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INDIAN ECONOMY - II

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INDIAN AGRICULTURE

Basic Features of Indian Agriculture

- From the year ending June 2005 to the year ending June 2018, the rural male population employed in agriculture has seen a decline of 12% points from 67% to 55%. According to the recent PLFS survey conducted by NSSO, employment in agriculture accounts to 44% of the overall employment but still contributed only 16% of GVA (Gross value added).
- This sector provides us with food security and raw material for the manufacturing sector. India's agriculture sector is characterized by traditional, subsistence and livelihood, rain fed farming, food grain oriented, lack in diversification and commercialization. The key issues in agriculture are to improve productivity, and increase production.

Statistics of Productivity of Agriculture

- The 3rd Advance Estimates of production of major crops for 2018-19 have been released by the Department of Agriculture, Cooperation and Farmers Welfare on 03rd June, 2019. The assessment of production of different crops is based on the feedback received from States and validated with information available from other sources.
- As per Third Advance Estimates for 2018-19, total Foodgrain production in the country is estimated at 283.37 million tonnes which is higher by 17.62 million tonnes than the previous five years' (2013-14 to 2017-18) average production of foodgrain.
- Institutional factors like the size of land-holdings, the pattern of ownership, the method of inheritance and security of tenure have a definite impact on both investment in agriculture and welfare of population dependent on agriculture.
- At the time of independence, India inherited a semi-feudal agrarian structure where ownership and control of land was highly concentrated among relatively few landlords and intermediaries.

Three types of land-tenure systems existed in pre-independent India:

● The Zamindari system

- ▶ Zamindari System (also known as Permanent Settlement System) was introduced by Cornwallis in 1793 through Permanent Settlement Act.
- ▶ It was introduced in provinces of Bengal, Bihar, Orissa and Varanasi.
- ▶ Zamindars were recognized as owner of the lands. Zamindars were given the rights to collect the rent from the peasants.
- ▶ The realized amount would be divided into 11 parts. 1/11th of the share belonged to Zamindars and 10/11th of the share belonged to East India Company

● The Mahalwari system

- ▶ Mahalwari system was introduced in 1833 during the period of William Bentick.
- ▶ It was introduced in Central Province, North-West Frontier, Agra, Punjab, Gangetic Valley, etc of British India.

- ▶ The Mahalwari system included many provisions of both the Zamindari System and Ryotwari System.
- ▶ In this system, the land was divided into Mahals. Each Mahal comprises one or more villages.
- ▶ Ownership rights were vested with the peasants.
- ▶ The villages committee was held responsible for collection of the taxes.

● **The Ryotwari system**

- ▶ Here, individual cultivator was supposed to pay the rent directly to the government without any intermediary. It was prevalent in parts of Madras, Bombay province and Assam.
- ▶ In practice, however, all three types of system had taken the features of each other. The picture that emerged at independence was that of exploitation of agricultural labourers at the hands of landlords, exorbitant rents, lack of incentive for technological progress and rigid system of land transfer across the country.

● **Land reforms:**

- ▶ Land reform involves the changing of laws, regulations or customs regarding land ownership. Land reform may consist of government-initiated or government-backed property redistribution, generally of agricultural land.
- ▶ Land reform can, therefore, refer to transfer of ownership from the more powerful to the less powerful, such as from a relatively small number of wealthy (or noble) owners with extensive land holdings (e.g., plantations, large ranches, or agribusiness plots) to individual ownership by those who work the land. Such transfers of ownership may be with or without compensation; compensation may vary from token amounts to the full value of the land.
- ▶ The common characteristic of all land reforms, however, is modification or replacement of existing institutional arrangements governing possession and use of land.
- ▶ Land distribution has been part of India's state policy from the very beginning. Independent India's most revolutionary land policy was perhaps the abolition of the Zamindari system (feudal land holding practices). Land-reform policy in India had two specific objectives:
 - To remove such impediments to increase in agricultural production as arise from the agrarian structure inherited from the past.
 - To eliminate all elements of exploitation and social injustice within the agrarian system, to provide security for the tiller of soil and assure equality of status and opportunity to all sections of the rural population.

Three major types of land-reforms were undertaken after independence:

- **Abolition of Intermediaries** like Zamindars or jagirdars so that ownership of land could be clearly identified with management and control. Many states promulgated laws to put an end to absentee landlordism and as a result about 30 lakh tenants acquired land ownership over an area of 62 lakh acres throughout the country.
- **Tenancy reforms** to confirm the rights of occupancy of tenants and to regulate rent of leased land. These reforms could not be implemented due to two main reasons. Many small tenants were forced to surrender their land under the so called "voluntary surrender" rule in the legislation. Secondly, the unavailability of accurate and up-to-date land record also constrained its implementation.
- **Reorganization of land holdings** to offset extremely uneven distribution of agricultural land. Under this, ceiling laws were imposed which laid down the maximum land that can be owned by a land holder (which was subsequently amended to holding by a family with effect from 1972). The excess land was to be surrendered to the government. But its performance remained dismal as it led to redistribution of less than 2% of operated area by 1992.

Thus, with the exception of abolition of intermediaries, other reforms could not be implemented mainly due to lack of political will.

- ▶ **Consolidation of holding** was introduced as a measure of improving farming efficiency. It made considerable progress in Punjab, Haryana and western U.P. but did not take off in southern and eastern states.
- ▶ **Cooperative joint farming**, recommended by the Congress Agrarian Reforms Committee under Mr. J. C. Kumarappa was also encouraged in the five year plans initially. Under this, farmers pool their land and reap the economies of scale, although the ownership continues to remain with the individual farmer. But this could not be implemented mainly because of farmers' reluctance to alienate their land. Many landlords also tried to misuse this concept to circumvent land ceiling.
- ▶ **The National Land Records Modernization Programme (NLRMP)** was launched by the Government of India in August 2008, aimed to modernize management of land records, minimize scope of land/property disputes, enhance transparency in the land records maintenance system, and facilitate moving eventually towards guaranteed conclusive titles to immovable properties in the country.

The Green Revolution

- The Green Revolution in India refers to a period when Indian agriculture was converted into an industrial system due to the adoption of modern methods and technology such as the use of high yielding variety (HYV) seeds, tractors, irrigation facilities, pesticides, and fertilizers. This was part of the larger Green revolution endeavor initiated by Norman Borlaug, which leveraged agricultural research and technology to increase agricultural productivity in the developing world.
- The Green Revolution within India commenced in the early 1960s that led to an increase in food grain production, especially in Punjab, Haryana, and Uttar Pradesh. Major milestones in this undertaking were the development of high-yielding varieties of wheat, and rust resistant strains of wheat.
- The production of wheat has produced the best results in fueling self-sufficiency of India. Along with high-yielding seeds and irrigation facilities, the enthusiasm of farmers mobilized the idea of agricultural revolution. Due to the rise in use of chemical pesticides and fertilizers, there was a negative effect on the soil and the land (e.g., land degradation).

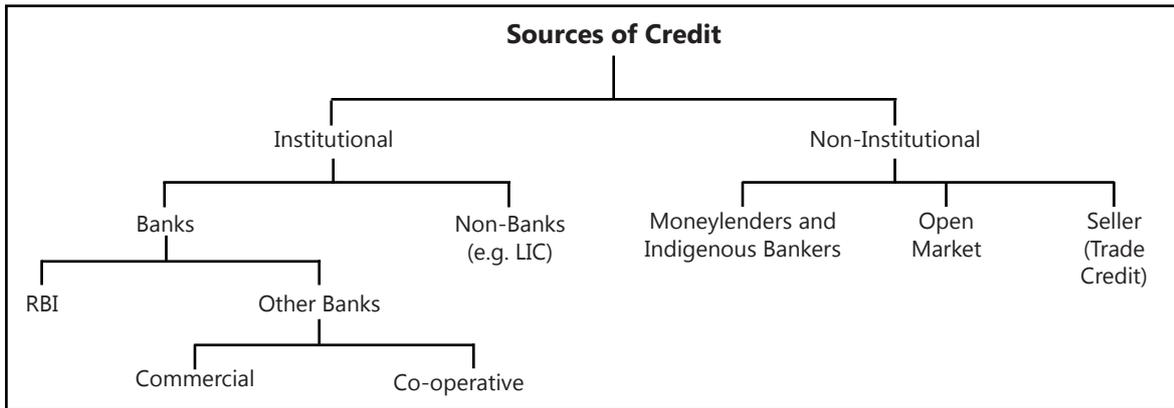
Bringing Green Revolution to Eastern India (BGREI)

- The programme of "Bringing Green Revolution to Eastern India (BGREI)" was launched in 2010-11 to address the constraints limiting the productivity of "rice based cropping systems" in eastern India comprising seven (7) States namely; Assam, Bihar, Chhattisgarh, Jharkhand, Odisha, Eastern Uttar Pradesh (Purvanchal) and West Bengal.
- The programme is now a sub-scheme of Rashtriya Krishi Vikas Yojana.

Objectives

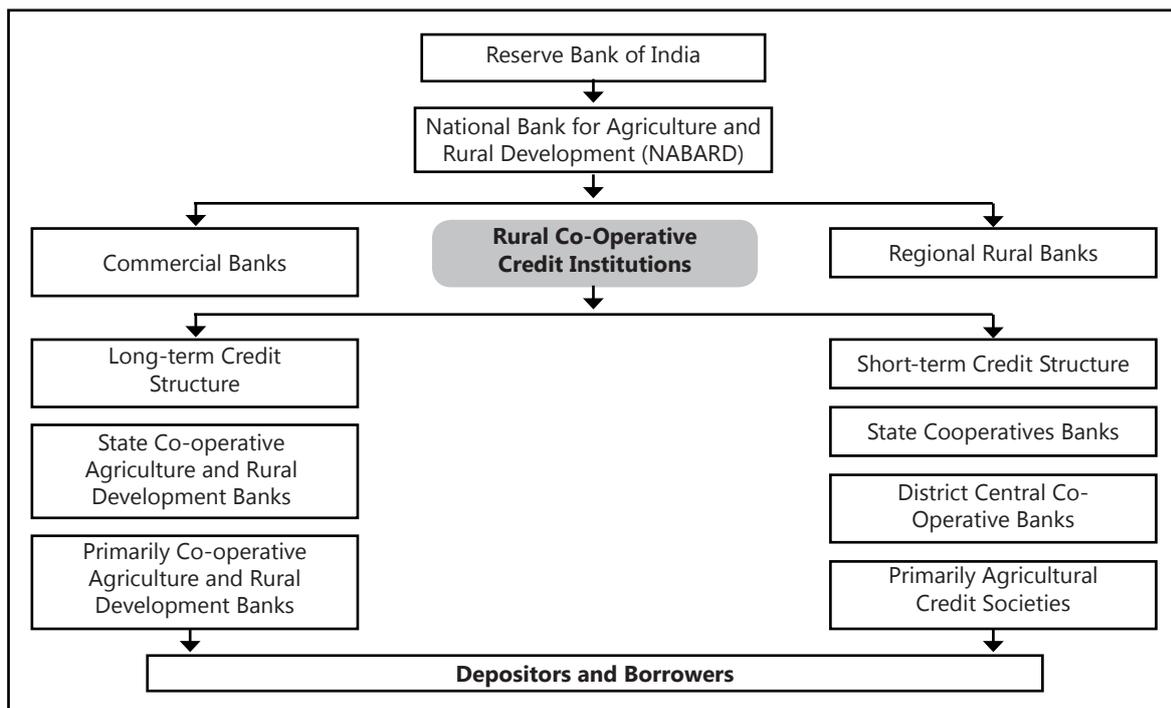
- To increase production & productivity of rice and wheat by adopting latest crop production technologies;
- To promote cultivation in rice fallow area to increase cropping intensity and income of the farmers;
- To create water harvesting structures and efficient utilization of water potential; and
- To promote post harvest technology and marketing support.

Agricultural Credit



- Agricultural credit is considered as one of the most basic inputs for conducting all agricultural development programmes poor.
- Agricultural Credit in India can be classified on two main bases viz. on the basis of specific financial requirement and on the basis of sources of credit.

National Bank for Agricultural and Rural Development (NABARD)



National Bank for Agriculture and Rural Development (NABARD) is an apex development financial institution in India, headquartered at Mumbai with regional offices all over India. The Bank has been entrusted with "matters concerning policy, planning and operations in the field of credit for agriculture and other economic activities in rural areas in India". NABARD is active in developing financial inclusion policy.

- NABARD was established on the recommendations of B.Sivaraman Committee, (by Act 61, 1981 of Parliament) on 12 July 1982 to implement the National Bank for Agriculture and Rural Development Act 1981.
- It replaced the Agricultural Credit Department (ACD) and Rural Planning and Credit Cell (RPCC) of Reserve Bank of India, and Agricultural Refinance and Development Corporation (ARDC). It is one

of the premier agencies providing developmental credit in rural areas. NABARD is India's specialised bank for Agriculture and Rural Development in India.

Role

- NABARD has been instrumental in grounding rural, social innovations and social enterprises in the rural hinterlands. It has in the process partnered with about 4000 partner organisations in grounding many of the interventions be it, SHG-Bank Linkage programme, tree-based tribal communities' livelihoods initiative, watershed approach in soil and water conservation, increasing crop productivity initiatives through lead crop initiative or dissemination of information flow to agrarian communities through Farmer clubs. Despite all this, it pays huge taxes too, to the exchequer – figuring in the top 50 tax payers consistently.
- NABARD virtually ploughs back all the profits for development spending, in their unending search for solutions and answers. Thus the organisation had developed a huge amount of trust capital in its 3 decades of work with rural communities.
- NABARD supervises State Cooperative Banks (StCBs), District Cooperative Central Banks (DCCBs), and Regional Rural Banks (RRBs) and conducts statutory inspections of these banks.
- **NABARD discharge its duty by undertaking the following roles :**
 - ▶ Serves as an apex financing agency for the institutions providing investment and production credit for promoting the various developmental activities in rural areas
 - ▶ Takes measures towards institution building for improving absorptive capacity of the credit delivery system, including monitoring, formulation of rehabilitation schemes, restructuring of credit institutions, training of personnel, etc.
 - ▶ Co-ordinates the rural financing activities of all institutions engaged in developmental work at the field level and maintains liaison with Government of India, state governments, Reserve Bank of India (RBI) and other national level institutions concerned with policy formulation
 - ▶ Undertakes monitoring and evaluation of projects refinanced by it.
 - ▶ NABARD refinances the financial institutions which finances the rural sector.
 - ▶ NABARD partakes in development of institutions which help the rural economy.
 - ▶ NABARD also keeps a check on its client institutes.
 - ▶ It regulates the institutions which provide financial help to the rural economy.
 - ▶ It provides training facilities to the institutions working in the field of rural upliftment.
 - ▶ It regulates and supervise the cooperative banks and the RRB's, through out entire India.

The Indian Council of Agricultural Research (ICAR)

- ▶ The Indian Council of Agricultural Research (ICAR) is an autonomous body responsible for co-ordinating agricultural education and research in India. It reports to the Department of Agricultural Research and Education, Ministry of Agriculture. The Union Minister of Agriculture serves as its president. It is the largest network of agricultural research and education institutes in the world.
- ▶ Presently, regulation of agricultural education is the mandate of ICAR, Veterinary Council of India (Veterinary sub-discipline) and Indian Council of Forestry Research and Education (Forestry sub-discipline). The UPA government has included Yashpal Committee recommendations in its '100 days agenda'. premier institute of agriculture in India

Types of Agricultural Credit

- **Short term Credit:** It is requested for the purchase of seeds, fertilizers, feeds etc. and is given for a period of not more than 15 months.

- **Medium - term Credit:** It is given for a period from 15 months to 5 years for the purpose of purchase of agricultural implements, animals etc.
- **Long - term Credit:** It is given for a period of more than 5 years for the purchase of machinery goods like tractors for land improvements etc.
- On the basis of sources, agricultural credit can be classified into two main categories:
 - ▶ **Institutional sources** such as cooperatives, commercial banks and land development banks.
 - ▶ **Non-institutional/private sources** such as money lenders, traders and commission agents.
 - ▶ In 1951-52 institutional sources accounted for only 7% of total agricultural credit. But by 1981, this contribution had increased to 63% with just 37% coming from non-institutional sources.
 - ▶ But these figures also indicate that the non-institutional lenders like moneylenders are still important sources of credit in the agricultural sector.
 - ▶ Due to the dismal performance in meeting credit flow target to the agricultural sector in the first two years of the tenth Five Year Plan (2002-07), the Reserve Bank of India (RBI) constituted an Advisory Committee on Flow of Credit to Agriculture and Related Activities from the Banking System under the Chairmanship of V.S. Vyas.

Vyas Committee's major recommendations were:

- A review of mandatory lending to agriculture by commercial banks to enlarge direct lending programmes.
- Direct agricultural lending by public and private sector banks should increase to about 18 percent of net bank credit.
- Banks to increase their disbursements to small and marginal farmers under Special Agricultural Credit Plan (SACP).
- Reducing cost of agricultural credit by enhancing their cost effectiveness, procedural simplification etc.
Thus, the target of 'Farm Credit Package' announced in June 2004 to double the flow of agricultural credit in three years was achieved well within time.

Sources of Agricultural Credit in India:

● **Non-Institutional Sources:**

- ▶ Moneylenders
- ▶ Traders and Commission agents
- ▶ Relatives

● **Institutional Sources:**

- ▶ Co-operative Credit Societies
- ▶ Land Development Banks
- ▶ Commercial Banks
- ▶ Regional Rural Banks

The Co-operative Credit Institutions

- The Co-operative Credit Institutions in India can be classified as under a three-tier structure.
 - ▶ Primary Credit Societies at the bottom
 - ▶ Central Co-operative Bank at the middle
 - ▶ State Co-operative Bank at the top
- The Reserve Bank of India assists the co-operative structure by providing concessional finance through NABARD in the form of General Lines of Credit for lending to agricultural & allied activities. Thus, the whole system is integrated with the Banking structure of the country.

- **The Primary Agricultural Credit Societies:**
 - ▶ A primary society is an association of borrowers and non-borrowers residing in a particular locality and taking interest in the business affairs of one another. As membership is practically open to all inhabitants of a locality, people of different status are brought together into the common organization.
- **Central Co-operative Banks:**
 - ▶ A Central Co-operative Bank is a federation of primary societies in a specified area. Where membership of a Central Co-operative Bank is restricted to primary societies only, it is known as a 'banking union'. Nowadays, individuals are also admitted as members of almost all Central Co-operative Banks.
- **State Co-operative Banks:**
 - ▶ At the top of the co-operative banking, there are State Cooperative Banks, organized with the object of attracting deposits from the rich urban classes. These Banks are also more suitably equipped to serve as channel between the co-operative movement and the joint stock banks.
- **Land Development Bank (LDB)**
 - ▶ A land development bank is a special kind of bank in India, and is of quasi-commercial type that provides services such as accepting deposits, making business loans, and offering basic investment products.
 - ▶ The main objective of the LDB is to promote the development of land, agriculture and increase the agricultural production. The LDB provides long-term finance to members directly through its branches.
- **Commercial banks**
 - ▶ Commercial banks now provide both direct and indirect finance to agriculture. Direct finance is provided for short and medium terms to enable farmers carry out agricultural operations smoothly. Indirect finance is provided in the form of advances for the purchase of inputs like seeds and fertilisers.
 - ▶ Commercial banks not only provide assistance for agricultural operations but also for extending credit to service units which provide infrastructural facilities such as storing and warehousing of agricultural produce, marketing, transporting and repairing of agricultural implements.
- **Recent developments on Agricultural Credit**
 - ▶ Kisan Credit Card (KCC) scheme
 - KCC scheme was introduced in August 1998 to provide short and medium term loans to the farmers for their cultivation needs, including the purchase of all inputs.
 - The scheme includes reasonable component of consumption credit and investment credit within the overall credit limit sanctioned to the borrowers. The scheme has also been extended to the borrowers of the long-term cooperative credit structure to address all the loan requirements of the borrowers of State Cooperative Agriculture Rural Development Bank (SCARBDs) under KCC scheme.
 - The KCC scheme is being implemented by the commercial banks, RRBs and Co-operative banks, with their proportional contribution being about 39%, 13% and 48% respectively.
 - Holders of the KCC are also automatically covered under accident insurance cover against death or disability.
 - A revised KCC scheme was introduced in March 2012 in which the KCC passbook has been replaced by an ATM-cum-debit card to all eligible and willing farmers in a time-bound manner.
 - ▶ Agriculture Debt Waiver and Debt Relief Scheme 2008
 - In the Union Budget 2008-09, the Government announced a scheme of agricultural debit waiver and debt relief for farmers with the total value of overdue loans being waived estimated at Rs.

50,000 crore and one-time settlement (OTS) relief on the overdue loans at Rs. 10,000 crore for implementation by all Scheduled Commercial Banks (SCBs), RRBs and cooperatives.

Agricultural Insurance

- Agriculture in India is highly susceptible to risks like droughts and floods. It is necessary to protect the farmers from natural calamities and ensure their credit eligibility for the next season. For this purpose, the Government of India introduced many agricultural schemes throughout the country.

Agriculture Insurance Company of India Limited (AIC)

- AIC is a public sector insurance company that offers yield-based and weather-based crop insurance programs in almost 500 districts of India. It covers almost 20 million farmers, making it the biggest crop insurer in the world in number of farmers served. It is headquartered in New Delhi, India
- AIC aims to provide insurance coverage and financial support to the farmers in the failure of any of the notified crop as a result of natural calamities, pests and diseases to restore their credit worthiness for the ensuing season; to encourage the farmers to adopt progressive farming practices, high value in-puts and higher technology; to help stabilize farm incomes, particularly in disaster years.

Pradhan Mantri Fasal Bima Yojana

- The Pradhan Mantri Fasal Bima Yojana (Prime Minister's Crop Insurance Scheme) was launched on 13 February 2016. It envisages a uniform premium of only 2 percent to be paid by farmers for Kharif crops, and 1.5 percent for Rabi crops. The premium for annual commercial and horticultural crops will be 5 percent.

National Agriculture Insurance Scheme (NAIS)

- NAIS envisages coverage of all food crops (cereals and pulses), oilseeds, horticultural and commercial crops. It covers all farmers, both loanees and non-loanees, under the scheme.
- The premium rates vary from 1.5 percent to 3.5 percent of sum assured for food crops. In the case of horticultural and commercial crops, actuarial rates are charged. Small and marginal farmers are entitled to a subsidy of 50 percent of the premium charged- the subsidy is shared equally between the Government of India and the States. The subsidy is to be phased out over a period of 5 years.

Agricultural Marketing

- Agricultural marketing is inferred to cover the services involved in moving an agricultural product from the farm to the consumer. It is also the planning, organizing, directing and handling of agricultural produce in such a way as to satisfy the farmer, producer and the consumer.
- Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing and packaging, transport, storage, agro- and food processing, distribution, advertising and sale. Effectively, the term encompasses the entire range of supply chain operations.

Institutions/Schemes related to Agricultural Marketing

● National Agriculture Market (eNAM)

- ▶ eNAM is an online trading platform for agricultural commodities in India. It seeks to network the existing Agricultural Produce Market Committees (APMCs) and other market yards to create a unified national market for agricultural commodities. NAM is a "virtual" market but it has a physical market (mandi) at the back end. Following are the benefits of eNAM:

- ▶ The market facilitate farmers, traders and buyers with online trading in commodities.
- ▶ The market is helping in better price discovery and provide facilities for smooth marketing of their produce.
- ▶ Over 90 commodities including staple food grains, vegetables and fruits are currently listed in its list of commodities available for trade.
- ▶ The eNAM markets are proving popular as the crops are weighed immediately and the stock is lifted on the same day and the payments are cleared online.

● **Agricultural Produce Market Committee (APMC)**

- ▶ Agricultural Produce Market Committee (APMC) is a statutory market committee constituted by a State Government under the Agricultural Produce Market Committee Act in respect of trade in certain notified agricultural or horticultural or livestock products.

APMCs are intended to be responsible for:

- ▶ Ensuring transparency in pricing system and transactions taking place in market area;
- ▶ Providing market-led extension services to farmers;
- ▶ Ensuring payment for agricultural produce sold by farmers on the same day;
- ▶ Promoting agricultural processing including activities for value addition in agricultural produce;
- ▶ Publicizing data on arrivals and rates of agricultural produce brought into the market area for sale; and
- ▶ Setup and promote public private partnership in the management of agricultural markets
- ▶ There are about 2477 principal regulated markets based on geography (the APMCs) and 4843 sub-market yards regulated by the respective APMCs in India.

● **Commodity Boards**

- ▶ Commodity Board is a registered agency designated by the Ministry of Commerce, Government of India for purposes of export-promotion and has offices in India and abroad. There are five statutory Commodity Boards, which are responsible for production, development and export of tea, coffee, rubber, spices and tobacco.

● **Tribal Cooperative Marketing Development Federation of India (TRIFED)**

- ▶ The Tribal Cooperative Marketing Development Federation of India (TRIFED) came into existence in 1987.
- ▶ It is a national-level apex organization functioning under the administrative control of Ministry of Tribal Affairs, Government of India.
- ▶ TRIFED organises National Tribal Craft Expo called "AADISHILP", painting exhibition called "Aadi Chitra", "OCTAVE" for North Eastern Artisans and Tribal Artisan Melas to facilitate the sale of their products.
- ▶ Promote sustainable livelihood systems for tribal people by marketing development and ensuring remunerative price for their products, provide minimum support price and value addition of Non-Timber Forest Produce (Minor Forest Produce), empower them through meticulous capacity building, augment their resources substantially, Develop marketing partnership with Central/State Government agencies and other development partners through establishing convergence and coherence in activities.

● **National Agricultural Cooperative Marketing Federation of India Ltd (NAFED)**

- ▶ NAFED is an apex organization of marketing cooperatives for agricultural produce in India, under Ministry of Agriculture, Government of India.
- ▶ It was founded in October 1958 to promote the trade of agricultural produce and forest resources across the nation. NAFED is now one of the largest procurement as well as marketing agencies for agricultural products in India.

- ▶ With its headquarters in New Delhi, NAFED has four regional offices at Delhi, Mumbai, Chennai and Kolkata, apart from 28 zonal offices in capitals of states and important cities.
- ▶ In 2008, it established, National Spot Exchange, a Commodities exchange as a joint venture of Financial Technologies (India) Ltd. (FTIL).

● **Promotion of National Market through Agri Tech Infrastructure Fund (ATIF)**

- ▶ Central Sector Scheme for Promotion of National Agricultural Market through Agri-Tech Infrastructure Fund (ATIF) for Rs. 200 crores to be implemented during 2014-15 to 2016-17.
- ▶ The Scheme envisages initiation of e-marketing platform at the national level and will support creation of infrastructure to enable e-marketing in 642 regulated markets across the country.
- ▶ For creation of a National Market, a common platform across all States is necessary. It is, therefore, proposed that a Service Provider be engaged centrally who would build, operate and maintain the e-platform on BOOT Project model (Build, Own, Operate, Transfer - BOOT) it is a PPP project model. This platform would be customized/ configured to address the variations in different states.
- ▶ As an initiative of deregulation, states have been advised by the Government of India to bring fruits and vegetables out of the ambit of APMC Act. In pursuance of this advisory, 12 States have, so far, either de-regulated the marketing of fruits and vegetables or have exempted from levying of market fee.

● **Commodity futures market**

- ▶ Commodity futures market in India have a long history. Futures trading in commodities has been in existence in the country with organised trading in cotton through the establishment of Cotton Trade Association in 1875. Since then a series of commodities were traded in the futures market, but trading through exchanges was actively encouraged only since last decade. Still, exponential growth were witnessed in commodity market after setting of national level commodity exchanges.
- ▶ Currently, there are three major national level commodity exchanges offering trading in commodity derivatives. They are Multi Commodity Exchange of India (MCX), National Commodities and Derivatives Exchange (NCDEX) and National Multi Commodity Exchange of India (NMCE). Among these exchanges, MCX claims the primary position in respect to the volume being traded.

→ **E-Technology in Agriculture**

Village Knowledge Centre (VKC)

- Village Knowledge Centre (VKC) serves as information dissemination centre providing instant access to farmers to latest information/ knowledge available in the field of agriculture, starting from crop production to marketing. A "VKC In-charge" who looks after the operations of the VKC manages every VKC.

Village resource centres (VRC)

- Village Resource Centres are being set up by ISRO with the help of selected NGOs, Trusts and State Government Departments. As of 2018, ISRO has set up some 473 VRCs.
- VRCs have provided various space technology enabled services such as tele-healthcare, tele-education, natural resources information etc. The major activities under VRC initiatives include:
- Advisories related to agriculture like crop pest and diseases, fertilizer/pesticides, organic farming, crop insurance; livestock/poultry,
- Career guidance to rural students
- Skill development and vocational training etc. to the rural population.

- VRC initiative uses Satellite Communication (SATCOM) network and Earth Observation (EO) satellite data to address the needs of the rural villages.

Precision agriculture (PA)

- PA is a farming management concept based on observing, measuring and responding to inter and intra-field variability in crops. The goal of precision agriculture research is to define a decision support system (DSS) for whole farm management with the goal of optimizing returns on inputs while preserving resources.
- The practice of precision agriculture has been enabled by the advent of GPS and GNSS. The farmer's and/or researcher's ability to locate their precise position in a field allows for the creation of maps of the spatial variability of as many variables as can be measured (e.g. crop yield, terrain features/topography, organic matter content, moisture levels, nitrogen levels, pH, EC, Mg, K, and others).
- Similar data is collected by sensor arrays mounted on GPS-equipped combine harvesters. These arrays consist of real-time sensors that measure everything from chlorophyll levels to plant water status, along with multispectral imagery. This data is used in conjunction with satellite imagery by variable rate technology (VRT) including seeders, sprayers, etc. to optimally distribute resources.

Agricultural Marketing Information Network (AGMARKNET)

- Agricultural Marketing Information Network (AGMARKNET) was launched in March 2000 by the Union Ministry of Agriculture.
- This e-governance portal was implemented by National Informatics Centre (NIC), facilitates generation and transmission of prices, commodity arrival information from agricultural produce markets, and web-based dissemination to producers, consumers, traders, and policy makers transparently and quickly.
- The AGMARKNET website is a G2C (Government to consumer) e-governance portal that caters to the needs of various stakeholders such as farmers, industry, policy makers and academic institutions by providing agricultural marketing related information from a single window. The portal has helped to reach farmers who do not have sufficient resources to get adequate market information.

Agricultural Technology Management Agency (ATMA)

- ATMA is a registered society responsible for technology dissemination at a district level. It is a focal point for integrating research extension and marketing.
- It allows receiving and expanding project funds entering into contracts and agreements and maintaining revolving accounts. It has also linkage with all the line department research organizations nongovernmental organizations and organizations associated with agricultural development in the districts.
- Each ATMA has a governing board. The district collector is the chairman of the board of the ATMA with other district level officials such as agricultural veterinary fishery etc as member the farmers woman representative are also taken ability to take all discussion concerning programme planning resource allocation.

National Mission on Agricultural Extension & Technology

- The objective of this Scheme is to make the extension system farmer-driven and farmer-accountable by way of new institutional arrangements for technology dissemination. It aims to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to farmers.
- This is to be achieved by a judicious mix of extensive physical outreach and interactive methods of information dissemination, use of ICT, popularisation of modern and appropriate technologies, capacity building and institution strengthening to promote mechanisation, availability of quality seeds, plant protection etc. and encourage aggregation of Farmers into Interest Groups (FIGs) to form Farmer Producer Organisations (FPOs).

The agropedia

- The agropedia is a compilation of an encyclopaedic nature on Indian agriculture. It has been undertaken as a project by a consortium of seven institutions under the guidance of the Indian Council of Agricultural Research as well as the Food and Agricultural Organization.
- It has been undertaken as a knowledge management initiative and as a subproject of the National Agricultural Innovation Project .
- There is a plan to adapt the online treatise to suit user requirements and the latest of technologies are to be incorporated in it. The agropedia is a single window information point for any type of academic and practical knowledge relating to extension services in Indian agriculture. It is a revolution of sorts in the field of digital content creation and organization. An audiovisual encyclopaedia which enchants , entertains and educates simultaneously.

e-Choupal

- e-Choupal is an initiative of ITC Limited, a conglomerate in India, to link directly with rural farmers via the Internet for procurement of agricultural and aquaculture products like soybeans, wheat, coffee, and prawns.
- e-Choupal tackles the challenges posed by Indian agriculture, characterized by fragmented farms, weak infrastructure and the involvement of intermediaries.
- The programme installs computers with Internet access in rural areas of India to offer farmers up-to-date marketing and agricultural information.

e-Krishi Samvad

- It is an online interface through which farmers and other stakeholders can directly approach ICAR (Indian Council of Agricultural Research) with their problems for effective solutions.
- Stakeholders can also upload photographs of crop diseases, animals or fishes for diagnostics and remedial measures instantly from the specialists.
- Appropriate solutions from specialists will be provided via SMS.

SENSAGRI

- It stands for "SENsOR based Smart AGRiculture". It is a collaborative research project formulated by Indian Council of Agricultural Research (ICAR) through the Indian Agricultural Research Institute (IARI).
- The major objective is to develop indigenous prototype for drone based crop and soil health monitoring system using hyperspectral remote sensing (HRS) sensors.
- This technology could also be integrated with satellite-based technologies for large scale applications.

ARYA

- Attracting and Retaining Youth in Agriculture (ARYA) aims to attract and empower the youth in Rural areas to take up various Agriculture, allied and service sector enterprises for sustainable income and gainful employment.
- It enables the Farm Youth to establish network groups to take up resource and capital intensive activities like processing, value addition and marketing .It is implemented in one district each from 25 states through KVKs

Genetically modified crops (GM crops or biotech crops)

- ▶ These are plants used in agriculture, the DNA of which has been modified using genetic engineering methods.
- ▶ In most cases, its aim is to introduce a new trait to the plant which does not occur naturally in the species.
- ▶ Examples in food crops include resistance to certain pests, diseases, environmental conditions, reduction of spoilage, resistance to chemical treatments (e.g. resistance to a herbicide), or improving the nutrient profile of the crop.
- ▶ Examples in non-food crops include production of pharmaceutical agents, biofuels, and other industrially useful goods, as well as for bioremediation.

Agricultural Extension

- It is the application of scientific research and new knowledge to agricultural practices through farmer education. The field of 'extension' now encompasses a wider range of communication and learning activities organized for rural people by educators from different disciplines, including agriculture, agricultural marketing, health, and business studies.
- Extension practitioners can be found throughout the world, usually working for government agencies. They are represented by several professional organizations, networks and extension journals.
- Its agencies in developing countries receive large amounts of support from international development organizations such as the World Bank and the Food and Agriculture Organization of the United Nations.

Programs for Agricultural Extension**● State Extension Programmes for Extension Reforms**

- ▶ It is a centrally sponsored scheme, launched in May 2005 during the 10th Five Year Plan. Its objective is to support State governments' effort on revitalization of their extension system.
- ▶ It promotes a decentralized farmer-driven and farmer accountable extension system through dissemination in the form of an Agricultural Technology Management Agency (ATMA).

● Agri Clinics and Agri Business Centres (ACABC) Scheme

- ▶ Launched in April 2002, the scheme encourages unemployed agri-graduates to set up agri-clinics and agri-business centres to supplement the efforts of public extension system and to serve as supplementary sources of input supply and services to the needy farmers.
- ▶ Capital subsidy to the extent of 25% (33% for North-East and hill areas and women graduates) and interest subsidy for first two years is provided to ACABCs by NABARD.

Price Policy for Agricultural and Food Management**● Objectives of Agricultural Price Policy**

- ▶ Procurement of food grains from farmers at remunerative prices so that they do not switch crops.
- ▶ Distribution of food grains to the non-producing consumers particularly the vulnerable sections of society at affordable prices.
- ▶ Maintenance of reasonable terms of trade (price ratio) between agricultural and non-agricultural sectors.
- ▶ Maintenance of good buffers for food security and price stability.

How is Agricultural and Food Management in India implemented?

● Minimum Support Prices (MSP)

- ▶ MSP can be regarded as an offer price at which government is willing to buy any amount of grain from the farmers in the years of good harvest when, in the absence of support operation, the market prices may fall below the costs of production.
- ▶ The Commission for Agricultural Cost and Prices (CACP) analyses the input costs and recommends MSP for 26 major crops.

● Procurement Prices

- ▶ Procurement prices are the prices at which government purchases food grains for maintaining Public Distribution System (PDS) and for building up Buffer stock.
- ▶ They are generally fixed at a level higher than MSP.

● Buffer stock

- ▶ A buffer stock is a system or scheme which buys and stores stocks at times of good harvests to prevent prices falling below a target range (or price level), and releases stocks during bad harvests to prevent prices rising above a target range (or price level).

● Public Distribution System (PDS)

- ▶ The basic objective of PDS in India is to provide essential consumer goods, particularly food grains at cheap and subsidized prices to the consumers so as to insulate them from the impact of rising prices and maintain the minimum nutrition level of the population.
- ▶ With respect to food grains, the PDS works on the basis of explicit subsidy paid to the Food Corporation of India (FCI) to meet the difference between the procurement price paid by FCI to the farmers and the issue price at which it sells food grains to the PDS.
- ▶ Only four items, viz., Rice, Wheat, Sugar and Kerosene account for almost 86% of total sales.
- ▶ The share of coarse grain and pulses are just about 1% and 0.2% respectively.
- ▶ With about 5 lakh fair prices shops, PDS distributes more than Rs. 20,000 crore worth of commodities to about 160 million families and has the largest distribution network of its kind in the world.

● Targeted Public Distribution System (TPDS)

- ▶ It was introduced in June 1997 as part of Decentralized Procurement Scheme launched in 10 states and 1 U.T.
- ▶ Under this, the population was to be divided into Below Poverty Line (BPL) and Above Poverty Line (APL) categories. The BPL families were allocated 10 kg/household/month of food grains which increased to 35 kg/household/month in April 2002 before decreasing to 30 kg/household/month in January 2006.
- ▶ A set of multiple prices were introduced for food grains allocated to BPL families, APL families and for Antyodaya Scheme (Since 2001).
- ▶ Since 2000, the Central Issue Price (CIP) to BPL families was 50% of the economic cost to the FCI while for APL families, CIP was 100% of the economic cost.
- ▶ Income tax assesses were not entitled to sugar under PDS.

Reforms in Agriculture Price Policy

- One way of rationalizing MSP policy is to make these price signals reflect social rather than just private returns of production. For instance, the social returns to pulse production is higher than the private returns, because it not only uses less water and fertiliser but fixes atmospheric nitrogen naturally and helps keep the soil porous and well aerated because of its deep and extensive root systems. These positive social benefits should be incorporated into MSP estimates.

- Price Deficiency Payment: Under this system if the price in an Agriculture Produce Market Committee (APMC) mandi fell below the MSP then the farmer would be entitled to a maximum of, say, 50 per cent of the difference between the MSP and the market price. This subsidy could be paid to the farmer via Direct Benefits Transfer (DBT).
- The Decentralized Procurement (DCP) scheme: To enhance efficiency of procurement and public distribution and to extend the benefits of MSP to local farmers, some state governments have adopted this scheme.
- An Online Procurement Monitoring System (OPMS) has been evolved for reporting and monitoring on a daily basis, procurement operations for wheat, paddy, and coarse grains in the country.
- The government had also set up a High Level Committee (HLC) in August 2014 under the chairmanship of Shri Shanta Kumar to suggest inter-alia restructuring or unbundling of the FCI with a view to improving its operational efficiency and financial management. The gist of its main recommendations are:
 - ▶ The FCI should hand over all procurement operations of wheat, paddy, and rice to states that have gained sufficient experience in this regard and have created reasonable infrastructure for procurement
 - ▶ Better price support operations for pulses and oilseeds and dovetail their MSP policy with trade policy so that their landed costs are not below their MSP
 - ▶ Cash transfers in PDS should be gradually introduced
 - ▶ On PDS- and NFSA-related issues: Defer implementation of the NFSA in states that have not done end to end computerization; Coverage of population should be brought down to around 40 percent
 - ▶ FCI should outsource its stocking operations to various agencies
 - ▶ Silo bag technology and conventional storages wherever possible should replace CAP (covered with plinth).
 - ▶ A transparent liquidation policy to liquidate stocks in OMSS or in export markets, whenever stocks go beyond the buffer stock norms.
 - ▶ Farmers be given direct cash subsidy (of about Rs 7000/ha) and fertilizer sector can then be deregulated.
 - ▶ Total end-to-end computerization of the entire food management system
 - ▶ The new face of the FCI will be akin to an agency for innovations in the food management system with the primary focus of creating competition in every segment of the foodgrain supply chain.

Types of Agricultural Subsidy in India

- Fertilizer subsidy
- Power subsidy
- Agricultural Equipment subsidy
- Irrigation subsidy
- Seed subsidy
- Export subsidy
- Credit subsidy
- Agricultural infrastructure subsidy
 - ▶ **Fertilizer Subsidy:** Disbursement of cheap chemical or non-chemical fertilisers among the farmers. It amounts to the difference between price paid to manufacturer of fertilizer (domestic or foreign) and price, received from farmers, rest of the burden is borne by the government.
 - ▶ **Power Subsidy:** The electricity subsidies imply that the government charges low rates for the electricity supplied to the farmers. Power is primarily used by the farmers for irrigation objectives. It is the difference between the cost of generating and distributing electricity to farmers and price received from farmers.

- ▶ **Seed Subsidy:** High yielding seeds can be provided by the government at low prices, and at the future payment options. The research and development activities needed to produce such productive seeds are also undertaken by the government, the expenditure on these is a sort of subsidy granted to the farmers.
- ▶ **Export Subsidy:** This subsidy is given to the farmers to face the international completion. When a farmer or exporter sells agricultural products in foreign market, he earns money for himself, as well as foreign exchange for the country. Therefore, agricultural exports are generally encouraged as long as these do not harm the domestic economy. Subsidies provided to encourage exports are referred as export subsidies.
- ▶ **Credit Subsidy:** It is the difference between interest charged from farmers, and actual cost of providing credit, plus other costs such as write-offs bad loans.

Nutrient Based Subsidy (NBS) Scheme

- ▶ The Government of India implemented a Nutrient Based Scheme with effect from 2010. Under the NBS scheme, a fixed subsidy is announced on per kg based on nutrients annually. An additional subsidy is also given for micronutrients.
- ▶ With the objective of providing quality fertilizer to the farmers depending on the crops and soil requirements, the government has included new grade of complex fertilizers under this scheme.
- ▶ Under the NBS, manufacturers are allowed to fix the MRP. The farmers pay only 50 percent of the delivered cost of Phosphate (P) and Potash (K) fertilizer and the rest is borne by the government in the form of subsidy.

WTO and Agricultural Subsidies

- The WTO Agreement on Agriculture (AoA), 1995 permitted the developed countries to continue to provide farm subsidies, but under certain restrictions.
- WTO members have taken steps to reform the agriculture sector and to address the subsidies and high trade barriers that distort agricultural trade. The overall aim is to establish a fairer trading system that will increase market access and improve the livelihoods of farmers around the world.
- The WTO Agreement on Agriculture, which came into force in 1995, represents a significant step towards reforming agricultural trade and making it fairer and more competitive.

The Agreement on Agriculture (AoA)

- The Agreement under WTO takes into account non-trade concerns, including food security and the need to protect the environment, and provides special and differential treatment for developing countries, including an improvement in the opportunities and terms of access for agricultural products of particular export interest to Members
- The Agreement on Agriculture constitutes of three pillars—domestic support, market access, and export subsidies.
- **Domestic support**
 - ▶ The first pillar of the Agreement on Agriculture is “domestic support”. AoA divides domestic support into two categories -trade distorting and non- trade distorting (or minimal trade distorting).
 - ▶ The WTO Agreement on Agriculture negotiated in the Uruguay Round (1986–1994) includes the classification of subsidies by “boxes” depending on consequences of production and trade
 - ▶ **Green Box subsidies** – It includes amounts spent on research, disease control, and infrastructure and food security. These also include direct payments made to farmers such as income support that do not stimulate production. These are not considered trade distorting and thus, they are encouraged.

- ▶ **Blue Box subsidies** – It includes direct payments to farmers to limit production and certain government assistance to encourage agriculture and rural development in developing countries. Blue Box subsidies are seen as being trade distorting.
- ▶ **Amber Box subsidies** – It includes all agricultural subsidies that do not fall into either blue or green boxes. These include government policies of Minimum support Prices (MSP) for agricultural products or any help directly related to production quantities (e.g. power, fertilizer, seeds, pesticides, irrigation, etc.). These are subject to reduction commitment to the **de-minimus level of agricultural outputs**- to 5% for developed and 10% for developing countries. India insisted that developed countries should first dismantle their agricultural subsidy structure before asking developing countries to open up their market for farm imports.

● **Market access**

- ▶ Market access refers to the reduction of tariff (or non-tariff) barriers to trade by WTO members. The 1995 Agreement on Agriculture consists of tariff reductions of:
 - 36% average reduction - developed countries - with a minimum of 15% per-tariff line reduction in next six years.
 - 24% average reduction - developing countries - with a minimum of 10% per-tariff line reduction in next ten years.
 - Least developed countries (LDCs) were exempt from tariff reductions, but they either had to convert non-tariff barriers to tariffs—a process called tariffication—or “bind” their tariffs, creating a ceiling that could not be increased in future.

● **Export subsidies**

- ▶ Export subsidies are the third pillar. The 1995 Agreement on Agriculture required developed countries to reduce export subsidies by at least 36% (by value) or by 21% (by volume) over six years. For developing countries, the agreement required cuts were 14% (by volume) and 24% (by value) over ten years

Peace Clause

- It came into force in 2013 at 9th WTO Ministerial Conference at Bali. According to it, agricultural subsidies committed under AoA cannot be challenged until the permanent solution for subsidies is in place before 2017. It means this clause will be expired in 2017 or by 11th Ministerial Conference in 2017 if no permanent solution is reached. Till 10th Ministerial Conference at Nairobi, no solution has been found for agriculture subsidies under AoA.

Trade Facilitation Agreement (TFA)

- ▶ The TFA is the WTO's first-ever multilateral accord that aims to simplify customs regulations for the cross-border movement of goods.
- ▶ It was the outcome of WTO's 9th Bali (Indonesia) ministerial package of 2013. The agreement includes provisions for:
 - Lowering import tariffs and agricultural subsidies will make it easier for developing countries to trade with the developed world in global markets.
 - Developed countries would abolish hard import quotas on agricultural products from the developing world and instead would only be allowed to charge tariffs on amount of agricultural imports exceeding specific limits.
 - It aims to reduce red-tapism to facilitate trade by reforming customs bureaucracies and formalities.

Market access

- This includes provisions related to tariffication, tariff reduction and trade facilitation in agriculture products. Tariffication means that all non-tariff barriers such as quotas, variable levies, minimum import prices, discretionary licensing, state trading measures, voluntary restraint agreements etc. need to be abolished and converted into an equivalent tariff.

- Developed countries have to reduce tariffs by 36% originating from tariffication with minimum rate of reduction of 15% for each tariff item over a 6 year period.
- Developing countries are required to reduce tariffs by 24% originating from tariffication in next 10 years.
- Special Safeguard provision allows the imposition of additional duties when there are either import surges above a particular level or particularly low import prices as compared to 1986-88 levels.

Mechanisms for developing countries

- During the Doha negotiations, developing countries have fought to protect their interest and population, afraid of competing on the global market with strong developed and exporting economies. In many countries large populations living in rural areas, with limited access to infrastructure, farming resources and few employment alternatives. Thus, these countries are concerned that domestic rural populations employed in import-competing sectors might be negatively affected by further trade liberalization, becoming increasingly vulnerable to market instability and import surges as tariff barriers are removed. Several mechanisms have been suggested in order to preserve those countries: the Special Safeguard Mechanism (SSM) and treatment of Special Products (SPs).

● Special Safeguard Mechanism

- ▶ A Special Safeguard Mechanism (SSM) would allow developing countries to impose additional safety measures in the event of an abnormal surge in imports or the entry of unusually cheap imports.

● Special Products

- ▶ At 2005 WTO Ministerial Conference in Hong Kong, WTO members agreed to allow developing countries to assign or make appropriate list of products for tariff lines as Special Products (SPs) based on "food security, livelihood security and rural development

Codex Alimentarius Commission (CAC)

- The Codex Alimentarius Commission (CAC) is an intergovernmental body with over 180 members, within the framework of the Joint Food Standards Programme.
- It was established by the Food and Agriculture Organization (FAO) of the United Nations (UN) and the World Health Organization (WHO) in 1963 with the purpose of protecting the health of consumers and ensuring fair practices in the food trade.
- Codex food safety standards are also referred in the WTO's Agreement on Sanitary and Phytosanitary measures (SPS Agreement).

Krishi Kalyan Cess (KCC)

- KCC is a cess, applicable on all services. It is to be solely used towards financing activities for the improvement of agriculture and farmer welfare.

Negotiations and Their Outcomes

- In the last two decades, the WTO talks on various ministerial conferences have failed over differences related to various issues of AoA. Ministerial Conference is the decision-making body of the WTO that takes important trade liberalization decisions. The major areas of discord between these countries are as follows:
 - ▶ Lowering of import tariffs on agricultural products.
 - ▶ Lowering or complete elimination of export subsidy on agricultural products.
 - ▶ Lowering the domestic support to the farm sector
 - ▶ Raising the authorised development aid to the LDCs.

- Developing countries like India feel that they are being discriminated against in matters like tariff on food imports into developed countries. For example, in the name of mutual access, OECD countries impose very low tariff on imports from fellow members while similar imports from developing countries are subjected to higher tariffs. The key points from rounds of discussions are as follows:

Doha Development Round

- The Doha Round of 2001 is called "Development Round" because of poor countries in its focus. However, the rich countries failed to yield much to the developing countries and instead kept pressurising the developing countries for deeper market access. However, this round brought the issue of AoA on forefront and agriculture virtually overshadowed all other things.
- The key elements of Doha Round included both agricultural and Non-agricultural Market Access (NAMA). With respect to agriculture, it included substantial and effective reductions in Overall Trade-Distorting Domestic Support (OTDS) by developed countries; self designation of an appropriate number of Special Products (SPs); an operational and effective Special Safeguard Mechanism (SSM); and Tariff simplification and tariff capping of developed country tariffs.

Reconciliatory Package, 2003

- In 2003, EU did not any subsidy to its farmers thus offering a reconciliation. But in this package, EU said that it will continue protecting the income of its farmers (protection of agricultural income to replace subsidy). It also did not mention export subsidy in its package. Thus, it failed to reach any reconciliation as stated.

Cancun and Hong Kong Meets (2003 & 2005)

- In these two meetings, India became proactive to carry forward the concerns of developing countries. The outcome draft agreements in these meets tilted heavily in favour of the developed countries so deadlock continued. Gradually, India and other countries also started to put forward their agenda of food security for which they needed public stockholding of essential commodities.

2013 Bali Ministerial Conference

- The outcome of the 2013 Bali Conference is known as Bali Package. The key points of Bali Package are as follows:
 - ▶ It was decided to find a permanent solution of public stockholding (procurement by governments for food security purpose). The developed countries decided not to challenge the breach of domestic support by public stockholding programmes of developing countries.
 - ▶ The countries agreed to provide more transparency in tariff quota.
 - ▶ The subsidies for land use, land reforms, poverty reduction programmes was included in green box.
 - ▶ It was decided to reduce export subsidies.

2015 Nairobi Ministerial Conference

- The 2015 Nairobi Ministerial conference resulted in so called Nairobi Package. This package included a commitment to abolish export subsidies for farm exports. As per this package:
 - ▶ Developed countries such as United States will need to eliminate the farm export subsidies immediately, except on a handful of agriculture products. The developing countries were allowed to end these export subsidies by 2018.
 - ▶ The Developing countries were given flexibility to cover marketing and transport costs for agriculture exports until the end of 2023. Additional time was given to the poorest and food importing countries. This simply implied that India will not be able to offer export subsidies for sugar and other farm products after eight years.

- ▶ No final decision was taken on public stock-holding as well as Special Safeguard Mechanisms (SSM).
- ▶ The countries struck a deal on IT trade whereby, they would eliminate the tariffs on 201 IT products per year. The idea is to make all IT products duty-free by 2019.
- Developing countries, particularly India, wanted public food procurement to be exempted from subsidy reduction deals under WTO norms, which say public stockholding must not exceed 10 per cent of the value of food grains produced. India's argument was that it should have permanent free dominstead of a temporary peace clause to use its food reserves to feed its poor without the threat of violating any international obligations. This issue remains unresolved so far. Further, India wanted to get the Doha Development Agenda reaffirmed.

Need of Permanent Solution

- A permanent solution would give more legal certainty and flexibility to India to run its food security programmes. Moreover, a lasting solution will help countries design their future procurement programmes accordingly.

The Argentina Conference and Current Status

- The latest and Eleventh Ministerial Conference of WTO members was held in Buenos Aires (Argentina) from 10th December to 13th December, 2017. This conference also failed to reach any consensus on any of the major objectives it had set itself before the meeting and hence no 'ministerial declaration' was issued at the end of meet. The main agenda of the conference included:
 - ▶ An effective permanent solution for public stock holding for food security programmes.
 - ▶ To address the unfinished issues of the Doha work programme Issues
 - ▶ credible outcome on domestic support for reducing farm subsidies
 - ▶ Discuss new issues relating to e- commerce, investment facilitation, bringing new disciplines for micro, small, and medium enterprises (MSMEs).

Schemes/institutions related to Agriculture Sector

National Mission for Sustainable Agriculture (NMSA)

- It is one of the eight Missions under the National Action Plan on Climate Change (NAPCC), which seeks to address issues regarding 'Sustainable Agriculture' in the context of risks associated with climate change by devising appropriate adaptation and mitigation strategies for ensuring food security, equitable access to food resources, enhancing livelihood opportunities and contributing to economic stability at the national level.

It has been formulated for enhancing agricultural productivity especially in rainfed areas focusing on integrated farming, water use efficiency, soil health management and synergizing resource conservation.

● Krishonnati Yojana

- ▶ It is an umbrella scheme which includes the following:

◦ National Food Security Mission (NFSM):

- National Food Security Mission was launched in 2007-08 to increase the production of rice, wheat and pulses by 10,8 and 2 million tonnes, respectively by the end of 11th Five Year Plan.
- The mission is being continued during 12th Five Year plan with new target of additional production of 25 million tonnes of foodgrains comprising 10 million tonnes of rice, 8 million tonnes of wheat and 4 million tonnes of pulses and 3 million tonnes of coarse cereals.
- The major interventions/activities covered under NFSM include cluster demonstrations of rice, wheat, pulses and coarse cereals, distribution of improved varieties/hybrid seeds, need

based plant and soil management, farm mechanization, resource conservation techniques/energy management, efficient water/application tools, cropping system based trainings and local initiatives, etc.

● **Mission for Integrated Development of Horticulture (MIDH):**

- It covers wide horticulture base, which includes fruits, vegetables, tuber crops, mushrooms, spices and aromatic plants flowers and foliage and plantation crops like coconut, arecanut, cashew nut, cocoa and bamboo.
- The mission emphasises on production of quality seeds and planting material, production enhancement through productivity improvement measures along with support for creation of infrastructure to reduce post harvest losses and improved marketing of produce with active participation of all stakeholders, particularly farmer groups and farmer producer organizations.

● **National Mission on Oilseeds and Oil Palm:**

- National Mission on Oilseeds and Oil Palm (NMOOP) envisages increase in production of vegetable oils sourced from oilseeds, oil palm and tree borne oilseeds.
- The strategy aims to implement the proposed mission, which will include increasing seed replacement ratio) with focus on varietal replacement; increasing irrigation coverage under oilseeds from 26 percent to 36 percent; diversification of area from low yielding cereals crops to oilseeds crops; intercropping of oilseeds with cereals/pulses/sugarcane; use of fallow land after paddy potato cultivation; expansion of cultivation of oil palm in watersheds and wastelands; increasing availability of quality planting materials of oil palm.

● **National Mission for Sustainable Agriculture:**

- (NMSA) as a programmatic intervention was made operational from the year 2014-15 aims at making agriculture more productive, sustainable and remunerative and climate resilient by promoting location specific integrated/composite farming systems; soil and moisture conservation measures; comprehensive soil health management; efficient water management practices and mainstreaming rainfed technologies.
- In relation to this following schemes have been launched:

● **Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**

- PMKSY has been formulated amalgamating ongoing schemes viz. Accelerated Irrigation Benefit Programme (AIBP) of the Ministry of Water Resources, River Development & Ganga Rejuvenation (MoWR,RD&GR), Integrated Watershed Management Programme (IWMP) of Department of Land Resources (DoLR) and the On Farm Water Management (OFWM) of Department of Agriculture and Cooperation (DAC). PMKSY has been approved for implementation across the country.
- The major objective of the PMKSY is to achieve convergence of investments in irrigation at the field level, expand cultivable area under assured irrigation (Har Khet ko pani), improve on-farm water use efficiency to reduce wastage of water, enhance the adoption of precision-irrigation and other water saving technologies (More crop per drop), enhance recharge of aquifers and introduce sustainable water conservation practices by exploring the feasibility of reusing treated municipal based water for peri-urban agriculture and attract greater private investment in precision irrigation system.
- The programme architecture of PMKSY aims at a 'decentralized State level planning and execution' structure, in order to allow States to draw up a District Irrigation Plan (DIP) and a State Irrigation Plan (SIP).
- It is expected that PMKSY will provide convergence to existing schemes of water management, thus bringing efficiency to the use of water.

◦ **National Saffron Mission**

- Kashmir valley's Karewa soils are perfect for growth of saffron which is considered as one of the most expensive cash crop. However area under saffron cultivation and yield per hectare are on constant decline. To arrest this decline National Saffron Mission was initiated in 2010. The objective (as in other missions) of the Saffron National Mission is to improve the overall production of saffron, enhancing quality of saffron, enhancement of research and extension capability and develop appropriate system for organized marketing for the growers.

◦ **Nutri-cereals**

- To promote production of millets viz. Jowar, Bajra, Ragi etc. through better technologies and creating awareness about their health benefits. These crops are more nutrient and protein rich than rice and wheat, but less remunerative to farmers.

◦ **Accelerated Fodder Development Program**

- This program targets fodder development through technologies. It is quite important for Animal Rearing sector as it is getting short of fodder.

◦ **Food and Agriculture Organization (FAO)**

- It is a specialised agency of UN that leads international efforts to defeat hunger. Its parent organization is UN Economic and Social Council (UNESCO). It was established on 16 October 1945 and its headquarters is in Rome. It has 194 member states, along with European Union (member organization).

◦ **Agri UDAN**

- It is a food and Agriculture Accelerator which focuses on catalyzing scale-up Food & Agri business start-ups through rigorous mentoring, industry networking and investor pitching.
- The main idea is to attract rural youth and train them to add value to agriculture and farmer's produce.
- The aim of AGRI- UDAAN is to bring start-up revolution in agriculture which has been mostly concentrated in Services sector

The International Fund for Agricultural Development (IFAD)

- ▶ It is an international financial institution and a specialised agency of the United Nations dedicated to eradicating poverty and hunger in rural areas of developing countries. It was established as an international financial institution in 1977 through United Nations General Assembly Resolution as one of the major outcomes of the 1974 World Food Conference.
- ▶ The strategic policy of IFAD is detailed in Strategic Framework for IFAD 2011–2015: Enabling the Rural Poor to Overcome Poverty.
- ▶ Its headquarters is in Rome, Italy, and is a member of the United Nations Development Group.

◦ **National Mission on Agricultural Extension and Technology:**

- Its aim is to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to the farmers consists of four sub-missions namely: (i) On agriculture extension; (ii) Seed and planting material; (iii) Agriculture mechanization; and (iv) Plant protection and plant quarantine.
- This includes the following initiatives:

◦ **Support to State Extension Programmes for Extension Reforms**

- This scheme has recently been revised to include manpower support; roping in the farmers' feedback into planning by setting up Farmer Advisory Committees (FACs) at block/district and state level and providing farmer-to-farmer learning and extension support through farmer friend.

- **National e-Governance Plan in Agriculture** : This scheme aims to achieve rapid development of agriculture in India through the use of ICT for ensuring timely access to agriculture related information for the farmers of the country.
- Setting up of Kisan Call Centres and farmer's portal to create awareness. It also includes platform like m- kisan portal and DD Kisan channel.
- **Price Stabilization Fund for Cereals and Vegetables** : The Government has approved the Price Stabilization Fund (PSF) as a Central Sector Scheme, with a corpus of Rs. 500 crore, to advance interest free loans to states and central/ state agencies to support their working capital and other expenses on procurement interventions for perishable agri-horticultural commodities when prices crash and farmers need to be protected. Currently it is operational for onion and potato only.
- **Interest subvention:** Government of India had announced an Interest Subvention Scheme in 2006-07 to enable banks to provide short term credit to agriculture (crop loan) upto Rs. 3 lakh at 7 per cent rate of interest to farmers. It aims to provide credit at a cheaper rate to the farmers.
- **Neeranchal**
 - For achieving the major objectives of the Watershed Component of the Pradhan Mantri Krishi Sinchayi Yojana (PMKSY) and for ensuring access to irrigation to every farm (Har Khet Ko Pani) and efficient use of water (Per Drop More Crop), Neeranchal has been implemented with the assistance of World Bank.
 - Neeranchal will translate into better implementation outcomes of PMKSY. The programme will lead to reducing surface runoff of rainwater, increasing recharge of ground water and better availability of water in rainfed areas resulting in incremental rainfed agriculture productivity, enhanced milk yield and increased cropping intensity through better convergence related programmes in project areas.

Fertilizers

- Fertilizer is a critical and expensive input required to improve agricultural output. In India, there has been a sharp increase in the use of fertilizers since the Green Revolution in the mid 1960s. To facilitate and promote the use of fertilizers in order to improve productivity, the Government has been providing fertilizer subsidy to farmers.
- For India, the standard ratio for the use of NPK fertilizers has been estimated to be 4:2:1. But during 2006-07, the ratio was 6:2.4:1 after which it is improving to reach 4.3:2:1 during 2009-10. Thus the fertilizer consumption is now less biased in favour of nitrogenous fertilizers.
- The biasness in favour of nitrogenous fertilizers reached its extreme in 1996-97 when it was 10:3:1 after which it has reduced despite periodic fluctuations.

Fertilizer Prices and Subsidy

- Fertilizer prices in India do not reflect market prices because of the Central government subsidy given to both the farmers and the fertilizers manufacturers.
- However, the fertilizer subsidy system has changed since April 2010. Till this time, the farmer got fertilizers at a pre-determined lower rate called Maximum Selling price. The manufacturer was paid a price called Retention Price which was high enough to cover his costs and yet leave a 12 percent post tax return on the net worth.
- Three important reforms were introduced in April, 2010:
 - ▶ Prices of all fertilizers except urea were decontrolled.
 - ▶ Retention Price System was replaced by Nutrient-based subsidy system: Under this system, the government pays the fertilizer companies a fixed amount of subsidy per tonne of nutrients being used and gives the companies the freedom to decide the prices of the nutrient-based fertilizers.

- ▶ The list of nutrients eligible for subsidy was expanded from just phosphatic and potassic fertilizers to include sulphur, boron and zinc.

● **New Urea Policy 2015**

- ▶ A comprehensive New Urea Policy 2015 has been formulated for the next four financial years. The Policy has multiple objectives of maximizing indigenous urea production and promoting energy efficiency in urea units to reduce the subsidy burden on the Government. Savings in energy shall reduce the carbon-footprint and would thus be more environment friendly.
- ▶ It will enable the domestic urea sector having 30 urea producing units, to become more energy efficient, would rationalize the subsidy burden and incentivize urea units to maximize their production at the same time. The policy will ensure timely supply of urea to farmers at same Maximum Retail Price (MRP) with lesser financial burden on the exchequer. It will also reduce import dependency in the urea sector.
- ▶ Additionally Government had also decided to allow urea producers to produce neem coated urea upto 100 percent of production and making it mandatory to produce a minimum of 75 percent of domestic urea as neem coated, so that farmers are benefited.
- ▶ Neem coated urea is required less in quantity with same plot size and gives higher crop yields. Underground water contamination due to leaching of urea also gets reduced with neem coating since nitrogen in the neem coated urea gets released to plants very slowly. Neem coated urea is not fit for industrial use, so chances of its illegal diversion to industries will also be lesser.

Neem(*Azadirachta indica*) coated Urea

- ▶ In January 2015, the government allowed the urea producers to produce up to 100% of production as Neem coated urea. Further, the government made it mandatory to produce at least 75% of domestic Urea as Neem coated.
- ▶ Neem coating leads to more gradual release of urea, helping plants gain more nutrient and resulting in higher yields.
- ▶ Lower underground water contamination due to leaching of urea.
- ▶ Neem serves as a natural insecticide
- ▶ Collection of neem seeds is needed for manufacturing of neem coated urea. This would generate employments in rural areas.
- ▶ Neem-coating will help check heavily subsidized urea's pilferage to chemical industry and other uses such as making of adulterated milk.

Seeds

- In India, more than four-fifths of the farmers rely on farm-saved seed leading to a low seed replacement rate.
- The importance of seeds as a crucial input was more formally recognized with the introduction of High Yielding Varieties (HYV) of seeds developed in Mexico by Prof. Norman Borlaug. It was introduced during the mid-1960s after the third Five Year Plan.
- The Indian Seed Programme includes the participation of Central and State Government, the Indian Council of Agricultural Research (ICAR), State Agricultural Universities and the Seed Corporations and private players.
- There are 15 State Seed Corporations besides two National level Corporations, viz., the National Seeds Corporation and the State Farms Cooperation of India.
- According to the type of seed generation, there are three types of seeds which are produced, viz., breeder, foundation and certified seeds.
- Breeder seeds are the highest class seeds and come directly from plant breeder. Foundation seeds are grown from the breeder seeds and the Certified seeds are grown from the foundation seeds.

- Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality seeds:
 - ▶ It is a central government scheme implemented by the Ministry of Agriculture, since 2005-06.
 - ▶ It aims to facilitate the availability of quality seeds of various crops to the farmers at affordable price and in time so as to enhance seeds replacement rate.
 - ▶ The scheme also aims to improve the quality of farm-saved seeds through 'Seed Village Programme'.
 - ▶ The Central Government has also financed Tissue Culture facilities in Odisha and Maharashtra for banana and pomegranate respectively.

Seed Replacement Ratio (SRR)

- ▶ It is a measure of how much of the total cropped area was sown with certified seeds in comparison to farm saved seeds.
- ▶ It represents the access of farmers to quality seed and it is directly proportional to productivity of farming

The Protection of Plant Varieties and Farmers' Rights (PPV&FR) Authority:

- It has been established in November 2005 to implement provisions of the PPV&FR Act, 2001. The Act was enacted to protect the Intellectual Property Rights (IPRs) of plant breeders and to stimulate investment in R&D for the development of new plant varieties.
- 14 crops were notified for the purpose of registration under the Act.

Important policy initiatives under the amended **NEW POLICY ON SEED DEVELOPMENT (NPSD)** include permitting 100% FDI under the automatic route and simplifying the procedure for inclusion of new varieties in the Organisation for Economic Cooperation and Development (OECD) Seeds Scheme.

Seed Village Scheme:

- ▶ To upgrade the quality of farmer-saved seed, which is about 80-85% of the total seed used for crop production programme, financial assistance is provided for distribution of foundation/certified seed at 50% cost of the seed of crops for production of certified/quality seeds only and for training on seed production and technology to the farmers.
- ▶ The seed produced in these seed villages are preserved/stored till the next sowing season. In order to encourage farmers to develop storage capacity of appropriate quality, assistance is given to farmers from making/procuring of Pusa Bin/Mud bin/Bin made from paper pulp for storing of seed produced by the frames open their farms.

Establishment and Maintenance of Seed Bank:

- ▶ In order to ensure that seeds are available to the farmers at the time of natural calamities like floods, droughts, etc., a need was felt to establish a Seed Bank to maintain stocks of foundation and certified seeds of different crops/varieties which can be utilized for such contingent requirements. Under this component, crop-wise targets of seeds are fixed for each participating organization for maintenance in the Seed Bank every year.

Irrigation

- There are many different types of irrigation systems, depending on how the water is distributed throughout the field. Some common types of irrigation systems include:

Surface irrigation

- Surface irrigation is the oldest form of irrigation and has been in use for thousands of years. In surface (flood, or level basin) irrigation systems, water moves across the surface of an agricultural lands, in order to wet it and infiltrate into the soil. Surface irrigation can be subdivided into furrow, border strip or basin irrigation. It is often called flood irrigation when the irrigation results in flooding or near flooding of the cultivated land. Historically, this has been the most common method of irrigating agricultural land and is still used in most parts of the world.

Localized irrigation

- Water is distributed under low pressure, through a piped network and applied to each plant.

Drip irrigation

- A type of localized irrigation in which drops of water are delivered at or near the root of plants. In this type of irrigation, evaporation and runoff are minimized.

Sprinkler irrigation

- Water is distributed by overhead high-pressure sprinklers or guns from a central location in the field or from sprinklers on moving platforms.

Center pivot irrigation

- Water is distributed by a system of sprinklers that move on wheeled towers in a circular pattern. This system is common in flat areas of the United States.

Lateral move irrigation

- Water is distributed through a series of pipes, each with a wheel and a set of sprinklers, which are rotated either by hand or with a purpose-built mechanism. The sprinklers move a certain distance across the field and then need to have the water hose reconnected for the next distance. This system tends to be less expensive but requires more labor than others.

Sub-irrigation

- Water is distributed across land by raising the water table, through a system of pumping stations, canals, gates, and ditches. This type of irrigation is most effective in areas with high water tables.

Manual irrigation

- Water is distributed across land through manual labor and watering cans. This system is very labor intensive.

Organic Farming

- Organic farming is an agricultural system that works in harmony with nature. It largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and rely upon crop rotation, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection.
- Organic farming in India has been followed since ancient times. It primarily aims at cultivating the land and raising crops in such a way, as to keep the soil alive and in good health by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and other biological materials along with beneficial microbes (biofertilizers) to release nutrients to crops for increased sustainable production in an eco-friendly and pollution-free environment.

● Key characteristics of organic farming:

- ▶ It relies on traditional techniques such as crop rotation, green manure, compost and biological. It is accomplished by using farm agronomic, biological and mechanical methods in exclusion of all synthetic off farm inputs.

- ▶ It protects the long term fertility of soils by maintaining organic matter levels and encouraging soil biological activity. It often involves **vermiculture and vermicomposting** too.
 - ▶ The biological processes, driven by **mycorrhiza**, allow the natural production of nutrients in soil throughout growing season.
 - ▶ Legumes are planted to fix nitrogen into the soil. It allows **nitrogen self-sufficiency through biological nitrogen fixation**.
 - ▶ It allows effective **recycling** of organic materials .
 - ▶ Natural insect predators are encouraged which can be specific for certain pests or of broad-range.
 - ▶ **Crop Rotation** supports a wider range of beneficial insects, soil micro-organisms, and hence, protects species from going extinct.
 - ▶ A key characteristic of organic farming is the rejection of **genetically engineered plants and animals**.
 - ▶ Hardier plants are generated through **plant breeding** rather than genetic engineering.
- **Some Facts about organic farming:**
 - ▶ Size of the Indian organic food market is Rs. 100 crore.
 - ▶ Number of organic food farmers in India are 570,000.
 - ▶ Sikkim has become India's first fully organic state by converting around 75,000 hectares of agricultural land into sustainable cultivation.
 - ▶ Uttaranchal is the first state to establish organic commodities board and created organic export zones by establishing organic bio-villages.
 - ▶ Madhya Pradesh has declared many of its villages as organic

Organic World Congress (OWC)

- The Organic World Congress (OWC) is organized once every three years in a different country and this time it is being organised in India. It provides an unique opportunity to share experiences, innovations and knowledge about organics. The last edition was held in Istanbul, Turkey, in 2014.

The International Federation of Organic Agriculture Movements (IFOAM - Organics International)

- It is the worldwide umbrella organization for the organic agriculture movement, which represents close to 800 affiliates in 117 countries.
- It declares its mission is to, "Lead, unite and assist the organic movement in its full diversity," and vision is the "worldwide adoption of ecologically, socially and economically sound systems, based on the Principles of Organic Agriculture".
- Among its wide range of activities, the federation maintains an organic farming standard, and an organic accreditation and certification service.

Paramparagat Krishi Vikas Yojana

- Under this programme, group of farmers would be motivated to take up organic farming. Fifty or more farmers will form a cluster having 50 acre land to take up organic farming under the scheme.
- Every farmer will be provided Rs. 20,000 per acre over three years to meet end to end expenditure- seed to harvesting of crops to transport of produce to the market.
- Organic farming will be promoted by using traditional resources and the organic products will be linked with the market. It will increase domestic production and certification of organic produce by involving farmers.

Allied Sectors of Agriculture

● Food Processing Industry

- ▶ According to the Confederation of Indian Industry (CII) the food-processing sector has the potential to attract US\$ 33 billion of investment in 10 years and generate employment of 9 million person-days. Realizing the importance of food processing and its potential in India the Government set up a separate Ministry for Food Processing Industries in 1998, with the following under its purview:
 - Fruit & Vegetable processing (including freezing and dehydration)
 - Grain Processing
 - Processing of Fish (including canning and freezing)
 - Processing and refrigeration of certain agricultural products, dairy products, poultry and eggs, meat and meat products
 - Industries related to bread, oilseeds, meals (edible), breakfast foods, biscuits, confectionery, malt extract, protein isolate, high protein food, weaning food and extruded food products (including other ready-to-eat foods)
 - Beer, including non-alcoholic beer
 - Alcoholic drinks from non-molasses base
 - Aerated water and soft drinks

Revolutions Related to Food Production and Food Processing

● Rainbow Revolution

- ▶ Rainbow revolution is an integrated approach to increase food production and improvement in post harvest management.
- ▶ It is launched as a part of 'National Agricultural Policy' launched in 2000 by GOI to attain 45 % annual growth rate of agriculture.

▶ Pink Revolution - Meat and Poultry Production.
▶ Red Revolution - Meat & Tomato Production.
▶ Round Revolution - Potato Revolution.
▶ Silver Fiber Revolution - Cotton Revolution.
▶ Silver Revolution - Egg/Poultry Production.
▶ White Revolution - Milk/Dairy production (Operation Flood).
▶ Yellow Revolution - Oil Seeds production.
▶ Evergreen Revolution - Overall development of Agriculture.
▶ Blue Revolution - Fish Production.
▶ Brown Revolution - Leather /Cocoa production.
▶ Golden Fibre Revolution - Jute Production.
▶ Golden Revolution - Overall Horticulture development/Honey Production.
▶ Green Revolution - Agriculture in general.

Central Sector Schemes

● Scheme for Development of Infrastructure for Food Processing

- ▶ **Mega Food Parks:-** The Scheme of Mega Food Parks was launched during 2008 to provide modern Infrastructure for food processing Units in the country on pre-identified cluster basis. The pattern of assistance is 50% of the eligible project cost in general areas and 75% in difficult areas subject to a maximum of Rs.50.00 crore.
- ▶ **Integrated Cold Chain, Value Addition and Preservation Infrastructure:-** The Scheme of Integrated Cold Chain, Value Addition and Preservation Infrastructure is to provide integrated cold chain and preservation infrastructure facilities without any break, from the farm gate to the consumer. During 12th Five Year Plan period, the allocation of the scheme is Rs.786.00 crore. The scheme envisages grant-in-aid @ 50% of the total cost of plant and machinery and technical civil work in general areas and 75% in North- Eastern region and difficult areas subject to maximum of Rs.10.00 crore per Project.
- ▶ **Modernization of Abattoirs:-** The Scheme of Modernization of Abattoirs was launched during 2008. The Scheme is implemented through local bodies (Municipal Corporations and Panchayats)/Public Sector Undertakings/Cooperatives/ Boards under Government and will have the flexibility for involvement of private investors on PPP basis. The Scheme envisages grant-in-aid @ 50% of the project cost in general areas and 75% for North- Eastern region subject to a maximum of Rs.15.00 crore per project.

● Scheme for Quality Assurance, Codex Standards, Research & Development and Other Promotional Activities

- ▶ **Food Testing Laboratories:-** The objective of the scheme is to ensure safety and quality of food products with the analysis of the samples received from food processing industries and other stakeholders. The establishment of a surveillance system for monitoring the quality and composition of food and thereby ensuring compliance of international standards on food.
- ▶ **Implementation of HACCP:-** The objective of the scheme is to motivate the food processing industries for adoption of food safety and quality assurance mechanisms such as TQM including ISO 14000, ISO 22000 HACCP, GMP, GHP, to prepare them to face global competition in post STO Regime, to enable adherence to stringent quality and hygiene norms, to enhance product acceptance by overseas buyers and to keep Indian industry technologically abreast of international best practices.
- ▶ **Research & Development:-** The objective of this scheme is that the end product/findings of R&D work must benefit food processing industries in terms of product and process development, improved packaging, value addition and leading to innovative products and process with commercial value.
- ▶ **Promotional Activities:-** Under the Scheme for Promotional Activities, the Ministry provides financial assistance for organizing pan India level Seminars/Workshops/Fair/ Exhibitions and also participate in pan India level Fair/Exhibitions spearheaded by Apex Industry Associations and Autonomous Bodies/PSUs of Govt. of India with the objective of dissemination of information regarding food processing industries.

● Scheme for Human Resource Development

- ▶ Ministry of Food Processing Industries (MFPI) has been implementing the Scheme for Human Resource Development since 9th Plan and onwards to augment the supply of trained manpower/ personnel at all levels for food processing sector namely entrepreneurs, managers, sales persons, floor workers etc.
- ▶ During the 12th Five Year Plan (2012-13), the HRD Scheme has been subsumed under the National Mission on Food Processing (NMFP), which is being implemented through State/UT Governments.

- **Strengthening of Institutions**

- ▶ This scheme focuses on putting in place new and strengthening of existing institutional mechanisms for human resource development (HRD) in the food processing sector. The following Institutions have been set up for development of food processing sector:-
 - National Institute of Food Technology Entrepreneurship & Management (NIFTEM)
 - Indian Institute of Crop Processing Technology (IICPT)
 - Indian Grape Processing Board (IGPB)
 - National Meat and Poultry Processing Board (NMPPB)

- **Centrally Sponsored Scheme of National Mission on Food Processing (NMFP):**

- ▶ The most significant initiative taken by Ministry of Food Processing Industries (MoFPI) during 12th Five Year Plan was the launch of Centrally Sponsored Scheme-National Mission on Food Processing (NMFP) through States/UTs.
- ▶ Under this Mission, funds are shared on 75:25 basis by Govt. of India and States; 90:10 in North-Eastern States and 100% grants for UTs. The components of the NMFP are (i) Technology Up-gradation / Setting up / Modernization of Food Processing Units (ii) Cold Chain, Value Addition and Preservation Infrastructure for Non-Horticulture Products (iii) Modernisation of Abattoirs (iv) Human Resource Development (v) Promotional Activities (vi) Creating Primary Processing Centres / Collection Centres in Rural Areas (vii) Modernisation of Meat Shops and (vi) Reefer Vehicles.

SAMPADA

- It is an umbrella scheme incorporating ongoing schemes of the Ministry of Food Processing
- Earlier schemes like Mega Food Parks, Integrated Cold Chain and Value Addition Infrastructure, Food Safety and Quality Assurance Infrastructure, etc.
- New schemes like Infrastructure for Agroprocessing Clusters, Creation of Backward and Forward Linkages, Creation of Food Processing & Preservation Capacities.
- The objective of the scheme is to supplement agriculture, modernize processing and decrease agri-waste.

- **Horticulture**

- ▶ The horticulture sector consists of crops like Fruits, Vegetables, Flowers, Plantation Crops and Spices.
- ▶ Globally, India is the second largest producer of fruits, and vegetables, the largest producer of mango, banana, coconut, cashew, papaya and pomegranate, and the largest producer and exporter of spices.
- ▶ Horticulture production has exceeded the production of foodgrains and oilseeds in 2012-13, owing to an 8.6% increase in productivity of horticulture crops between 2008-09 and 2012-13.

Schemes for the horticultural sector

- **Price Stabilisation Fund Schemes (PSFS)**

- ▶ PSFS for tea, coffee, rubber and tobacco growth was launched in April, 2003 against the backdrop of decline in unit value realization of these commodities.
- ▶ The objective of PSF was to safeguard the interests of growers and provide financial relief when prices fall below a specified level.
- ▶ All erstwhile schemes National Horticulture Mission (NHM), Horticulture Mission for North East and Himalayas (HMNEH), National Horticulture Board (NHB), Coconut Development Board (CDB),

Central Institute for Horticulture and National Bamboo Mission (NBM) have been subsumed under the Mission for Integrated Development of Horticulture (MIDH) during the Twelfth Plan.

● **Animal Husbandry, Dairying and Fisheries**

○ **Animal Husbandry**

- Indian Agriculture system is a model of sustainable agriculture, as it is predominantly a mixed crop livestock farming system, with the livestock segment supplementing farm incomes by providing employment, draught animals, and manure.

○ **Dairy Sector**

- India ranks first in the world in milk production, accounting for 17% of world production. During 2012-13, milk production peaked at 132.43 mt.
- It is an important secondary source of income for 70 million rural households engaged in dairying and for 70% of the workforce that comprised women. A new scheme called the National Dairy Plan Phase I has been launched in March 2012 with the objectives of improving productivity of milch animals, strengthening and expanding village-level infrastructure for milk procurement, and providing producers greater access to the market in the dairy sector. A comprehensive new scheme National Programme on Bovine Breeding and Dairy Development was launched with the objective of enhancing milk production.

○ **Fisheries**

- India ranks second in world fish production.
- The sector contributes 1% to over all GDP and represents 4.6% of agri GDP.

○ **Livestock health**

- Live Health and Disease Control Scheme.
- It is centrally sponsored.
- It has lead to overall reduction in incidence of animal diseases in the country.

○ **Important Schemes**

- National Project for Cattle and Buffalo Breeding (NPCBB). Launched in 2000 to be implemented in 10 years. It aims at genetic up gradation and development of indigenous breeds. At present 28 states and one UT are participating in the project.

○ **Livestock Insurance Scheme**

- Implementation as a centrally sponsored scheme on a pilot basis during 2005-06 to 2007-08 in 100 selected districts across the country.
- Two objectives of the scheme are:
- Providing protection mechanism to the farmers against any eventual loss of animals. Attaining qualitative improvement in livestock and their products. 50% subsidy on premium is provided by the Central Government. The scheme was implemented in the states through respective State Livestock Development Boards.

○ **National Livestock Mission**

- It has been formulated encompassing seven centrally sponsored and seven central sector schemes, with the objective of sustainable development of the live stock sector.

○ **The National Fisheries Development Board (NFDB)**

- NFDB registered in 2006 has been set up to apply modern tools of R&D like biotechnology in fisheries sector.

◦ **A Central Mini-kit Testing Programme**

- Has been implemented under which Mini-kits of latest high-yielding fodder varieties are distributed.

Economics of Animal Rearing

- India is home to a large number of breeds of animals, as part of the eco system converting waste into protein (having multi functionality with agricultural activities (ploughing and sowing), as means of transport of agricultural produce, their produce used for consumption (milk), excreta providing source of energy (cow dung), directly used for consumption and exports (poultry, meat products). Their skin used for multiple purposes like clothing, footwear, wool, woollen wear etc (sheep, yak).
- But animal rearing in India is an informal secondary occupation. It is unscientific in nature, as an ancillary, livelihood activity meeting requirements of rural families, their produce over self consumption as surplus sold amongst the local population. There is also the 70:70 feature of India, of 70% of the animals held by 70% of the rural population, largely comprising of women and landless/small/marginal farmers in rural areas.
- It is not seen as a science, but driven more out of need, experimentation and experience. They play a complementary inter-linked activity to farming and other allied activities, not allowing understanding of it being a potential source of Multiple Income Earning Opportunity (MIEO) for the rural poor. Cooperatives set up for milk and products through National Dairy Development Board (NDDB), Anand Milk Union Limited (AMUL) and others represent the first attempt of economics of animal rearing as a viable business model of not only providing means of livelihood but remunerative means of income enabling prosperity amongst farmers engaged in this activity. Goat milk sale price is much higher than price of milk from buffaloes and cows and can be seen as commercial activity.
- India has been the largest exporter of beef products and India is presently in the throes of "pink revolution" signifying a great potential for meat products. But, this will require modern and automated abattoirs, greater thrust on hygiene and processing and cannot be confined as an informal activity any more. It will also require developing local infrastructure in terms of adequate power, refrigerated storage and transport and an efficient logistics.
- Similarly poultry hatchery, eggs are fast emerging as viable businesses given the growing demand and changing consumption habits towards protein oriented diet globally. Sheep and Yak rearing can provide linkages to the woollen industry. But more than opportunities, it has structural issues which need to be addressed, to look at them as sound business proposition and the other ensuring long term viability and sustainability of this untapped area in rural areas. Dissemination of the science of animal rearing, feed and fodder, newer technologies of breeding and cross breeding and health management.

Recent Developments

■ **Punjab Plans to Set up Cooperative Rural Hubs**

CONTEXT

Aiming to strengthen the Primary Agriculture Cooperative Societies (PACS) and enhance their business by more footfall, Punjab Government has decided to transform these societies into 'cooperative rural hubs' to provide quality products of essential commodities, electronic goods and other items of daily needs at village level.

Primary Agriculture Cooperative Societies (PACS)

- ▶ These are Short Term Cooperative Credit Structure functioning at the grassroots (Gram Panchayat) level.
- ▶ These are Primary Societies owned by farmers, rural artisans etc. and intended to promote thrift and mutual help among the members; cater to their credit requirements and provide credit-linked services like input supply, storage and marketing of agricultural produce etc.
- ▶ These Cooperative Credit Institutions with their deep reach in the rural areas and accessibility to the small and marginal farmers and the other marginalized populations have been playing a vital role in dispensation of agriculture credit.

- Besides this, more 'agricultural service centres' should be established in the PACSs to provide agriculture implements on custom-hiring basis required by the farmers to cut their capital expenditures in purchase of costly tools.
- PACSs would provide latest agriculture implements to the farmers on custom-hiring basis to prevent stubble burning which would be beneficial for the societies as well as to the common people for better ecological health thereby preventing many physical diseases.
- There is plan to set up rural hubs in selected PACSs in a phased manner across the State.
- The purpose of this attempt is to strengthen the primary agriculture cooperative societies and to boost their business.
- Around 30% PACSs were in losses and others running with thin profits. So it was the need of the hour to strengthen these cooperative societies vis-à-vis to turn them into profit earning ventures.

■ New Agri Project - "Green Ag."

CONTEXT

The government had launched a Global Environment Facility (GEF) assisted project namely, "Green – Ag." in collaboration with the Food and Agriculture Organisation (FAO) in September, 2018.

Global Environment Facility

- ▶ **It was** established on the eve of the 1992 Rio Earth Summit to help tackle our planet's most pressing environmental problems.
- ▶ **It provides funding to assist developing countries in meeting the** objectives of international environmental conventions.
- ▶ **It serves as "financial mechanism" to five conventions, which are Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), Stockholm Convention on Persistent Organic Pollutants (POPs), UN Convention to Combat Desertification (UNCCD), and Minamata Convention on Mercury.**

- Green Ag.' **will help in transforming Indian Agriculture for global environmental benefits and the conservation of critical biodiversity and forest landscapes.**
- The aim of the project is to mainstream biodiversity, climate change and sustainable land management objectives and practices into Indian agriculture.
- It will also support harmonization between India's agricultural and environmental sector priorities and investments so that the achievement of national and global environmental benefits can be fully realized without compromising India's ability to strengthen rural livelihoods and meet its food and nutrition security.
- It started in high-conservation-value landscapes of five States including- Madhya Pradesh: Chambal Landscape, Mizoram: Dampa Landscape, Odisha: Similipal Landscape, Rajasthan: Desert National Park Landscape and Uttarakhand: Corbett.

- Key missions that will be targeted for strengthening include the National Mission on Sustainable Agriculture; National Livestock Mission; National Food Security Mission; National Initiative on Climate-resilient Agriculture, National Mission for Horticulture and Rashtriya Krishi Vikas Yojana.

■ Agri-Market Infrastructure Fund

CONTEXT

The Cabinet Committee of Economic Affairs recently approved creation of a corpus of Rs. 2000 crore for Agri-Market Infrastructure Fund (AMIF).

APMC

- ▶ **Agricultural Produce Market Committee (APMC)** is a statutory market committee constituted by State Governments for trade in certain notified agricultural or horticultural or livestock products, **under the Agricultural Produce Market Committee Act of the respective state.**

- The fund would be **created with NABARD for development and up-gradation of agricultural marketing infrastructure in Gramin Agricultural Markets and Regulated Wholesale Markets.**
- It will provide the State/UT Governments subsidized loan **for developing marketing infrastructure in 585 Agriculture Produce Market Committees (APMCs) and 10,000 Grameen Agricultural Markets (GrAMs).**
- States may also access AMIF for innovative integrated market infrastructure projects including Hub and Spoke mode and in Public Private Partnership mode.
- In these GrAMs, physical and basic infrastructure will be strengthened using MGNREGA and other Government Schemes.
- After approval of AMIF Scheme, the interest subsidy will be provided by DAC&FW to NABARD in alignment with annual budget releases during 2018-19 and 2019-20 as well as upto 2024-25.
- The Scheme being demand driven, its progress is subject to the demands from the States and proposals received from them.

Important announcements for agriculture made in the interim budget 2019-

- Micro irrigation fund Rs. 5,000 crore
- Dairy Processing and Infrastructure Development Fund (DIDF) Rs. 10,881 crore
- Agri Market Infrastructure Fund – Rs. 2,000 crore
- Rs. 10,000 crore for both Fishery & Aquaculture and Animal Husbandry Infrastructure Development Fund.

■ Krishi Kalyan Abhiyan

CONTEXT

Krishi Kalyan Abhiyan being implemented in 25 villages in each of the 111 Aspirational Districts from 1st June to 31st July, 2018.

Salient Features

- Krishi Kalyan Abhiyan undertakes various **activities to promote best farming practices and enhance Agricultural income.**
- The **Ministry of Agriculture and farmers' welfare** in line with the **vision of doubling farmers' income by 2022** has launched the Krishi kalyan Abhiyaan from 1st June, 2018 till 31st July, 2018

so as **to aid, assist and advice farmers on how to improve their farming techniques and raise their incomes.**

- The Krishi Kalyan Abhiyaan was undertaken in 25 villages with more than 1000 population each in Aspirational Districts identified in consultation with Ministry of Rural Development as per directions of NITI Aayog.
- The overall coordination and implementation in the 25 villages of a district is being done by Krishi Vigyan Kendra of that district.

Various activities to promote best practices and enhance agriculture income are being undertaken under this plan such as:-

- Distribution of Soil Health Cards to all farmers; 100% coverage of bovine vaccination for Foot and Mouth Disease (FMD) in each village.
- 100% coverage of Sheep and Goat for eradication of Peste des Petits ruminants (PPR); Distribution of Mini Kits of pulses and oilseeds to all; Distribution of Horticulture/Agro Forestry/ Bamboo plant @ 5 per family (location appropriate); Making 100 NADAP Pits in each village.
- Artificial insemination saturation; Demonstration programmes on Micro- irrigation; Demonstrations of integrated cropping practice.
- In addition, demonstration programmes on Micro Irrigation and Integrated Cropping Practice will also take place so as to familiarize farmers with the latest techniques and how they can be incorporated at the grass root level.
- Training programmes are being conducted in each of the villages by ICAR/KVs for Bee Keeping, Mushroom cultivation and Kitchen garden; Women participants and farmers will be given preference for the training program.

'Transformation of Aspirational Districts' programme:

- ▶ **Aim: Launched in January 2018, the 'Transformation of Aspirational Districts' programme aims to quickly and effectively transform some of the most underdeveloped districts of the country.**
- ▶ **3Cs: The broad contours of the programme are** Convergence (of Central & State Schemes), Collaboration (of Central, State level 'Prabhari' Officers & District Collectors), and Competition among districts driven by a Mass Movement or a Jan Andolan.
- ▶ **Focus: With States as the main drivers, this program will focus on the strength of each district, identify low-hanging fruits for immediate improvement, measure progress, and rank districts.**

■ Kisan Kalyan Pradhikaran

CONTEXT

In an attempt to increase farm productivity and farmers' income, the Haryana government announced the setting up of 'Haryana Kisan Kalyan Pradhikaran', an authority which will undertake measures to make agriculture remunerative.

- The Pradhikaran will play a very important role in **doubling farmers income by integrating different schemes and policies.**
- It will undertake all possible **measures to enhance farm productivity and mitigate the physical, financial and psychological distress of farm households and landless workers.**
- It will also **maintain close liaison with line departments for implementation and monitoring of schemes, programmes and projects through the Agriculture Advisory Council** and issue necessary guidelines from time to time.
- The body will oversee regulations, guidelines and procedures for farmers' welfare and suggest amendments in the statute governing farmers' welfare in the State in consonance with Central Acts.

■ Agriculture Price Policy (APP) in India

CONTEXT

Based on the recommendations of the Commission for Agricultural Costs and Prices (CACP), the Department of Agriculture and Co-operation, Government of India, declares Minimum Support Prices (MSP) for 22 crops before their sowing seasons.

APP is the tool for influencing the prices of agricultural product. It is an incentive to the producer to produce a particular product according to the desired quality.

Determination of Minimum Support Price

- The CACP is a statutory body and **submits separate reports recommending prices for Kharif and Rabi seasons**. The Central Government after considering the report and views of the State Governments and also keeping in view the overall demand and supply situation in the country, takes the final decision.
- The information/data used by the Commission, inter-alia include the following:
 - ▶ Cost of cultivation per hectare and structure of costs in various regions of the country and changes there in;
 - ▶ Cost of production per quintal in various regions of the country and changes therein;
 - ▶ Prices of various inputs and changes therein;
 - ▶ Market prices of products and changes therein;
 - ▶ Prices of commodities sold by the farmers and of those purchased by them and changes therein;
 - ▶ Supply related information - area, yield and production, imports, exports and domestic availability and stocks with the Government/public agencies or industry;
 - ▶ Demand related information - total and per capita consumption, trends and capacity of the processing industry;
 - ▶ Prices in the international market and changes therein, demand and supply situation in the world market;
 - ▶ Prices of the derivatives of the farm products such as sugar, jaggery, jute goods, edible/non-edible oils and cotton yarn and changes therein;
 - ▶ Cost of processing of agricultural products and changes therein;

Impact of Pricing Policy

- The policy has been instrumental in **creating a fairly stable price environment for farmers to induce them to adopt new production technology** and thereby increase the output of foodgrains. The improvement in the level of food security in India during the last three decades has been widely acknowledged the world over.
- Geographically dispersed growth of cereal production during the last two decades coupled with public distribution system of cereals helped in increasing the physical access to food.

■ Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA)

CONTEXT

Cabinet approves New Umbrella Scheme "Pradhan Mantri Annadata Aay Sanrakshan Abhiyan" (PM-AASHA).

- PM-AASHA **will provide MSP assurance to farmers**.

- The Scheme is aimed at **ensuring remunerative prices to the farmers for their produce as announced in the Union Budget for 2018.**

Need of PM AASHA:

- Increasing MSP is not adequate and it is more important that farmers should get full benefit of the announced MSP.
- For this, government realizes that it is essential that if price of the agriculture produce market is less than MSP, then in that case State Government and Central Government should purchase either at MSP or work in a manner to provide MSP for the farmers through some other mechanism.

Components of PM-AASHA:

- Price Support Scheme (PSS),
- Price Deficiency Payment Scheme (PDPS)
- Pilot of Private Procurement & Stockist Scheme (PPSS).

Details:

- In Price Support Scheme (PSS), physical procurement of pulses, oilseeds and Copra will be done by Central Nodal Agencies with proactive role of State governments.
- It is also decided that in addition to NAFED, Food Cooperation of India (FCI) will take up PSS operations in states /districts.
- The procurement expenditure and losses due to procurement will be borne by Central Government as per norms.
- **Under Price Deficiency Payment Scheme this scheme (PDPS)**, it is proposed to cover all oilseeds for which MSP is notified.
- In this direct payment of the difference between the MSP and the selling/modal price will be made to pre-registered farmers selling his produce in the notified market yard through a transparent auction process.
- All payment will be done directly into registered bank account of the farmer.
- This scheme does not involve any physical procurement of crops as farmers are paid the difference between the MSP price and Sale/modal price on disposal in notified market.

Other pro-farmer initiatives of the Government:

- Several market reforms have been initiated. These include **Model Agricultural Produce and Livestock Marketing Act, 2017 and Model Contract Farming and Services Act, 2018.** Many States have taken steps to adopt these through legislation.
- Efforts are on for a new market architecture, so as to ensure that farmers get remunerative prices on their produce. These include **setting up of Gramin Agricultural Markets (GrAMs) so as to promote 22,000 number of retail markets** in close proximity of farm gate; competitive and transparent wholesale trade at APMC through eNAM and a robust and pro-farmer export policy.
- Besides, several other pro-farmers' initiatives such as implementation of **Pradhan Mantri Fasal Bima Yojana, Pradhan Mantri KrishiSinchai Yojana, ParamparagatKrishi Vikas Yojana and distribution of Soil Health Cards have been undertaken.** The commitment for farmer welfare is also reflected by unprecedented decision of announcing minimum support price based on the formula of 1.5 times the cost of cultivation.

■ **Bhavantar Bhugtan Yojana**

CONTEXT

Efforts are being made by the Madhya Pradesh State Government to provide proper value of produce to the farmers of the state. In this direction the Bhavantar Payment Scheme (price deficit finance scheme) is being implemented on a pilot basis.

A Deficiency price payment scheme is **ad hoc mechanism and not remedy**. Because neither the centre nor state governments are putting in the political capital to reform India's inefficient agriculture markets where the bulk of the produce is traded. Prices are decided in a non-transparent way by a cartel of traders.

Bhavantar Bhugtan Yojana

- It's a scheme, **to cushion farmers from price crashes**. If prices fall, the government will pay farmers the deficit, hence 'bhavantar'.

How is it different from minimum support price?

- In MSP, there are a lot of overhead costs that the government has to bear. In most crops, it ranges from 30-40% because of storage and handling costs, and waste.
 - In Bhavantar, on the other hand, the state's cost has come down to just 18% — and **it goes straight to the farmer, not to transporters and chowkidars as in MSP**.
 - Bhavantar ensures profit to farmers, without the need to stock their produce and incur maintenance and transportation costs.
- Madhya Pradesh is the largest producer of pulses and oilseeds — 28% of the total production in the country. India is not self-reliant in this. On an average, the Union government imports pulses and oilseeds worth Rs 90,000 crore every year while in paddy and wheat, the country is more than self-reliant. So only oilseeds and pulses covered under the scheme and not paddy or wheat.

■ Maharashtra Adopt Food Park Model

CONTEXT

M/s Satara Mega Food Park Pvt. Ltd. at Village Degaon, District Satarawas is the first Mega Food Park in the state of Maharashtra.

- This is the 12th Mega Food Park operationalized in the country so far and the 10th operationalized during the tenure of present government.

India's first mega food park 'Srini Mega Food Park', **sprawling over 147-acre space, was opened in Chittoor in Andhra Pradesh in 2012.**

About Mega Food Park Scheme

- The Scheme of Mega Food Park **aims at providing a mechanism to link agricultural production to the market by bringing together farmers processors and retailers so as to ensure maximizing value addition, minimizing wastage, increasing farmers income** and creating employment opportunities particularly in rural sector.
- The primary objective of the Scheme is **to provide modern infrastructure facilities for the food processing along the value chain from the farm to the market** with a cluster based approach based on a hub and spokes model
- The Mega Food Park Scheme is based on "**Cluster**" approach and envisages creation of **state of art support infrastructure in a well-defined agri / horticultural zone** for setting up of modern food processing units along with well-established supply chain.
- Mega food park typically consist of supply chain infrastructure including collection centers, primary processing centers, central processing centers, cold chain and around 30-35 fully developed plots for entrepreneurs to set up food processing units.

■ Gujarat's first Mega Food Park inaugurated in Surat

CONTEXT

Union Minister for Food Processing Industries has inaugurated the first Mega Food Park in Gujarat.

Significance

- The Gujarat Agro Mega Food Park will benefit the **people of Surat District and the people of nearby Districts of Navsari, Tapi, Narmada & Bharuch.**
- The modern infrastructure for food processing created at Park will benefit the farmers, growers, processors and consumers of Gujarat and adjoining areas immensely and prove to be a big boost to the growth of the food processing sector in the State of Gujarat.
- The union government is providing an environment that is smooth, transparent and easy for investors wanting to start an enterprise in India and in a bid to make India a resilient food economy and the Food Factory of the World, the government has made Food Processing a major thrust area of 'Make in India'.
- There is an increasing focus on boosting the food processing industry in India so that agriculture sector grows exponentially and becomes a major contributor to doubling the farmers' income and to contribute to 'Make in India' initiative of the government.

■ Three Year Action Plan of Agricultural Education:

CONTEXT

Cabinet approves 'Three Year Action Plan(2017-2020) of Agricultural Education Division & ICAR Institutes.

- **Purpose:** for strengthening and developing higher agricultural education in India.

It comprises of:

- **"Strengthening and Development of Higher Agricultural Education in India** - Rs. Rs.2050.00 crore;
- ICAR-National Academy of Agricultural Research Management (NAARM) - Rs. 24.25 crore and
- ICAR - Central Institute of Women in Agriculture (CIWA) including All India Coordinated Research Project on Home Science (AICRP-HS) - Rs.151.21 crore.

Significance:

- The scheme is aimed to **generate quality human resources from the institutions of higher agricultural education.**
- It encompasses several new initiatives including, steps to attract talented students, reducing academic inbreeding and addressing faculty shortage.
- It will also take care of green initiatives, mitigating faculty shortage, international ranking, alumni involvement, promoting innovations, inspired teacher network, reducing inbreeding, academia interface, technology enabled learning, Post-doctoral Fellowships, Agriculture Education Portal, Scientific Social responsibility etc.
 - ▶ **For quality assurance** ranking of the agricultural universities has been linked to the financial support under the scheme along with accreditation.

Benefits:

- This will lead to generation of competitive and confident human resource.
- In addition, research on gender issues in agriculture and allied fields, formulating gender-equitable agricultural, policies/programmes and gender-sensitive agricultural-sector responses will be undertaken by ICAR-CIWA.

- Capacity building needs of the human resources and stakeholders of the entire National Agricultural Research & Education System (NARES) will be catered leading to enhancing of competencies and capacities of the stakeholders including farmers, young scientists, students and agri-industry in NARES by ICAR-NAARM.

- ▶ The Indian Council of Agricultural Research (ICAR) **undertakes planning, development, coordination and quality assurance in higher agricultural education through partnership with 75 Agricultural Universities (AUs) established across the country.**
- ▶ The National Academy of Agricultural Research Management (NAARM) **has played a key role in enhancing the capacities of individuals and institutions of National Agricultural Research and Education System (NARES) in agricultural research, education and technology management.**
- ▶ The Central Institute for Women in Agriculture (CIWA) **has been providing a leadership role in empowering farm women as in the changing agricultural scenario the roles and responsibilities of women in agriculture are indispensable.**

■ Price Deficiency Payment (PDP) system

CONTEXT

The Niti Aayog released a three-year action agenda for the Centre suggesting the 'Price Deficiency Payment' (PDP) system among other reforms.

Aim/Objective:

- Under this, farmers will be compensated for the difference between the MSPs for select crops and their actual market prices.

Salient Features:

- The key benefit from the price deficiency payment is that it will **reduce the need for the government to actually procure food crops**, transport and store them and then dispose of them under PDS.
- The PDP system may be more effective than MSPs at ensuring that cropping patterns in India respond to consumer needs.
- It may also ensure that more farmers actually benefit from price support.
- ***The difference between the support and market prices can instead simply be paid in cash to the farmer.***
- It is believed that the Price Deficiency Payment can also keep India's bill on food subsidies under check.

Schemes launched by different state governments:

Mukhya Mantri Bhavantar Bhugtan Yojana:

- It is an ambitious scheme launched to ensure that farmers receive minimum support prices (MSP) for pulses and oil seeds.

Bhavantar Bharpai:

- The **Haryana Government** launched country's first 'Bhavantar Bharpai' a scheme which would come into effect in January through which the state government would compensate farmers for price deficit for agricultural produce in which tomato, onion, potato and cauliflower have been included. It is applicable **only to farmers growing vegetables.**

■ Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM)

CONTEXT

The Kusum scheme was announced in the Union Budget in 2018.

Ministry: Minister of State for Ministry of Agriculture & Farmers

Aim/Objective:

- KUSUM scheme aims to provide **1.75million off-grid agricultural solar pumps** by building 10,000 MW solar plants on barren lands.

Salient Features:

- As per the scheme, 10,000 MW solar plants on barren lands will be built
- Providing sops to DISCOMS so they can purchase the electricity produced
- Solarising existing pumps of 7250 MW as well as solarising government tube wells with a capacity of 8250 MW
- **Farmers will be provided 60% subsidy on solar pumps by the government.** It will be shared between States and Centre whereas 30% will be provided through bank loans. Farmers will bear the balance cost.
- 7.5 lakh solar pumps will be distribution.

Analysis:

- The scheme will help in the promotion of decentralized solar power production. It will reduce the transmission losses of discoms and provide support for the improvement of financial health of DISCOMs by the reduction of subsidy which is a burden to agriculture sector. Kisan Urja Suraksha evam Utthaan Mahaabhiyan (KUSUM) scheme will also **promote water conservation, energy efficiency and provide water security to farmers.**

■ Rythu Bandhu (Friend of farmers) scheme

CONTEXT

Telangana government launched Rythu Bandhu (friend of farmers) Scheme, an investment support scheme to support livelihood of farmers.

Aim/Objective:

- The objective is to help the farmer meet a **major part of his expenses on seed, fertiliser, pesticide, and field preparation.**

Ministry: Government of Telangana

Salient Features:

- Rythu Bandhu is a support scheme for farmers in Telangana, which **provides cheque payments to farmers based on their landholdings.**
- It is first of its kind **investment support scheme** for farmers to be launched by any state in India.
- Under this scheme, farmers will directly get **financial support twice every year** to maximise agricultural production and productivity.
- They will get investment support of Rs **8,000 per acre every year (Rs. 4000 each for monsoon and Rabi season)** as crop investment support.
- About 58 lakh farmers who till over 1.42 crore acres of land in the state are expected to be benefitted from the initiative.
- The state government has already set aside Rs 12,000 crore in the 2018-19 budget exclusively for this scheme.

- The government will issue **cheques rather than make direct benefit transfer (DBT)** because banks might use the DBT money to adjust against farmers' previous dues.

■ Micro Irrigation Fund (MIF)

CONTEXT

The Cabinet Committee on Economic Affairs chaired by the Prime Minister, approved an initial Corpus of Rs.5,000 crore for setting up of a dedicated "Micro Irrigation Fund" (MIF) with NABARD under Pradhan Mantri Krishi Sinchayee Yojana (PMKSY).

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- The dedicated MIF will supplement efforts of **Per Drop More Crop (PDMC)** Component of PMKSY in an effective and timely manner. It will help to bring about 10 lakh ha of land under irrigation through innovative composite, community and cluster based micro irrigation projects with additional investment in MIF.
- The MIF will facilitate states to mobilise resources for their initiatives, including additional (top up subsidy) in implementation of PMKSY-PDMC to achieve annual target of about 2 Million ha per year **during remaining period of 14th Finance Commission** under PDMC component of PMKSY as recommended by Group of Secretaries.

Salient Features:

- The government estimates the area that can come under micro irrigation at **69.5 million hectares**, compared with the **current coverage of only about 10 million hectares**.
- The states can access this fund for incentivizing micro-irrigation, innovative integrated projects, including projects in the **Public Private Partnership (PPP) mode**.
- The funds can be accessed by State Level Agencies/ Farmers Producers Organization (FPO)/ Cooperatives with state government guarantee or any equivalent collateral.
- The fund may be accessed by the Farmers Co-operatives for innovative cluster based community irrigation projects.
- Under the programme, **NABARD will extend loans to state governments during this period**. The loans can be **paid back in 7 years**, including a **grace period of two years**.

■ National Bamboo Mission (NBM)

CONTEXT

The Cabinet Committee on Economic Affairs chaired by the Prime Minister approved Centrally Sponsored Scheme of National Bamboo Mission (NBM) under National Mission for Sustainable Agriculture (NMSA) during remaining period of Fourteenth Finance Commission (2018-19 & 2019-20).

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- To increase the area under bamboo **plantation in non-forest Government and private lands** to supplement farm income and contribute towards resilience to climate change.
- To improve post-harvest management through establishment of innovative primary processing units, treatment and seasoning plants, primary treatment and seasoning plants, preservation technologies and market infrastructure.
- To promote product development at micro, small and medium levels and feed bigger industry.

- To rejuvenate the under developed bamboo industry in India.
- To promote skill development, capacity building, awareness generation for development of bamboo sector.

Analysis:

- Bamboo plantation will contribute to optimizing farm productivity and income thereby enhancing livelihood opportunities of small & marginal farmers including landless and women as well as provide quality material to industry. Thus, the Mission will not only serve as a potential instrument for enhancing income of farmers but also contributing towards climate resilience and environmental benefits.
- The Mission will also help in creating employment generation directly or indirectly in both skilled and unskilled segments.

Background:

- **National Bamboo Mission (NBM)** started as a **Centrally Sponsored Scheme in 2006-07**, was mainly emphasizing on **propagation and cultivation of bamboo**, with limited efforts on processing, product development and value addition.
- There, was weak linkage between the producers (farmers) and the industry.
- The restructured proposal gives simultaneous emphasis to propagation of quality plantations of bamboo, product development and value addition including primary processing and treatment; micro, small & medium enterprises as well as high value products; markets and skill development, thus addressing the complete value chain for growth of the bamboo sector.

■ **Mega Food Parks**

CONTEXT

Food Processing Minister Harsimrat Kaur Badal inaugurated Cremica Food Park, which is the first mega food park of Himachal Pradesh.

Ministry: Ministry of Food Processing Industries (MoFPI)

Aim/Objective:

- Providing a mechanism to link agricultural production to the market by bringing together farmers, processors and retailers so as to ensure maximizing value addition, minimizing wastage, increasing farmers income and creating employment opportunities particularly in rural sector.

Salient features:

- The Mega Food Park Scheme is based on "**Cluster**" **approach** and envisages creation of state of art support infrastructure in a well-defined agri / horticultural zone for setting up of modern food processing units in the industrial plots provided in the park with well-established supply chain.
- Mega food park typically consist of supply chain infrastructure including collection centers, primary processing centers, central processing centers, cold chain and around 25-30 fully developed plots for entrepreneurs to set up food processing units.
- The Mega Food Park project is **implemented by a Special Purpose Vehicle (SPV)** which is a Body Corporate registered under the **Companies Act**. State Government, State Government entities and Cooperatives are not required to form a separate SPV for implementation of Mega Food Park project.
- Entrepreneurs looking for fully developed Industrial Plots to setup food processing Units and avail other related services may contact promoters of Mega Food Parks.

■ Operation Greens

CONTEXT

In the budget speech of Union Budget 2018-19, a new Scheme "Operation Greens" was announced on the line of "Operation Flood", with an outlay of Rs.500 crore to promote Farmer Producers Organizations (FPOs #), agri-logistics, processing facilities and professional management.

- Accordingly, the Ministry has formulated a scheme for integrated development of **Tomato, Onion and Potato (TOP)** value chain.

Ministry: Ministry of food processing industries (**MoFPI**)

Aim/Objective:

- Enhancing value realisation of TOP farmers by targeted interventions to strengthen TOP production clusters and their FPOs, and linking/connecting them with the market.
- Price stabilisation for producers and consumers by proper production planning in the TOP clusters and introduction of dual use varieties.
- Reduction in post-harvest losses by creation of farm gate infrastructure, development of suitable agro-logistics, creation of appropriate storage capacity linking consumption centres.
- Increase in food processing capacities and value addition in TOP value chain with firm linkages with production clusters.
- Setting up of a market intelligence network to collect and collate real time data on demand and supply and price of TOP crops.

Salient features:

- The scheme has two-pronged strategy of **Price stabilisation measures (for short term) and Integrated value chain development projects (for long term)**.
- Short term Price Stabilisation Measures
 - ▶ NAFED will be the Nodal Agency to implement price stabilisation measures. MoFPI will provide 50% of the subsidy on the following two components:
 - ▶ Transportation of Tomato Onion Potato(TOP) Crops from production to storage;
 - ▶ Hiring of appropriate storage facilities for TOP Crops;
- Long Term Integrated value chain development projects
 - ▶ Capacity Building of FPOs & their consortium
 - ▶ Quality production
 - ▶ Post-harvest processing facilities
 - ▶ Agri-Logistics
 - ▶ Marketing / Consumption Points
 - ▶ Creation and Management of e-platform for demand and supply management of TOP Crops.

Operation Greens:

- It was announced in **Union Budget 2018-19** on line of Operation Flood **to promote FPOs, agri-logistics, processing facilities and professional management**.
- It aims to promote farmer producers organisations, processing facilities, agri-logistics and professional management.
- It also aims to aid farmers and help control and limit erratic fluctuations in the prices of **tomatoes, onions and potatoes (TOP)**.
- It is essentially **price fixation scheme** that aims to ensure farmers are given the right price for their produce.
- The idea behind it is to double the income of farmers by the end of 2022.

■ Price stabilization fund scheme

Ministry: Ministry of Consumer Affairs

Aim/Objective:

- To help regulate the price volatility of important agri-horticultural commodities like onion, potatoes and pulses.

Salient features:

- The scheme provides for **maintaining a strategic buffer of aforementioned commodities** for subsequent calibrated release to moderate price volatility and discourage hoarding and unscrupulous speculation.
- For building such stock, the scheme **promotes direct purchase from farmers/farmers' association at farm gate/Mandi.**
- The PSF is utilized for granting interest free advance of working capital to Central Agencies, State/UT Governments/Agencies to undertake market intervention operations.
- Apart from domestic procurement from farmers/wholesale mandis, import may also be undertaken with support from the Fund.

■ Fisheries & Aquaculture Infrastructure Development Fund (FIDF)

CONTEXT

The Cabinet Committee on Economic Affairs chaired by the Prime Minister gave its approval for creation of special Fisheries and Aquaculture Infrastructure Development Fund (FIDF).

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- Creation of fisheries infrastructure facilities both in marine and inland fisheries sectors.
- To augment fish production to achieve its target of 15 million tonne by 2020 set under the Blue Revolution; and to achieve a sustainable **growth of 8% -9%** thereafter to reach the fish production to the level of about **20 MMT by 2022-23.**
- Employment opportunities to over 9.40 lakh fishers/fishermen/fisherfolk and other entrepreneurs in fishing and allied activities.
- To attract private investment in creation and management of fisheries infrastructure facilities.
- Adoption of new technologies.

Salient Features:

- FIDF would provide concessional finance to State Governments / UTs and State entities, cooperatives, individuals and entrepreneurs etc., for taking up of the identified investment activities of fisheries development.
- Under FIDF, **loan lending will be over a period of five years from 2018-19 to 2022-23 and maximum repayment will be over a period of 12 years inclusive of moratorium of two years on repayment of principal.**
- The **National Bank for Agriculture and Rural Development (NABARD), National Cooperatives Development Corporation (NCDC) and all scheduled Banks will be the nodal loaning entities.**
- The creation of the special fund will enable the creation of fisheries infrastructure facilities both in marine and inland fisheries sectors.
- It aims to boost fish production and help achieve the **target of producing 15 million tonnes of fish by 2020, which was set under the Blue Revolution.**

- It will also support the government's aim to **achieve sustainable growth of 8 -9 per cent** and thereafter take the fish production to the level of about 20 million tonnes by 2022-23.
- The fund will also boost employment opportunities for over 9.40 lakh fishermen and other entrepreneurs in fishing and allied activities.
- It will also attract private investment in the creation and management of fisheries infrastructure facilities.
- Further, it will encourage the adoption of new technologies in the fisheries sector.

■ Yuva Sahakar-Cooperative Enterprise

CONTEXT

Union Minister of Agriculture and Farmers' Welfare launched Yuva Sahakar-Cooperative Enterprise Support and Innovation Scheme of National Cooperative Development Corporation (NCDC).

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- It is youth-friendly scheme aimed at **attracting youth to cooperative business ventures**.

Salient Features:

- The scheme is linked to **Rs 1000 crore 'Cooperative Start-up and Innovation Fund (CSIF)' created by the NCDC**
- It envisages 2% less than applicable rate of interest on term loan for the project cost up to Rs 3 crore including 2 years moratorium on payment of principal.
- **All types of cooperatives in operation for at least one year are eligible to avail of the scheme.**
- Under it more incentives will be provided for cooperatives of North Eastern region, Aspirational Districts and cooperatives with women or SC or ST members.
- The funding for the project under this scheme will be **up to 80% of the project cost** for these special categories against 70% for others
- The **NCDC has the unique distinction of being the sole statutory organisation functioning as an apex financial and developmental institution exclusively devoted to cooperative sector.**
- It supports cooperatives in diverse fields apart from agriculture and allied sectors.
- It is an **ISO 9001:2015** compliant organisation and has a distinctive edge of competitive financing.
- It has extended financial assistance of Rs 63702.61 crore during 2014-2018 (as on November 13), 220% more than Rs 19850.6 during 2010-14.

■ State of Maharashtra's Agribusiness and Rural Transformation (SMART) Project

CONTEXT

Maharashtra Government launched World Bank assisted State of Maharashtra's Agribusiness and Rural Transformation (SMART) Project to transform rural Maharashtra.

Aim/Objective:

- The objective of project is to **create and support value chains in post-harvest segments** of agriculture, facilitate agribusiness investment, stimulate SMEs within the value chain.

Salient Features:

- It will support resilient agriculture production systems, expand access to new and organised markets for producers and enhance private sector participation in the agribusiness.
- The project will be implemented in 10,000 villages of total 40,913 villages in states with objective to achieve sustainable farming within the next three years.
- The project is giant step towards transformation of rural economy and empowerment of farmers and also sustainable agriculture through public-private partnership (PPP) model.
- It seeks to sure higher production of crops and create robust market mechanism to enable farmers to reap higher remunerations for the yield.
- It unites agriculture-oriented corporates and farmers by providing them common platform.
- Its focus is on villages which are reeling under worst agriculture crisis compounded by lack of infrastructure and assured value chains to channelize farm produce.

■ RKVY-RAFTAAR

CONTEXT

The Cabinet Committee on Economic Affairs chaired by the Prime Minister Shri Narendra Modi, approved the continuation of Rashtriya Krishi Vikas Yojana (RKVY) as Rashtriya Krishi Vikas Yojana-Remunerative Approaches for Agriculture and Allied sector Rejuvenation (RKVY-RAFTAAR) for three years, i.e. 2017-18 to 2019-20.

Aim/Objective:

- The financial allocation of the scheme will be Rs. 15,722 crore with the objective of making farming as a remunerative economic activity through strengthening the farmer's effort, risk mitigation and promoting agribusiness entrepreneurship.

Salient features:

- RKVY-RAFTAAR **funds would be provided to the States as 60:40 grants between Centre and States (90:10 for North Eastern States and Himalayan States)** through the following streams:
 - Regular RKVY-RAFTAAR (**Infrastructure & Assets and Production Growth**) with 70% of annual outlay to be allocated to states as grants based for the following activities:
 - ▶ Infrastructure and assets with 50% of regular RKVY-RAFTAAR outlay.
 - ▶ Value addition linked production projects with 30% of regular RKVY-RAFTAAR outlay.
 - ▶ Flexi-funds with 20% of regular RKVY-RAFTAAR outlay. States can use this for supporting any projects as per the local needs.
 - RKVY-RAFTAAR special sub-schemes of National priorities - 20% of annual outlay; and
 - Innovation and agri-entrepreneur development through creating end-to-end solution, skill development and financial support for setting up the agri-enterprise -10% of annual outlay including 2% of administrative costs.
- The scheme will incentivize States in enhancing more allocation to Agriculture and Allied Sectors. This will also strengthen farmer's efforts through creation of agriculture infrastructure that help in supply of quality inputs, market facilities etc. This will further promote agri-entrepreneurship and support business models that maximize returns to farmers.

■ Pandit Deendayal Upadhyay Unnat Krishi Shiksha Scheme

Aim/Objective:

- It was launched for giving the agricultural education to the people.

Salient Features:

- The intentions that this particular scheme comes up with are listed in the points given below:
 - ▶ The scheme has come up with some stories where the steps are taken to uplift the cultivation process and that lead to the success of agriculture.
 - ▶ With such schemes the students who are studying agriculture get the opportunity to try and come up with certain solutions that increases the yield in the agricultural field.
 - ▶ This has also helped the nation to have better outcomes from the agricultural field, thus, the farmers are benefited and that can ultimately lead the success of the nation.
 - ▶ The excess yield has also helped the nation to export the grains to other countries and that will earn better profit for the farmers which will indirectly lead to the benefits of the nation.

■ e-RaKAM

CONTEXT

The Union Government has launched a portal, e-Rashtriya Kisan Agri Mandi (e-RaKAM). It will provide a platform to sell agricultural produce and strengthen the agriculture-oriented Indian economy.

Aim/Objective:

- It is a digital initiative that aims to bring together the PSUs, civil supplies, farmers and buyers on a single platform so that the selling and buying process of agricultural products become smooth.

Salient features:

- The e-RaKAM is a first-of-its-kind initiative that leverages technology to **connect farmers of the smallest villages to the biggest markets of the world** through internet and e-RaKAM centres.
- With the help of the platform, various crops whose price increases due to rainfall or bad weather conditions will be managed and get in the market.
- The portal is **jointly developed by state-run-auctioneer MSTC and Central Warehousing Corporation arm CRWC.**

■ Project CHAMAN

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- To develop sound methodology for **estimation of Horticulture crops** and implement on pilot basis using Sample Survey methodology and Remote Sensing technology.

Salient features:

- CHAMAN stands for **Coordinated Horticulture Assessment and Management.**
- This scheme helps the states to identify suitable areas and horticultural crop types using **satellites and remote sensing technology.**
- The information collected through remote sensing and geoinformatics data is processed to integrate with information on weather, soil, land-use, and crop mapping to prepare horticulture development plans.

■ Biotech KISAN

Ministry: Ministry of Science and Technology

Aim/Objective:

- It aims to understand the **problems of water, soil, seed and market faced by the farmers and provide simple solutions to them.**

Target group:

- Farmers, especially women farmers

Salient features:

- Biotech-KISAN will connect farmers to best global practices; **training workshops** will be held in India and other countries. **Farmers and Scientists will partner** across the globe.
- The Biotech-KISAN is a **Farmer centric scheme** launched by of the **Department of Biotechnology**, where **scientists will work in sync with farmers** to understand problems and find solutions.
- Developed in consultation with the farmers. **Soil, Water, Seed and Market** are some key points that concern small and marginal farmers. Biotech-KISAN aims to link farmers, scientists and science institutions across the country in a network that identifies and helps solve their problems in a cooperative manner.
- The scheme includes the **Mahila Biotech- KISAN fellowships**, for **training and education in farm practices, for women farmers**. The Scheme also aims to support the women farmers/entrepreneur in their small enterprises, making her a grass root innovator.
- The scheme is targeted towards the least educated marginalised farmer; Scientists will spend time on farms and link communication tools to soil, water seed and market. The aim is to understand individual problems of the smallholding farmers and provide ready solutions.

■ Cattle Genomics

Ministry: Ministry of Science & Technology

Aim/Objective:

- To **predict breeding values of animal, using DNA level information** with performance record, more accurately and identify **genetic worth of animal** (elite animal) at an early age.

Salient features:

- The ability to **select elite breeding animal at an early age will help in enhancing productivity at farmer's level in future.**
- Programme is currently in **research mode.**

■ Mission Fingerling

CONTEXT

Mission Fingerling with a total expenditure of about Rs. 52000 lakh to achieve Blue Revolution.

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective: Recognizing the potential and possibilities in the **fisheries sector.**

Salient features:

- **Fish Fingerling production** is the single most important critical input visualised to achieve fish production targets under **Blue Revolution.**

- To establish more hatchery to produce Fry/PL required for different categories of water bodies.
- Use of High Yielding Verities of brooders is another significant aspect to be addressed on priority.

Analysis:

- The implementation of this program will supplement the requirement of stocking materials in the country up to a large extent, which is a much needed input to achieve the enhanced fish production.

■ National Dairy Plan(Phase-I)

Ministry: Ministry of Agriculture and Farmers' Welfare

Authority: National Dairy Development Board

Aim/Objective:

- To help **increase productivity of milch animals** and thereby increase milk production to meet the rapidly growing demand for milk.
- To help provide rural milk producers with greater access to the organised milk-processing sector.

Salient features:

- **Productivity Enhancement:** This component aims at increasing bovine productivity through a **scientific approach** to animal breeding and nutrition.
- Village based milk procurement systems for weighing, testing quality of milk received and making payment to milk producers.
- Effective coordination of project activities among various EIAs, timely preparation and implementation of annual plans, regular review and reporting of project progress and results, a comprehensive and functional project management information system (MIS) and learning that will support improvement and innovation.

Analysis: Outputs of NDP-I

- Production of High Genetic Merit(HGM) cattle and buffalo bulls
 - ▶ Production of 2,500 HGM bulls
 - ▶ Import of 400 exotic bulls/ equivalent embryos
- Strengthening of "A" and "B" graded Semen Stations
 - ▶ Production of 100 million semen doses annually in the terminal year
 - ▶ Pilot Model for Viable Doorstep AI delivery Services
 - ▶ 3000 MAITs carrying out annual 4 million doorstep AIs by the terminal year

■ Pashudhan Sanjivani

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- It is an **Animal Wellness Programme** encompassing setting up of **Emergency Help Lines**, provision of **Animal Health cards** ('**Nakul Swasthya Patra**') along with UID identification and a National Data Base.

■ E-Pashudhan Haat Portal

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- It is an e- market portal for bovine germplasm for connecting breeders and farmers of indigenous bovine breeds.

■ Quality mark award scheme

CONTEXT

"Quality Mark" Award Scheme for Dairy Cooperatives initiated by National Dairy Development Board (NDDB).

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- To promote and encourage enhancement of safety, quality and hygiene of milk and milk products manufactured by dairy cooperatives.

Salient features:

- It is bringing about process improvement in the entire value chain from producer to the consumer to ensure availability of safe and quality of milk and products both for the domestic and foreign market.
- The **Quality Mark Award Scheme** for dairy Cooperatives in the country has been initiated to **instill confidence in the consumers for the quality of milk being marketed by them** by ensuring availability of safe and good quality milk and milk products.
- The quality mark scheme was rolled out after deliberating on the process and award mechanism for over a year.
- **The initiative does not propose any new/ additional system for Food Safety and Quality Management but lays down minimum standards against each link of the processes required for ensuring quality and safety.**

■ Sahakar-22

Ministry: Ministry of Agriculture & Farmers Welfare

Aim/Objective:

- It is an **National Cooperative Development Corporation (NCDC)** Mission 2022 for new India to achieve **rural and farm prosperity through cooperatives.**

■ Dairy Processing and Infrastructure Development Fund

Aim/Objective:

- The project will focus on building an efficient milk procurement system by setting up of chilling infrastructure & installation of electronic milk adulteration testing equipment and manufacturing faculties for Value Added Products for the Milk Unions/ Milk Producer Companies.

Salient features:

- The project will be **implemented by National Dairy Development Board (NDDB)** and **National Dairy Development Cooperation (NCDC)** directly through the End Borrowers such as Milk Unions, State Dairy Federations, Multi-state Milk Cooperatives, Milk Producer Companies and NDDB subsidiaries meeting the eligibility criteria under the project.
- An **Implementation and Monitoring Cell (IMC)** located at **NDDB, Anand**, will manage the implementation and monitoring of day-to-day project activities.
- The end **borrowers will get the loan @ 6.5% per annum.** The **period of repayment will be 10 years** with initial two years moratorium.
- The respective **State Government will be the guarantor** of loan repayment. Also for the project sanctioned **if the end user is not able to contribute its share; State Government will contribute the same.**

- Rs 8004 crore shall be loan **from NABARD to NDDB/NCDC**, Rs 2001 crore shall be end borrowers contribution, Rs 12 crore would be jointly contributed by NDDB/NCDC and Rs 864 crore shall be contributed by DADF towards interest subvention.

Analysis:

- **Employment Generation Potential:** The implementation of DIDF scheme will generate direct and indirect employment opportunities for skilled, semi-skilled and unskilled manpower.
- Direct employment opportunities for about 40,000 people will be created under the scheme through project activities like expansion & modernisation of existing milk processing facilities, setting up of new processing plants, establishment of manufacturing facilities for value added products and setting up of Bulk Milk Coolers (BMCs) at village level.
- About 2 lakh indirect employment opportunities will be created on account of expansion of milk and milk product marketing operations from existing Tier I, II & III to Tier IV, V & VI cities/towns etc.
- This will lead to deployment of more marketing staff by Milk Cooperatives, appointment of distributors and opening of additional milk booths/retail outlets in urban/rural locations.

■ **GOBAR-DHAN Yojana**

CONTEXT

The Union Government launched GOBAR-DHAN Yojana, a central government scheme nationally from Karnal district of Haryana by end of April 2018.

Ministry: Ministry of Drinking Water & Sanitation

Aim/Objective:

- The scheme aims to positively impact village cleanliness and **generate wealth and energy from cattle and organic waste.**
- The scheme also aims at creating **new rural livelihood opportunities** and enhancing income for farmers and other rural people.

Salient Features:

- The Swachh Bharat Mission (Gramin) comprises two main components for creating clean villages – creating open defecation free (ODF) villages and managing solid and liquid waste in villages.
- The GOBAR-DHAN scheme, with its focus on keeping villages clean, increasing the income of rural households, and generation of energy from cattle waste, is an important element of this ODF-plus strategy.
- The scheme envisages the implementation of 700 bio-gas units in different states of the country in 2018-19.
- The scheme focuses on managing and converting cattle dung and solid waste from farms and fields to useful compost, biogas and bio-CNG. It will also help in keeping villages clean and generate energy while increasing income of farmers and cattle herders.

Analysis:

- The scheme will be hugely beneficial for country as India is home to highest cattle population in world (around 300 million in number) which produces around 3 million tonnes of dung.
- It will encourage farmers to consider dung and other waste not just as waste but as source of income. It will provide many benefits to rural people by keeping villages clean and sanitized, improving livestock health and increasing farm yields.
- Under it, biogas generation will help to increase self-reliance in energy utilized for cooking and lighting. It will augment income of farmers and cattle herders. It will create new opportunities for jobs linked to waste collection, transportation, biogas sales etc.
- It will also provide stable fuel supply in market for oil companies and accessible credit in market through government schemes and banks for entrepreneurs. Villagers will be mobilized under this scheme to create self-help groups (SHGs) and creative societies that will help in clean energy and green jobs initiative.

■ Rashtriya Gram Swaraj Abhiyan

CONTEXT

The Cabinet Committee on Economic Affairs chaired by the Prime Minister gave its approval for restructured Centrally Sponsored Scheme of Rashtriya Gram Swaraj Abhiyan (RGSA).

Ministry: Ministry of Panchayati Raj

Aim/Objective:

- To make rural local bodies:
 - ▶ Self-sustainable
 - ▶ Financially stable
 - ▶ More efficient

Salient Features:

- The key principles of SDGs, i.e. leaving no one behind, reaching the farthest first and universal coverage, along with **gender equality** will be embedded in the design of all capacity building interventions including trainings, training modules and materials.
- Priority will be given to subjects of national importance that affects the excluded groups the most, e.g. poverty, primary health services, nutrition, immunization, sanitation, education, water conservation, digital transactions etc.
- The scheme is designed keeping in view programmatic **convergence with Mission Antyodaya GPs and 115 Aspirational districts as identified by NITI Aayog.**
- As Panchayats have representation of Schedule Castes, Schedule Tribes and women, and are institutions closest to the grass-roots, strengthening Panchayats will promote equity and inclusiveness, along with Social Justice and economic development of the community.

Analysis:

- Help more than **2.55 lakh Panchayati Raj Institutions (PRIs)** to develop governance capabilities to deliver on SDGs through inclusive local governance with focus on optimum utilisation of available resources.
- Increased use of e-governance by PRIs will help achieve improved service delivery and transparency.
- **Strengthen Gram Sabhas** to function as effective institutions with social inclusion of citizens particularly the vulnerable groups
- Establish the institutional structure for capacity building of PRIs at the national, state and district level with adequate human resources and infrastructure.
- Panchayats will progressively be strengthened through incentivisation on the basis of nationally important criteria which will encourage competitive spirit among them.

Background:

- The Finance Minister, in his budget speech for 2016-17, announced the launch of new restructured scheme of **Rashtriya Gram Swaraj Abhiyan (RGSA)**, for developing governance capabilities **of Panchayati Raj Institutions (PRIs) to deliver on the Sustainable Development Goals (SDGs).**
- A Committee under the Chairmanship of the Vice Chairman-NITI Aayog was constituted to restructure the existing scheme of this Ministry as Rashtriya Gram Swaraj Abhiyan.
- The Committee held several meetings, consultations etc. with various stakeholders and submitted its report with set of recommendations which were accepted by Government and formed the basis for the formulation of this scheme.

■ Swajal Pilot Project

CONTEXT

Union Minister of Drinking Water and Sanitation, launched the Swajal pilot project at Village Bhikampura, Karauli, Rajasthan.

Ministry: Ministry of Drinking Water and Sanitation

Aim/Objective:

- Under this scheme, government aims to **provide villages with piped water supply powered by harnessing solar energy.**

Salient Features:

- Besides ensuring the availability of clean drinking water to every household round the year, the project would also generate employment.
- **Swajal is a community owned drinking water programme for sustained drinking water supply.**
- Under the scheme, **90% of the project cost will be taken care by the Government** and the **remaining 10% of the project cost will be contributed by the community.**
- The Operations and management of the project will be taken care by the local villagers.

■ National Rural Drinking Water Programme

CONTEXT

Cabinet approves continuation and Restructuring of National Rural Drinking Water Programme

Aim/Objective:

- To cover **all rural population in Arsenic/Fluoride affected habitations** with clean drinking water on a sustainable basis.

Salient features:

- The NRDWP was started in 2009, with a major emphasis on ensuring sustainability (source) of water availability in terms of potability, adequacy, convenience, affordability and equity.
- NRDWP is a Centrally Sponsored Scheme with 50.50 fund sharing between the Centre and the States.
- Over the years, learning from the success achieved and the deficiencies felt during the implementation of NRDWP, certain modifications are needed in existing guidelines and procedure of release of funds to the States for making the programme more outcome-oriented and competitive.
- Keeping in view the need to make the NRDWP more result-oriented, incentivize competition amongst States and focused on sustainability, a series of discussions were held with States, various stakeholders / domain experts / international institutions and NITI Aayog, some amendments in the guidelines of the programme have been introduced.
- These are giving more flexibility to the states in utilization of NRDWP funds by reducing the number of components under the programme.
- Focus on piped water supply, increase level of service delivery, thrust on coverage of water quality affected habitations (National Water Quality Sub-Mission to tackle Arsenic & Fluoride affected habitations, JE / AES areas), coverage of Open Defecation Free (ODF) declared villages, SAGY GPs, Ganga GPs, Integrated Action Plan (IAP) districts, Border Out Posts (BOP) with piped water supply and Institutional set up for proper O&M of water supply assets etc. have been introduced.
