

	2013-14	2021-22
<b>Wheat</b>	1908	2993
<b>Rice</b>	2615	4293

- **However, the CIPs for NFSA beneficiaries haven't been revised since the commencement of the NFSA.**

Figure 28: Food Subsidy (in ₹ thousand crore) and Annual Growth in Food Subsidy (in per cent)



Source: Based on data received from DFPD.

## 23) ETHANOL BLENDED WITH PETROL (EBP) PROGRAM

- Government has set an ethanol blending target of 20% to be achieved by 2025. It is estimated that the blending target of 10% would be achieved during 2022.
- Government has allowed production of ethanol from different feed stocks viz B-Hy & C-Hy molasses, cane juice, sugar syrup, sugar and damaged food grains including surplus FCI rice, maize, etc. by the distilleries either attached with sugar mills or standalone.
- **Financial assistance** in the form of interest subvention is also provided to eligible distilleries for augmentation of ethanol production capacity in the country.
- **The ethanol supply** under the EBP program, which was only 38 crore liters in Ethanol Supply Year (ESY) 2013-14, has increased to 173.3 crore liters during ESY 2019-20 and is expected to be more than 302 crore liters by the end of ESY 2020-21 to achieve **approx. 8.1 per cent blending**.

## 24) STORAGE

- The storage capacity available with FCI include warehouse capacity available with:
  - Central Warehousing Corporation (CWC)
  - State Warehousing Corporation (SWC)
  - Capacity hired from private sector
- This is used for storage of food grains procured for central pool by the government agencies.
- As of **31<sup>st</sup> Dec 2021** – the **total storage** available with **FCIs and state agencies** was **961.73 LMT**.
  - It consisted of covered godowns of 793 LMT and Covered and Plinth (CAP) facilities of 168.92 LMT.
  - 463.24 LMT was with FCI and 498.49 LMT with State Agencies.
- In addition, a capacity of 144.34 LMT has been created under the Private Entrepreneurs Guarantee Scheme in which construction of godowns are undertaken in PPP mode.
- **Steps to increase the storage capacity:**
  - Government is implementing a central sector scheme for construction of godowns with focus on augmenting storage capacity in the States of the NE region and a few other states.



- Under this Scheme, funds are released directly to FCI in the form of equity for land acquisition and construction of storage godowns and infrastructure like railway sidings, electrification, installation of weighbridge, etc.
- Funds are also released as grants-in-aid to the Governments of the North-Eastern States including Jammu & Kashmir for construction of intermediate storage godowns considering the storage gaps as well as difficult geographical & climatic conditions in these States.
- GoI has approved an action plan/road map for construction of steel silos in the country in PPP mode for modernization storage infrastructure and improving shelf life of stored food grains.
  - Under this so far, 29.25 LMT capacity in various locations throughout the country have been awarded.

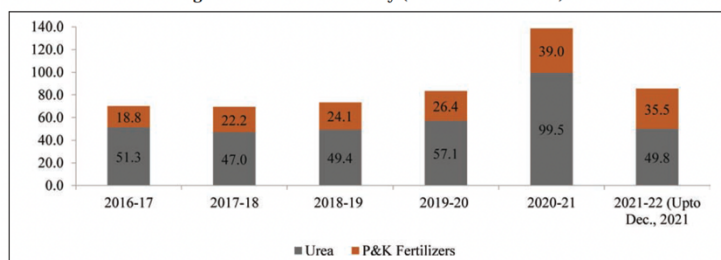
## 25) FERTILIZERS

- Government makes UREA and 24 grades of P&K fertilizers available to farmers at subsidized prices through fertilizer manufacturers/importers.
- **Urea** is made available at a statutorily notified MRP.
- Other fertilizers (phosphatic and potassic (P&K)) are available under **Nutrient Based Subsidy (NBS) Scheme** w.e.f. 1<sup>st</sup> April 2010. Here subsidy is provided based on nutrient content.

- India also must depend on imports of fertilizers.
- **Steps taken to increase fertilizer production in India:**

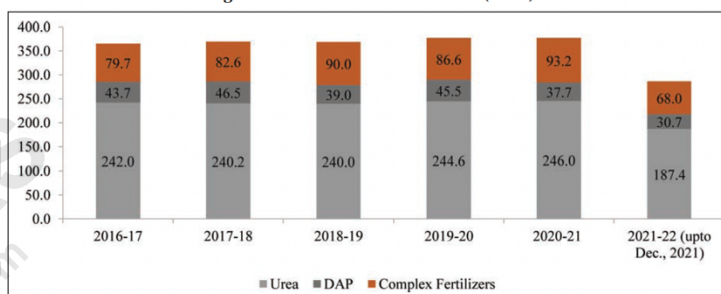
- 1) **New Urea Policy – 2015:** It has objective of maximizing indigenous production, promoting energy efficiency in production, and rationalizing subsidy burden on the government.
- 2) **Neem coated UREA** has been made **mandatory** for all domestic producers.
- 3) Government has brought **Potash derived from Molasses (PDM)** under NBS scheme for the first time since 2010 to give push to its manufacturing by sugar mills as a by-product and reduce its import dependence.
- 4) Latest technologies such as coal gasification;
- 5) implementation of Direct Benefit Transfer for providing benefits to farmers through Point of Sale machines, etc. are being promoted.

Figure 29: Fertilizer Subsidy (in ₹ thousand crore)



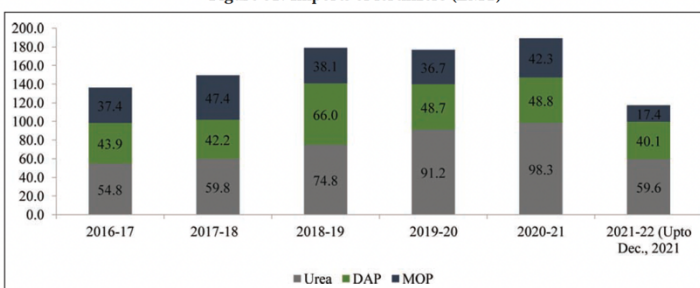
Source: Based on data received from the Department of Fertilizers.

Figure 30: Production of Fertilizers (LMT)



Source: Based on data received from the Department of Fertilizers.

Figure 31: Imports of fertilizers (LMT)



Source: Based on data received from the Department of Fertilizers.