G.S. PAPER III – ECONOMIC DEVELOPMENT

Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security.

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1. Issues related to Direct and Indirect Farm Subsidies and Minimum Support Prices

Right from the time of independence, achieving food security for all has been a national goal. Food Management is an important component in realizing this goal. The main objectives of food management include:

- procurement of food grains from farmers at remunerative prices,
- distribution of food grains to consumers at affordable prices; and
- maintenance of food buffers for food security and price stability.

The government has a number of instruments at its disposal to achieve these objectives.

1.1 Government's price policy

Government's price policy seeks to ensure remunerative prices to the farmers for their produce with a view to encourage higher investment and production and to safeguard the interest of the consumers by making available supplies at reasonable prices. The price policy also seeks to evolve a balanced and integrated price structure in the perspective of overall needs of the economy. Towards this end, the Government fixes the Minimum Support Price (MSP) for major agricultural commodities viz. paddy, jowar, bajra, maize, ragi, arhar (tur), moong, urad, cotton, groundnut-in-shell, sunflowerseed, soyabean, sesamum, nigerseed, wheat, barley, gram, masur (lentil), rapeseed/mustard, safflower, copra and Jute and Fair and Remunerative Price (FRP) for sugarcane, taking into account the recommendations of the Commission for Agricultural Costs and Prices (CACP), the views of State Governments and Central Ministries as well as other concerned stake holders.

i. Minimum Support Price

MSP is the price which the government ensures to farmers for their produce. Government announces minimum support price (MSP) for major crops during the two main crop seasons – rabi and kharif – every year. The substantial hike in MSP has resulted in better prices available to farmers for their produce. Successive rise in MSP has also led to overall food security to the country: India is now self-sufficient in wheat and rice. Rice, wheat and major coarse cereals are purchased by procuring agencies under MSP. Government helps producers of pulses, oilseeds and some other crops by **market intervention** when prices tend to fall below the MSP. The government is strengthening the procurement infrastructure so that farmers do not have to resort to distress sale of their produce.

MSP is in the nature of a minimum guaranteed price for the farmers offered by the Government for their produce in case the **market prices fall below that level.** If the market offers higher price than MSP, the farmers are free to sell their produce at that price.

ii. Fair and Remunerative Price (FRP)

The Fair Price is offered in the interest of farmers keeping in view the need for a remunerative price and the present situation of the agriculture. For example: the 'fair and remunerative price' of Sugarcane is determined under the **Sugarcane (Control) Order 1966.** This will be uniformly applicable all over the country. States can top up FRP to give farmers a more remunerative price. The concept of FRP in case of essential commodities such as in place of Statutory Minimum Price (SMP) is in fact a big step forward as it ensures upfront payment towards margins on account of profit and risk to sugarcane farmers on the cost of production and transportation of sugarcane. Moreover, there is a system of **State Advisory Prices (SAP)** in some States, which are generally higher than the FRP.

iii. Central Issue Price (CIP)

It is the price at which Central Govt. issues the food grains to State Governments/UT Administrations. Wheat and rice are issued to the State Governments/UT Administrations from the Central pool at the uniform Central Issue Prices (CIP) for distribution under Targeted Public Distribution System (TPDS). The Steps to Contain Price Rise in Essential Commodities:

- **Reduced import duties to zero** – for wheat, onion and pulses and to 7.5% for refined edible oils. The import duty on sugar has been kept at 10%.
- **Banned export of edible oils** (except coconut oil, forest based oil and edible oils in blended consumer packs upto 5 kg with a Minimum Export Price of USD 1500 per MT) and pulses (except Kabuli chana and organic pulses and lentils up to a maximum of 10000 tonnes per annum).
- **Imposed stock limits** from time to time in the case of select essential commodities such as pulses, edible oil, and edible oilseeds for a period upto 30.9.2013 and in respect of paddy and rice upto 30.11.2013.
- Maintained the Central Issue Price (CIP) for rice (at Rs 5.65 per kg for BPL and Rs 3 per kg for AAY) and wheat (at Rs 4.15 per kg for BPL and Rs 2 per kg for AAY) since 2002.
- Suspended Futures trading in rice, urad, tur, guar gum and guar seed.
- To ensure adequate availability of sugar for the households covered under TPDS, the levy obligation on sugar factories was restored to 10%.
- Government allocated rice and wheat under **Open Market Sales Scheme** (OMSS Scheme).

iv. Decentralized Procurement

The Scheme of Decentralised Procurement (DCP) of foodgrains (rice and wheat) was introduced in 1997-98 with a view **to enhance the efficiency of procurement and Public Distribution System (PDS)** and **to encourage local procurement and reduce out go of food subsidy.** Under the scheme, the States undertake the responsibility of procurement of foodgrains, its scientific storage and distribution through Targeted Public Distribution System (TPDS). The surplus of foodgrains procured by DCP States, in excess of their TPDS requirement is handed over to FCI for the Central Pool stocks and deficit, if any, is met by FCI. At present the States of West Bengal, Madhya Pradesh, Chhattisgarh, Uttarakhand, Andaman and Nicobar Islands, Odisha, Tamil Nadu, Karnataka and Kerala are procuring rice under the decentralised procurement scheme. Government of Andhra Pradesh have agreed to adopt the Decentralised Procurement (DCP) Scheme of procurement from 2012-13 onwards for seven districts. The Government of India is actively pursuing this issue with the remaining State Governments to adopt the DCP scheme.

Due to the introduction of decentralized procurement there has been an increase in the procurement of rice in the country benefitting large number of farmers. Provision of minimum nutritional support to the poor through subsized foodgrains and ensuring price stability in different states are the twin objectives of the food security system. In fulfilling its obligations towards distributive justice, the government incurs food subsidy. Food Subsidy is released to Food Corporation of India (FCI) and Decentralised Procurement (DCP) States on distribution of foodgrains. It is the difference between cost of foodgrains procured and Central Issue Price (CIP). Under Decentralised Procurement (DCP) Scheme, States undertake the responsibility of procurement of foodgrains, its storage and distribution under Targeted Public Distribution System (TPDS). The entire difference between the **economic cost of foodgrains** and **Central Issue Price** (CIPs) is reimbursed to these States directly as food subsidy.

1.2 Issues of Pricing in Agriculture

Though with economic liberalization and gradual integration with the world economy, relaxation of export controls on several agricultural products since 1991 have helped agricultural exports, there are still occasional interventions by the government (for example, export bans on wheat and rice, or limits on the stocking of grains by private trade that dissuade the private sector players from investing in the agri-system. However, one of the main government interventions in the agricultural markets currently is its policy of **minimum support prices (MSP)** for agricultural commodities. For procurement of horticultural commodities which are perishable in nature and not covered under the Price Support Scheme, with a view to protect the growers of these commodities from making distress sale in the event of bumper crop during the peak harvesting periods when the prices tend to fall below the economic cost of production, a Market Intervention Scheme (MIS) is implemented on the request of a State /UT Government which is ready to bear 50 percent loss (25 percent in case of North-Eastern States), if any, incurred on its implementation.

MSP is viewed as a form of market intervention by the central government and as one of the supportive measures (safety nets) to the agricultural producers i.e. farmers. This has also a strong linkage to factor market of the agriculture and related sector

1.2.1 The MSP is aimed at:

(i) Assure remunerative and relatively stable price environment for the farmers by inducing them to increase production and augment the availability of food grains.

(ii) Improve economic access of food to people.

(iii) Evolve a production pattern which is in line with overall needs of the economy.

1.2.2 Problem with the Minimum Support Price Policy

Most important aspects deserve attention is sustainable MSP policies are:

(i) unwarranted fluctuations in prices, which may be provoked by domestic causes and international price variations

(ii) uneven incentive structure for the farm producers; allocation of resources towards desired crops

(iii) consumers face sharp price rise which may have been created by monsoon failure or artificial scarcity.

(iv) farmers in the states which don't have surplus production are deprived of the benefit of MSP.

(v) market prices in some mandies even fall below MSP.

1.2.3 Govt. intervention for regulating prices

i. Model APMC act

Model APMC bill is designed to help small farmers get **better prices** through **contract farming.** The legal framework for contract farming under the State Agricultural Produce Marketing (Regulation) Acts will be quite helpful to the small farmers in securing better remuneration for their produce, particularly in backward areas/ districts, as such arrangements would **cover the price risk** and also the production risk to a great extent. Contract Farming has the potential of combining small farmers' efficiency with economy of scale, utilizing corporate management skills, providing assured markets and reducing transaction costs in the value chain by ensuring vertical integration. Several national and multinational processors or fast food chains are increasingly entering into contract with the farmers to encourage them to cultivate farm products (fruit, vegetables, etc.) of the desired quality by providing them not only seeds and other inputs but also assured procurement of the produce at pre-decided prices. Such tie-ups have special significance for small and marginal farmers, who have small marketed surplus and do not have staying power. They may not individually be capable of investing in technology, but through self help groups or cooperatives, there could emerge a desirable institutional framework, through which farmers can suitably reap the benefits of contract farming arrangements.

Contract farming is particularly useful for high value crops because it enables the corporates to associate with the farmers and helps in imparting the latest technological know how to them. The Model Agricultural Produce Marketing (Regulation) Act circulated by the Central Government to the States in 2003 for implementing marketing reforms has provisions for the registration of contract farming sponsors and recording of contract farming agreements with the Agricultural Produce Marketing Committee (APMC) or a prescribed authority under the Act, protection of title or rights of the farmers over the land under such contracts, dispute settlement mechanism and a model draft agreement suggesting various terms and conditions.

In seven States/ Union Territories there are no APMC Acts, therefore, there is no regulation of contract farming in such States / UTs. The Model Act circulated by the Ministry is suggestive in nature, and, since Agriculture is a State subject, it is for the State Governments to decide on the implementation, intermediation and monitoring of the contract farming arrangements in their State.

1.3 The burden of subsidies

i Nutrition Based Subsidy Scheme

The Cabinet approved Nutrient Based Subsidy (NBS) rates for Phosphatic and Potassic (P&K) fertilisers for the year 2013-14 on May 1, 2013. As per the NBS policy, the government fixes subsidy rates for various nutrients for P&K fertilisers every year. In contrast, the government periodically fixes the **Maximum Retail Price (MRP) for urea**, which is not covered under the NBS policy. The difference between MRP and normative cost is paid to the urea companies as subsidy.

Under the NBS policy, P&K fertiliser manufacturers and importers set the domestic MRP for their products in accordance with international prices of these fertilisers. Despite a decline in international prices of P&K fertilisers, commensurate declines in domestic MRPs have not been observed. Hence, the government has mandated P&K fertiliser manufacturers and importers to submit certified cost data while claiming subsidy. **In case the government finds MRPs to be unreasonable, the subsidy may be restricted or denied.** If the government discovers an abuse of the subsidy mechanism, a fertiliser company's grade(s) of fertilisers or the entire company itself may be excluded from the NBS scheme. The government expects new NBS rates to result in about 15% reduction in P&K subsidy outgo (**about Rs 4,400 crore**) for the year 2013-14 and at least Rs 1,500 and Rs 1,000 per tonne decline in prices of DAP and MOP from their current levels.

2 Public Distribution Systems (PDS)

2.1 Objective

Government of India is committed to ensure **food security** for all and to make available essential commodities to vulnerable section at reasonable cost round the year through Public Distribution System (PDS). With this objective in mind the PDS was reorganised in 1997 with its focus on the poor whereby the population Below Poverty Line (BPL) will be given 20 kg of foodgrains per month per family at 50 per cent of economic cost. This will benefit an estimated 33 crore of people living Below Poverty Line (BPL) in the country while the population Above Poverty Line (APL) will continue to get foodgrains at economic cost through the fair price shops. The estimated subsidy for running the Targeted Public Distribution System is estimated at Rs. 7457crore.

2.2 Functioning of PDS

A well targeted and properly functioning Public Distribution System (PDS) is an important constituent of our food security. The Targeted Public Distribution System (TPDS) with its focus on "poor in all areas" envisages issue of 35 Kg of foodgrains per family per month for the population Below Poverty Line (BPL) at specially subsidized prices. Under TPDS, the States are required to formulate and implement foolproof arrangements for identification of poor, for delivery of foodgrains to Fair Price Shops (FPSs) and for its distribution in a transparent and accountable manner at the FPS level. The thrust is to include only the really poor and vulnerable sections of society. The National Agenda for Governance seeks to reform and improve the Public Distribution System so as to serve the poorest of the poor in rural and urban areas.

2.3 Limitations of PDS

1. Procurement of foodgrains in a few States led to many problems with regard to the levy of taxes, storage and transportation to different centres. This resulted in heavy transit losses.
2. As the major food deficit States are located in the North-East and far South, transportation of foodgrains from Punjab and Haryana to these States put enormous pressure on rail traffic besides causing huge expenditure on transportation cost and losses on account of transit, storage and pilferage.
3. **Post-harvest grain losses** have become more pronounced due to food scarcity conditions arising out of vagaries of weather and fluctuation in production levels.
4. Farmers retain roughly 70% of the foodgrains for food, feed or seed purpose. Of the balance 30% is traded and marketed. About 50% is handed by the public sector (the Food Corporation of India assisted by various State agencies) and the rest goes to private trade. A considerable loss of foodgrains, both in quality and quantity, takes place at farm level.

2.4 Revamping PDS

- To overcome these problems the Government **decentralized the procurement** process by dispersing the procurement centres to different parts of the country, encouraging local procurement to the maximum extent. Under this scheme, the designated States procure, store and issue foodgrains as per allotments indicated by the Centre under PDS. The difference between the economic cost of the State Governments and the Central Issue Prices is passed on the State Governments as subsidy.
- An adequate storage of **buffer stock of foodgrains** in the Central Pool is an essential element of the national food policy. Buffer stock of foodgrains is necessary not only to impart inter-seasonal stability to foodgrain supply and prices but also to ensure food security and meet emergent situations arising out of unexpected crop failures and natural disasters. Buffer stock norms for each quarter have been prescribed.
- Since foodgrain production has almost reached a plateau, one of the means of meeting the consumption requirement for increasing population is by **reducing the post-harvest losses** by strengthening forward linkages in the agriculture sector.
- **Initiatives towards computerization of PDS**: Ministry of Consumer Affairs, Food & Public Distribution has given top priority to Public Distribution System (PDS) reforms which include improvement of infrastructure for distribution and storage of PDS food grains. State Governments have been urged to take initiatives to computerize system and adopt best practices of management.
- e-gov and PDS: Computerization of TPDS is being implemented as a Mission Mode Project (MMP) under the National e-Governance Plan (NeGP) by the Central Government. As per MMP guidelines, a dedicated institutional mechanism by way of an Empowered Committee (EC) and a **Central Project e-Mission Team (CPeMT)** for

computerization of TPDS has been set up. States/UTs have also been requested to establish a two-tier structure at their level comprising a State Apex Committee as well as a State Project e-Mission Team (SPeMT). Detailed guidelines for end-to-end Computerisation of TPDS have been issued to all States/UTs. Action Plan for computerization of TPDS have also been received from all States/UTs. The application software prepared by National Informatics Centre (NIC) has been shared by it with State Information Officers (SIOs) of NIC. To ensure the implementation of Computerization of TPDS, the progress is also being reviewed in various meetings, conferences, etc. In the first phase, the scheme on Computerization of TPDS Operations had been approved to be implemented on pilot basis in three districts each of Andhra Pradesh, Assam, Chhattisgarh and Delhi. A pilot scheme on **Smart Card based delivery of essential commodities** has been initiated in Chandigarh UT and Haryana. Under the scheme, existing ration cards are to be replaced by Smart Cards.

3. Issue of Buffer Stock

The buffer stocks are required to **feed TPDS** and other welfare schemes, ensure **food security** during the periods when production is short of normal demand during bad agricultural years; and (iii) **stabilize prices** during period of production shortfall through open market sales. The total annual stock of food grains in the Central Pool is distributed over different quarters of the year depending upon offtake and procurement patterns. The seasonality of production and procurement is thus a decisive factor in determining the minimum norm of food grains stocks required in a particular quarter of the year. For working out buffer stocking norms and making recommendations for policy decisions, the Government has been setting up from time to time Technical Groups under the Chairmanship of Union Food Secretary. The last buffer stock strategic standards norms were set in 2005. Government maintains buffer stocks of wheat and rice in the Central Pool.

3.1 Strategic reserve of food grains

As per buffer norms and in order to ensure food security in the country, Government has decided that **a strategic reserve** of 50 lakh tonnes of foodgrains would be maintained by Food Corporation of India (FCI). The strategic reserve is to be built up over a period of time starting from 2008-09. The stock of foodgrains in the Central Pool including strategic reserve would be kept in the available godowns/ additional godowns proposed to be constructed by the FCI and State agencies. The cost of maintaining the strategic reserve would be borne by the Government of India in the form of subsidy.

3.2 TPDS

The Government has allocates foodgrains @ 35 kg per family per month for Below Poverty Line (BPL) including Antyodaya Anna Yojana (AAY) category under Targeted Public Distribution System (TPDS). In addition, the Government makes a special ad-hoc additional allocation @ 10 kg of foodgrains per family per month for all accepted number of BPL, AAY and APL families to check inflationary trend in the economy.

3.3 Issues with Buffer Stocks of Food grains in India:

i. Contradictions in the policy approaches

42% percent of our little children are malnourished while India's godowns are bursting with food grain. There are glaring contradictions in India's policy approach towards buffer stock management. Subsidies on food and agriculture have shot up and bumper crops have been harvested. Despite that food prices in key staple commodities have continuously increased. Farmers are being paid more than double than 10 years ago. Still they are committing suicide. Exporters of food grains and agriculture commodities have been making huge profits at the cost of national exchequer loses.

ii. An artificial shortage

India has bumper crops every year; 259.32 million tonnes in 2012-13 and have enormous buffer stocks. The Food Corporation of India expects to procure some 50 million tonnes of wheat this rabi season, stocks may touch a mark of 100 million tonnes. Stockpiling by the FCI has led to an artificial shortage of wheat despite bumper crops. This leads rise in domestic prices dramatically. There is no sense in building up such massive stocks at a huge cost to the economy and burden on consumers.

iii. Low per capita availability

Per capita availability of food grain stands at 462.9 gm in 2011 which is less than 170 kg per person per year. The average food availability for 2006-10 was 404.62 gm per capita. Declining per capita availability of food grain has been a severe problem to the livelihood of the general masses in India which is admitted in the Economic survey for 2012-13.

iv. Storage Capacity

Huge amount of food grains keep laying in open sky in agriculture affluent states such as Punjab, Haryana and UP; at the same time the previous stock keep on rotting. The warehousing system of the food grains in India is highly inadequate and inefficient and ineffective. The Ministry of Consumer Affairs, Food & Public Distribution has taken a number of initiatives to create additional food grain storage capacity which include 152.97 lakh ton capacity in 19 states through private entrepreneurs and central and state ware housing corporations. Steps have also been taken for construction of **godowns in North eastern** region with a cost of Rs 568.17 crores to stock food grains in the region and speedy movement of food grains from procuring states to distribution centres.

v. Export of Surplus Foodgrains

The export of foodgrains depends on availability of surplus over and above the requirement of **buffer stock including strategic reserve,** international demand and supply situation, quality standards in the importing countries, varieties traded and price competitiveness. The Empowered Group of Ministers (EGOM) on Food takes into account various factors including the stocks of food grains available in the country, surplus over and above the buffer stock norm and strategic reserve requirements, the concerns of food security, availability of food grains to common man at reasonable price and remunerative prices to the grower, on a continuous basis and decides on the export of food grains as and when required. The Government has also decided to export limited quantities of wheat/non basmati rice from time to time to various countries like Afghanistan, Nepal, Sri Lanka, Maldives, Bangladesh and Oman on diplomatic/humanitarian basis.

Problem with exports: Unable to manage the stocks, the government resorts to exports at subsidized rates which only benefit the traders. Given that the economic cost of wheat is Rs. 19,100 (per metric tonne) and the minimum export price for wheat fixed by the government is in the region of Rs. 16,200, the losses are estimated at Rs 1,700 crore for the previous year. Global prices have tumbled in the past week below the government fixed minimum export price of $300 a metric tonne to about $270.

4. Food Security

India is lagging behind in achieving the MDGs of halving hunger by 2015. The decline in per capita foodgrain availability and its unequal distribution have serious implications for food security in both rural and urban areas. The proportion of households below the poverty line was 28% is close to 300 million persons. The percentage of population consuming diets providing less than 2400 kcal (underlines definition of below poverty line) per capita per day is almost 77% of the rural population. Poverty is concentrated and food deprivation is acute in predominantly rural areas with limited resources such as rain-fed agricultural areas. Food sector as a whole has also been supported in the current budget with higher provision for **food subsidies, market intervention and imports.** These will help in attaining food security for all and containing food inflation. The National Food Security Mission, a scheme intended to bridge yield gaps of major crops, has been provided Rs. 2,250 crore.

4.1 National Food Security Bill

A sum of Rs. 10,000 crore has been kept for the National Food Security Act. The Government hopes that the Bill for this will be passed by Parliament as early as possible. This allocation is over and above the normal provision for food subsidy, towards the incremental cost that is likely under the Act.

4.2 Swaminathan Committee Report recommendations on Food Security

- Implement a **universal public distribution system.** The National Commission on Farmers pointed out that the total subsidy required for this would be 1% of GDP.
- Reorganise the delivery of **nutrition support programmes** on a life-cycle basis with the participation of Panchayats and local bodies.
- **Eliminate micronutrient deficiency** induced hidden hunger through an integrated food cum fortification approach.
- Promote the establishment of Community Food and Water Banks operated by Women Self-help Groups (SHG), based on the principle **'Store Grain and Water everywhere'.**
- Help small and marginal farmers to improve the productivity, quality and profitability of farm enterprises and organize a Rural Non-Farm Livelihood Initiative.
- Formulate a **National Food Guarantee Act** continuing the useful features of the Food for Work and Employment Guarantee programmes. By increasing demand for food grains as a result of increased consumption by the poor, the economic conditions essential for further agricultural progress can be created.

4.3 National Food Security Mission (NFSM)

A Centrally Sponsored Scheme on NFSM was launched in the country to enhance the production of rice, wheat and pulses by 10, 8 and 2 million tones, respectively by the end of 11th Plan. The mission aims at increasing production of rice, wheat and pulses through area expansion and productivity enhancement, restoring soil fertility and productivity, creating employment opportunities, and enhancing farm level economy to restore confidence of farmers of targeted districts. Various activities of NFSM relate to demonstration of improved production technology, distribution of quality seeds of HYVs and hybrids, popularization of newly released varieties, support for micro nutrients, gypsum, zero tillage, rotavators, weeders and other farm implements, IPM, INM, extension, water lifting and moisture saving devices training and mass media campaign including awards for best performing districts. Besides, the pilot projects on community generators, control of blue bulls and demonstration of ICRISAT technologies would also be implemented.

The strategies adopted by the NFSM for increasing productivity and production of major crops are being further fine-tuned so that the momentum gained by the Mission in the 11th Plan is used for achieving 25 million tonne per year additional foodgrain production by 2017.

In the 11th Plan, NFSM exceeded its target of adding 20 million tonne foodgrain production per year in 2011-12, a year before the target date. In the first year of the current Plan, i.e. 2012-13, as against the target of producing additional 2 MT rice, 1 MT wheat and 1.25 MT pulses, NFSM has achieved significantly higher production - 7 MT rice, 9 MT wheat and 2.5 MT pulses.

4.4 The Chhattisgarh Model for Food Security

Chhattisgarh is the only state to enact a food security law. A combination of policy, policing and adminstrative measures for wider coverage rather than targeted distribution, putting ration shops in the hands of those trusted by the community they serve, incentives for those running the fair price shops, computerised tracking of foodgrain, weeding out bogus BPL (below poverty line) cards and zero tolerance for pilferage has resulted in efficient delivery of foodgrain to 74 % of the population. The Chhattisgarh Food Security Act extends coverage to 90%t of the population. Apart from grains, beneficiaries are entitled to 2 kg of pulses at Rs 5- Rs 10 per kg. The Chhattisgarh model would argue that the Food Security Act can work without impacting the economy negatively. The state first reformed its PDS and gave its farmers sufficient incentives before enacting the law.

5. Technology Missions

5.1 Integrated Watershed management techniques

The main objectives of the IWMP are to restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water. The outcomes are prevention of soil run-off, regeneration of natural vegetation, rain water harvesting and recharging of the ground water table. This enables multi-cropping and the introduction of diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the watershed area. In addition, the Scheme of Technology Development, Extension and Training (TDET) are also being implemented to promote development of cost effective and proven technologies to support watershed management.

Technological support is very critical for the development of wastelands. Proper area specific strategy has to be developed keeping in view the agro-climatic conditions and capability of the soil. The Central Sector Scheme of **Technology Development, Extension & Training** (TDET) was launched during the year 1993-94 to develop suitable technologies for development/reclamation of wastelands for sustainable production of food, fuel wood, fodder etc. The Scheme is being implemented through ICAR Institutes, State Agriculture Universities (SAUs), DRDAs and Government institutions having adequate institutional framework and organizational backup. Successful implementation of the Scheme is expected to bridge the gap between the existing technologies and the need relevant to the latest situation. Under this Scheme, 100% Central Grant is admissible to implement the projects on wastelands owned by the

Government, Public Sector Undertakings including Universities, Panchayats etc. In case of the projects on wastelands of Private Farmers/Corporate Bodies. Space technology, GIS Mapping, Satellite imagery technologies etc. have been very successful in various states across India.

5.2 Space technology applications for Agriculture

At present India has nine remote sensing satellites making it as **one of the largest constellation** of remote sensing satellites in the world. **Satellite sensors** provide valuable database to arrive at suitable decisions in maintaining productive capabilities of **agro ecosystems.** Remote sensing and INSAT are useful for various agricultural purposes as follows:

1. Pre-harvest crop acreage and production estimation is a remote sensing based nation-wide project to provide crop statistics with reasonable accuracy.
2. Satellites provides valuable inputs for diversification and intensification of crops.
3. Satellite imageries are useful for correct planning and improvement of **watershed development projects.**
4. **Mapping and monitoring of wastelands** is being carried out for entire country using remote sensing.
5. Remote sensing satellite data can be used for mapping of various **Saline and Usar soils** for reclamation measures.

6. **Potential Fishery Zones** (PFZ) are demarcated on the basis of presence of chlorophyll and sea- surface temperature data obtained from remote sensing satellites. Based on this, advisories are issued to fishermen.
7. By virtue of the unique combination of Remote Sensing and contemporary microwave satellites, periodic database to monitor droughts and floods is provided.
8. Indian Meteorological Department uses data from the INSAT for weather forecasting which is also used by IMD for providing agro-meteorological services.
9. INSAT utilization of **agriculture extension** services has been quite effective in disseminating improved agriculture practices throughout the country.
10. Precision agriculture, an emerging agricultural management concept, embodies the convergence of biotechnologies and other agricultural technologies with space and informatics to optimize agricultural inputs viz., fertilizers, pesticides, water etc, in tune with micro-level/field requirements. The concept is at present limited to developed countries and is yet to evolve in India.

5.3 National Mission on agricultural Extension & Technology

A new strategy is being formulated for farm mechanization during the Twelfth Five Year Plan. The aims & objectives of the proposed Sub Mission on Agricultural Mechanization (SMAM) under National Mission on agricultural Extension & Technology are as under:

- Increasing the reach of farm mechanization to small and marginal farmers;
- Establishment of 'Custom Hiring Centre' to offset the adverse economies of scale arising due to small landholding and high cost of individual ownership.
- Passing on the benefit of hi-tech, high value and hi-productive agricultural machinery to farmers through creating hubs for such farm equipment;
- Promotion farm mechanization through demonstration and capacity building activities ;
- Ensuring quality control of newly developed agricultural machinery.

5.4 Promoting Farm Mechanization among Small and Marginal Farmers

The Ministry of Agriculture has various extension services for disseminating the know-how of **modern agricultural technologies** throughout the country which also includes remote/rural areas by following ways:

- Through establishment of Agriculture Technology Management Agencies (ATMA) for introduction of new technologies to the farmers.
- Through **Kisan Call Centres** (KCC) for providing the information on modern technologies to the farming community.
- **Kisan Vigan Kendras** (KVK) of Indian Council of Agricultural Research (ICAR) are established with the aims at assessment, refinement and dissemination of modern technology to the farmers.
- Various agricultural technologies are being dissimientated through a network of Doordarshan National Channel, 18 Regional Kendras and 180 Narrowcasting Centres apart from 96 FM Radio Stations under **"Mass media Support to Agricultural Extension"** scheme. Promotion and strengthening of agricultural mechanization is also done through training, testing and demonstrations. To promote farm mechanization amongst small and marginal farmer and to facilitate custom hiring facility, the Government is also considering providing assistance on procurement of agricultural machinery to establish custom hiring centres, to individual Entrepreneurs, Self Help Group (SHG)/ User Groups (UG) of farmers, Cooperative Societies etc.

5.5 National Agricultural Innovation Project

The Indian Council of Agricultural Research (ICAR) and the World Bank have been implementing a joint National Agricultural Innovation Project (NAIP) in the country. The specific objective of the National Agricultural Innovation Project is to accelerate the collaborative development and application of agricultural innovations between public and research organizations, NGOs, farmers, private sector and other stakeholders. Some of the major activities under the project are as follows:-

- Three hundred thirty six (336) entrepreneurs have been incubated and 60 technologies commercialized.
- Rice knowledge management portal for providing complete rice information from a single portal has been developed.
- An online access to over 2,900 journals to 140 National Agricultural Research System (NARS) libraries has been provided.
- Over 610 NARS Scientists have so far been trained in frontier areas of agricultural sciences in the state of art laboratories across the world. 86 national trainings involving international experts have also been sanctioned and more than 80 have been completed.
- Research on production to consumption system is covered by 51 consortia working across sub-sectors of Indian agriculture.
- Sustained improvement in incomes and well-being of farm families, mainly in disadvantaged areas, have been undertaken in 102 districts of the country.

5.6 Agricultural Research and education

Indian Council of Agricultural Research (ICAR), is the main organisation of the Department of Agricultural Research and Education (DARE) of the Ministry of Agriculture. It has played pivotal role in developing agricultural technologies, input materials and critical scientific mass leading to self-sufficiency in food. The activities of the ICAR are organised into eight subject matter divisions, namely, Division of crop sciences, Horticulture, Soil Agronomy and Agro-Forestry, Agricultural Engineering, Animal Science, Fisheries, Agricultural Extension and Agricultural education. The Research is carried out through a chain of 45 Central institutes, 4 Bureaux, 10 project directorates, 30 national research centres (NRCs) and 80 All India Coordinated Research Projects (AICRPs) located throughout the country, mostly at 28 State agricultural universities (SAUs) at their 200 zonal research stations. The whole country has been divided into 120 distinct agro-climatic zones and in each of them, a multidisciplinary regional research station has been established under on-going national agricultural research project.

Launched- **Jai Vigyan National Science and Technology Mission** on Conservation of Agro- biodiversity (Plant Genetic Resources). A total of 61,015 samples of diverse germplasm procured from 63 countries. In National Gene Bank, data pertaining to all conserved accessions have been computerized.

6. Economics of Animal-rearing

Animal husbandry and dairying are vital sectors of India's economy, more particularly the rural economy. It provides a significant proportion of **self-employment opportunity** in the employment generated in the agriculture livestock sector. **The Operation Flood** played major role in bringing the milk production to triple fold since its inception in 1970's. India also became the world's Number one milk producer in 1997, with an estimated production of 72 million tonnes, more than that of the then biggest – the United States (70.7 million tonnes). One sixth of world cattle population is in India and the Milk machine buffalo population contributes more than half of the globe. India ranks fifth in egg production in the world.

6.1 Contribution of Livestock in Indian Economy:

Animal Husbandry Sector plays a vital role in providing household nutritional security, increased income, and employment especially of women and in rural transformation. Animals provide a diverse range of output for cultivation, irrigation, transport; fibre and leather goods, manure for fertilizer and fuel besides direct production of milk, meat and eggs for human consumption. **Livestock provide economic security and social status to the family.** Concentration of livestock in general and small ruminants in particular, is in marginal, small and semi-medium holdings which mostly represent poorer sections of the society. Thus progress in livestock sector is directly related to a more balanced development of rural economy and upliftment of poorer sections of the society. As discussed above; animal husbandary provides self-employment to millions of households in rural areas. Women constitute 71% of the labour force in livestock farming. Rural women play a significant role in animal husbandry and are involved in operations like feeding, breeding, management and health care. In dairying, 75 million women are engaged as against 15 million men. A large manpower is also involved in livestock related activities like manufacture of animal food products and beverages, manufacture of textiles, tanning & dressing of leather, farming of animals, production, processing and preserving meat and meat products, manufacture of dairy products, retail and wholesale trade of livestock products.

Though the proportionate contribution of livestock sector to total GDP has remained steady between 4-6%; share of livestock in the agricultural GDP has improved from 15% in 1981-82 to 26% in 2010-11.

6.2 Dairy development

Dairying with crossbred cattle and high yielding buffaloes has become a remunerative business. Studies have shown that dairy enterprise as against crop in rural areas was on the top with regard to profit in marginal, small and medium holdings ,also that dairying and crop production together for small farmers having irrigated land was more profitable than crop farming alone. Animal Husbandry components provide easy cash; so small farmers prefer it to crop production. An **Integrated Dairy Development Project** has been put in place for non-operation flood, hilly and backward regions of the country. These two programmes will help dairy development by increasing milk production, generating additional employment and providing remunerative prices to the milk producers in addition to improving genetic merit of cattle and buffaloes.

In India's dairy development the role of international cooperation has been significant through bilateral and multilateral assistance. Among the countries that have participated include, Australia, Canada, Denmark, Germany, New Zealand, Sweden, Switzerland, UK and USA. European Union, FAZ/UNDP, FAD/WFP, UNICEF and the World Bank (IDA) are International Agencies that assisted in India's ambitious programme. One outstanding example of such cooperation is the Operation Flood (1970-96). Planned and executed by the National Dairy Development Board (NDDB), this project (OF) has been a major instrument for modernizing the dairy sector and putting it under the cooperative umbrella. India's milk production by 2020 will be 186 million tonnes at the growth rate of 4.3 per cent and 221 million tonnes at the growth rate of 5%. The consumption has been estimated to be 160 million tonnes thus making a surplus for export. There is a need to integrate good hygienic and manufacturing practices along with attractive **packaging and cold chain network** in the production system to improve the quality and shelf life of the products.

6.3 Fisheries

Fisheries help in augmenting food supply generating employment, raising nutritional level and earning foreign exchange. India is now the sixth largest producer of fish in the world. Fish Farmers Development Agencies (FFDA) provide a package of technical, financial and extension support to fish farmers, for the development in land fisheries. For the development of marine fisheries, apart from six major fishing harbours viz. Cochin, Chennai, Vishakhapatnam, Roychowk and Paradip, 41 minor fishing harbours and fish landing centres have been constructed to provide lending and berthing facilities to fishing craft.

6.4 Meat, Egg and Wool

Low nutritional input is the major concern in small ruminants for increasing their reproductive efficiency and body weight gains. The carcass weight in sheep and goats which are around 12 and 10 kg respectively have been constant for the last more than 20 years and the increase in volumes of meat and wool yield have largely been due to increase in numbers. Focus, therefore, in small ruminants would be on improvement of existing pastures/grass lands which have deteriorated over the years and adoption of semi-intensive systems of production to achieve higher growth rate and more number of lambs/kids per female in a year. Crossbred pigs have higher growth rate and better feed conversion efficiency. Rabbits should be encouraged for production of meat, wool and skin.

Commercial poultry production is highly organised and the germ plasm feed and other essential inputs like vaccine are being marketed by the private sector. Commercial poultry production, however, is concentrated in urban and peri-urban areas and limited to some States. The rural sector, which provides 32 - 35 per cent of eggs and broilers, has not been serviced by the private sector. Strengthening the rural poultry production system while providing household nutritional security would also provide extra family income. To increase egg production in the rural sector, State poultry and duck breeding farms are being strengthened to produce and disseminate breeding stocks suitable for low input technology to women beneficiaries and other socially backward segments of the society. The scheme which is currently being implemented in the North-Eastern States shall be extended to the rest of the country.

6.5 The National Livestock Mission(NLM)

A number of new initiatives have been proposed in the 12th Five Year Plan for retaining youth in Agriculture Sector and funding for research and innovations in the sector. The twin objectives of the plan are ensuring **food security** and improving the lot of farmers through higher investments in agriculture and allied sectors. To address the challenges in live stock sector, National Livestock Mission and National Programme for Bovine Breeding & Dairying have also been proposed in the Plan.
The National Livestock Mission will be launched in 2013-14 to attract investment and to enhance productivity of livestock, taking into account local agro-climatic conditions. Rs. 307 crore have been provided for the Mission. There will be a sub Mission in NLM for increasing the availability of feed and fodder.

6.5.1 Submissions under NLM:

- Sub-Mission on Livestock Development,
- Sub-Mission on Pig Development in North-Eastern Region,
- Sub-Mission on Fodder and Feed Development,
- Sub-Mission on Skill Development, Technology Transfer and Extension.

6.5.2 Components of NLM

- Forage production from Non-forest wasteland / rangeland / grassland / non-arable land (ha) and Forage production from Forest Land (ha);
- Cultivation of coarse grains and dual purpose crops ;fodder seed production and distribution ;Conservation of fodder through post harvest technologies ;
- Distribution of hand driven chaff cutters; distribution of power driven chaff cutters;

- Establishment of high capacity Fodder Block Making units ;
- Distribution of low capacity, tractor mountable Fodder Block Making units Silage making units; bypass protein making units; area specific mineral mixture / feed processing units; feed testing laboratories; strengthening of the regional fodder stations;
- strengthening of research; training and human resource Development; institutional strengthening and support.

6.6 Challenges to Animal Rearing in India

- Availability of **quality nutrients** through feed and fodder resources has to be ensured.
- The **large size of cattle population** is hampering the vertical genetic improvement in cattle production.
- The small sized herds both in governmental and institutional farms and with private farmers is an important issue especially when the developed countries are making use of genomic tools for **vertical genetic improvement** in their livestock genetic resources.
- **Disease diagnosis,** health and hygiene maintenance of livestock is affecting the production potential. Emerging and remerging animal disease that may affect the health across the species is causing concern, especially, the zoonotic diseases.
- Safer food, packaging and maintenance of quality milk and other animal products would positively affect the livestock products in the country as well as **for exports.**
- Amelioration of ill effects arising out of **climate changes** especially the mitigation strategies for methane production by livestock.
- Resource constraints, large population size, low productivity and small livestock are other the main constraints.

7. Agriculture in Budget 2013-14

There is a substantial rise in allocation for farm schemes, new schemes on nutri-farms, farmer producer organisations, livestock etc. Union budget for 2013-14 supports the agriculture sector in a big way. While the existing provisions have been continued, a number of new initiatives have been taken for bringing in more investment to this sector, promoting growth in key areas and farmers' welfare. The following are the **major provisions** relating to agriculture and food sector in the budget:

- Agriculture gets **Rs 27,049 crore,** an increase of 22% over Revenue Expenditure of the current year.
- Plan outlay for agriculture has been raised considerably: Agriculture Ministry: **Rs 17095 crore;** out of this, for **agricultural research**: **Rs 3,415 crore.**
- Agricultural credit target fixed at Rs 700,000 crore.
- The interest subvention scheme for short-term crop loans will be continued. A farmer will be able to get credit at **4 % per annum.**
- The interest subvention scheme has so far been applied to loans given by **public sector banks, RRBs and cooperative banks.** This is being extended to crop loans borrowed from private sector **scheduled commercial banks**.
- Bringing Green Revolution to Eastern India (**BGREI**) has been a remarkable success; an allocation of Rs 1000 crore in 2013-14. Assam, Bihar, Chhattisgarh and West Bengal have increased their contribution to rice production.
- The original Green Revolution States face the problem of stagnating yields and over-exploitation of water resources. The answer lies in crop diversification. Rs 500 crore has been allocated for crop diversification to promote technological innovation and encourage farmers to choose crop alternatives.

- The **Rashtriya Krishi Vikas Yojana** is intended to mobilise higher investment in agriculture; Rs. 9,954 crore is allocated to RKVY.
- The National Food Security Mission, a scheme intended to bridge yield gaps of major crops, has been provided Rs. 2,250 crore.
- The allocation for the **integrated watershed programme** has been raised to Rs. 5,387 crore to help small and marginal farmers who are vulnerable everywhere especially in drought prone and ecologically-stressed regions. Watershed management techniques help in improving productivity of land and water use.
- A pilot programme on **Nutri-Farms** for introducing new crop varieties that are rich in micro-nutrients such as **iron-rich bajra, protein-rich maize and zinc-rich wheat** is to be started; Rs 200 crore has been allocated for this to start pilots in the districts most affected by malnutrition.
- The National Institute of Biotic Stress Management for addressing plant protection issues will be established at Raipur, Chhattisgarh. The Indian Institute of Agricultural Bio-technology will be established at Ranchi, Jharkhand and will serve as a centre of excellence in agricultural bio-technology.
- A pilot scheme to replant and rejuvenate coconut gardens that was implemented in some districts of Kerala and the Andaman & Nicobar Islands will be extended to the entire State of Kerala. Rs 75 crore has been allocated for this scheme.
- Farmer Producer Organizations (FPO) have emerged as aggregators of farm produce and link farmers directly to markets. Matching equity grants will be provided to registered FPOs upto Rs. 10 lakh per FPO to leverage working capital from financial institutions. Rs 50 crore is being provided for this purpose.
- Besides, a **Credit Guarantee Fund** will also be created in the Small Farmers' Agri Business Corporation with an initial corpus of Rs 100 crore.

<u>7.1 Latest Budgetary Provisions on Subsidy</u>

- Rs 90,000 crore have been provided for food subsidy [including expenditure likely on implementation of the Food Security Act] as against 2012-13 RE of `85,000 crore. The subsidy is used in TPDS operations and foodgrain procurement. In addition, provisions have been made for subsidy on import of pulses (`250 crore) and edible oils (`318.34 crore).
- Other subsidies that will benefit the agricultural sector are: fertilizer subsidy: Rs 65,971.5 crore; interest subvention on farm credit: Rs 6,000 crore; price support by Jute and Cotton Corporations: Rs 255 crore.

8. Current Legislative Reforms

<u>8.1 The Agricultural Biosecurity Bill 2013</u>

The Bill 2013 proposes:

a. integration of plant and quarantine services;

b. establishment of an Authority for prevention, control, eradication and management of pests and diseases of plants and animals and unwanted organisms for ensuring agricultural biosecurity; the Bill establishes the **Agricultural Biosecurity Authority of India** that will:

- regulate the import and export of plants, animals and related products;
- prevent the introduction of quarantine pests from outside India;
- Implementing post-entry quarantine measures.

c. to meet international obligations or India for facilitating imports and exports of plants, plant products, animals, animal products, aquatic organisms and regulation of agriculturally important micro-organisms;

d. prevention and control of pest infestation or infection, including declaration of an area as “controlled area” for this purpose and measures for control of such infestation or infection;

e. provision for infection, taking samples, entry and search of premises, checking of conveyances to ensure compliance of **phytosanitary and sanitary measures** and also seizure, treatment and disposal of plants, animals and their products to prevent spread of pests by designated officers;

f. declaration of biosecurity emergency in case of outbreak of organisms threatening biosecurity and actions and procedures to deal with it;

g. removal of plant, animals, their products and other objects imported in violation of the provisions of the proposed legislation.

h. **The Customs Act, 1962** or other laws in force, that prohibit the import of certain customs and goods shall also apply to those pests, plants and animals, which require permits or are prohibited by the Authority.

i. An **Agricultural Biosecurity Fund** shall be constituted for the purposes specified in the Act; envisaged Authority may borrow money from any source through the issue of bonds and debentures to discharge its functions.

8.2 Model APMC Act

Quite recently on July, 2013; Committee on Agricultural Market Reforms recommended Universal Implementation of Model APMC Act. The Committee submitted its report to agriculture minister. **The Committee of State Ministers In-charge of Agriculture Marketing to promote marketing reforms has called for an effective implementation of Model APMC Act in all the states.** This committee was constituted in March, 2010 under the Chairmanship of **Shri Harshvardhan Patil**, Minister for Cooperation and Parliamentary Affairs, Govt. of Maharashtra. The mandate of the committee was to

(i) persuade various State Governments/Administration of Union Territories to implement the reforms in agriculture marketing through adoption of Model APMC Act and Rules;

(ii) suggest further reforms necessary to provide a **barrier free national market;**

(iii) suggest measures to effectively disseminate market information and to promote grading, standardization, packaging and quality certification of agricultural produce.

(iv) setting up of multiple and competitive marketing channels; independent regulatory authority to encourage private investors;

(v) need for **viability gap funding** to attract private sector investment; higher investment in marketing infrastructure under RKVY;

(vi) waiver of market fee on fruit and vegetables; setting up of independent district level authority for registration and dispute settlement;

(vii) setting up grading units with trained manpower in the market.

8.3 National Food Security Bill: Discussed below under Food Security heading.

8.4 Biotechnology Regulatory Authority of India Bill, 2013

The Bill was introduced in the Lok Sabha on April 23, 2013 to promote the safe use of modern biotechnology by enhancing the effectiveness and efficiency of regulatory procedures. Some of the key features of the Bill are:

- The Bill establishes the **Biotechnology Regulatory Authority of India** (Authority).

- The functions of the Authority shall include regulating the research, transport, import, manufacture and use of organisms and products of modern biotechnology.
- A **Biotechnology Regulatory Appellate Tribunal** will hear appeals against the decisions of the Authority.
- Field trials for certain organisms or products cannot be conducted unless the Authority permits them as aiding the development of modern biotechnology such as genetically engineered plants, animals used in food or any animal clones that can be applied in agriculture, fisheries or food products.
- The Bill will not apply to the clinical trials of drugs, under the Drugs and Cosmetics Act, 1940, and food or food additives or any material under the Food Safety and Standards Act, 2006.
- An Inter-Ministerial Governance Board will oversee the performance of the Authority. A **Biotechnology Advisory Council** will render strategic advice to the Authority regarding developments in modern biotechnology and their implications in India.
- Regulatory divisions of the Authority have been created to deal with agriculture, forest and fisheries, human health and veterinary products, etc.
- A Risk Assessment Unit will appraise applications before final approval is granted for proposed research, transport or import of an organism or product.

8.5 Amendments to the Multi-State Co-operative Societies (Amendment) Bill

The Cabinet approved amendments to the Multi-State Co-operative Societies (Amendment) Bill 2010, currently pending in the Lok Sabha.

- The Bill amends the **Multi-State Co-operative Societies Act, 2002,** which regulates multi-state cooperative societies i.e. cooperatives which serves the interest of members in more than one state.
- The Bill seeks to allow the constitution of interim boards, grant the Central Registrar power to modify bye-laws, and permit the constitution of an election authority to conduct elections.
- The Standing Committee on Agriculture submitted its report on the Bill on December 20, 2012 and was of the opinion that several provisions of the Bill contravened the Constitution.
- According to the Ministry, the official amendments aim to ensure that the provisions of the Bill are in conformity with the provisions of the Constitution (Ninety-Seventh Amendment) Act, 2011. **The Act adds co-operative societies to the Constitution.**
- The Bill provides that the Central Registrar may declare a multi-state co-operative society "sick" and constitute an interim board for a period of up to five years.
- It defines a "sick co-operative society" as one which has accumulated losses equal to or exceeding the total of its paid-up capital, free reserves and surpluses and has also suffered cash losses in the current financial year and the one preceding it.

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