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**Innovative Policy Interventions
for
Transformation of Farm Sector**

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Presidential Address

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Innovative policy interventions for transformation of farm sector

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I feel privileged to deliver the Presidential address in the 26th annual conference of Agricultural Economics Research Association (India). I thank the office bearers and members of the Association for giving me this honour.

I am deviating from the standard practice of delivering a theme based address based on sophisticated analysis or quantitative rigour and terminology of economics, and, presenting before you some simple propositions to bring long awaited and much needed change in farm sector.

1 The context

Agriculture and allied sectors provide employment to close to half of the workforce of the country and contribute about 17 per cent of national income. Among the ten major sectors of Indian economy the contribution of agriculture is highest both in employment as well as in value added output. Therefore growth and development of agriculture is significant for transformation of Indian economy and for inclusive development. In other words, agriculture is at the core of achieving the goals of “*Sabka Saath, Sabka Vikaas*” and “New India 2022”.

Since the beginning of economic reforms in early 1990s agriculture sector could not keep pace with the growth of other sectors of Indian economy. While non farm economy witnessed an acceleration in growth rate, agriculture growth continues to fluctuate around long term average of 3.0 per cent (fig. 1) despite potential for higher growth. Consequently, existing gap between agriculture and non agriculture income and per farmer income and income of a non farm worker further increased in this period (fig. 2). Agricultural prices became highly volatile in this period - sometime falling too low and some time going very high. This period also experienced fast shift towards commercialization of agriculture – increase in use of commercial inputs, rise in area under cash crops and market oriented production, which subjected farmers to high level of market risk. All these factors shifted discourse on agriculture from “development” to “distress” despite the fact that government support for agriculture in various forms kept increasing in these years.

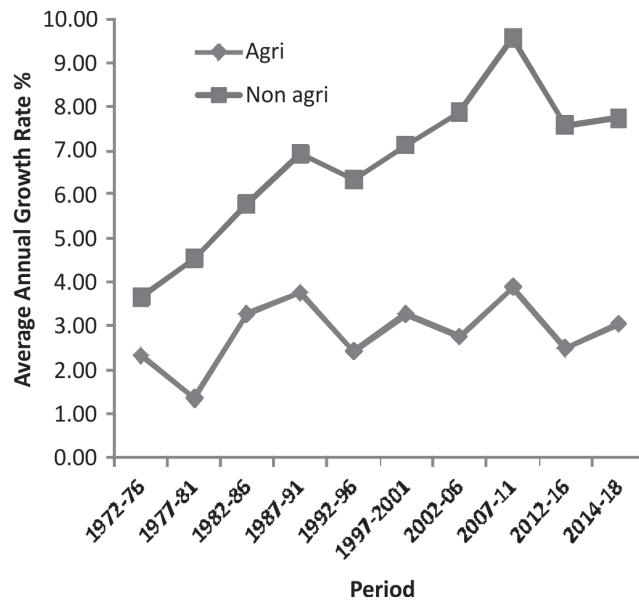


Figure 1. Annual rate of change (%) in GDP agriculture and non agriculture, 1971-72 to 2017-18: Five Yearly Average

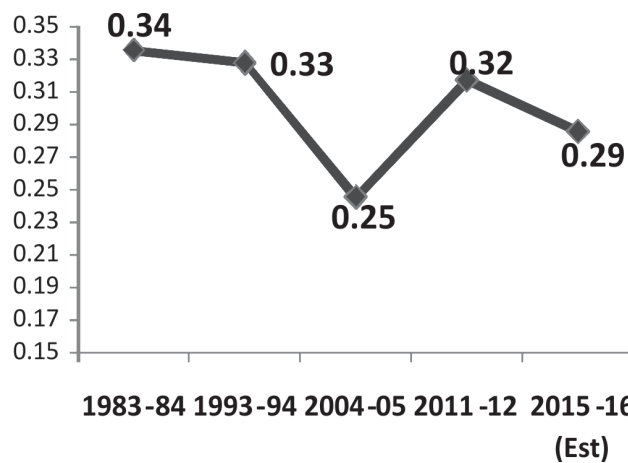


Figure 2. Ratio of income of farmer to non farm worker

It looks like the policy intervention by and large followed “Business as Usual” approach devoid of any significant change and innovative ways of supporting agriculture sector. It is obvious that the situation in agriculture cannot be changed with the “business as usual” approach. There is also a need to ensure that benefit of agriculture growth and development accrues to farmers. Till 2015, food security and growth in output were the primary goals for agriculture policy in the country. Improvement in farmers’ welfare was not explicitly stated to be the goal of agricultural policy. In February 2016 the Prime Minister Narendra Modi presented a unique vision for agriculture to the country

by proposing the idea of “Doubling of Farmers Income by the Year 2022”. This is important not only to improve welfare of farmers but also to sustain interest in farming and providing incentive to raise growth trajectory of agriculture. These changes are not possible without paradigm shift in approach towards agriculture sector.

I propose some new ideas for public intervention in major areas of agriculture which involve a paradigm shift in the policy for the sector. Some of the changes have already been initiated in recent years. The paper covers eight areas:

1. Reforms in agriculture
2. Output Price support
3. Input subsidies
4. Development initiatives
5. Corporate Investments in Agriculture
6. Linking Production to Processing
7. Promoting Producers Alliances
8. Scaling up success stories of “Innovative farmers”.

2 Reforms in agriculture

Many experts and high level committees constituted from time to time have held the lack or poor progress of reforms in agriculture as a major obstacle for growth and modernisation of agriculture and identified areas covering inputs, technology, production, marketing and post harvest value addition. During last four years Central government has come with series of reforms to remove restrictive regulations and attract modern capital and organised private sector investments for putting agriculture on higher growth trajectory and raise farmers income.

2.1 Market reforms

India’s agricultural markets and supply chains are suffering from low scale traditional method of transactions and low mechanisation resulting in low efficiency, large price spread, poor competitiveness, little value addition, spatial and temporal fragmentation and high wastage. These markets have failed to evolve over time. No surprise that consumers complain of high prices and producers suffer from low prices. Modern capital has shied away from entering into agricultural markets and supply chain.

In order to address the situation, the Union Government came with Model APLM Act (*Model Agricultural Produce and Livestock Marketing (Promotion and Facilitation) Act – 2017*) and has been pursuing states to adopt the Model Act, agricultural markets being a state subject. The Union Government has also been promoting e-NAM (electronic trading platform for National Agriculture Market) to create single national market for

farm produce. If these two changes are adopted by states, it will bring a lot of benefits to farmers, consumers and economy by upgrading standard of markets, promoting efficiency and replacing traditional supply chain with modern value chain.

2.2 Contract farming

Indian agriculture is predominated by small holders who suffers from serious scale disadvantage, low risk taking capacity and poor access to modern technology, capital and market. Contract farming is crucial to promote food processing and to provide technical and financial support and quality input to smallholders. There are several success stories where contract between commercial firm and farmers have led to sharp increase in farmers income and transformation of production. However, there were many hurdles in forging contract and assuring farmers benefits from this arrangement. Ministry of Agriculture and Farmers Welfare, GOI has released “*TheState/UT Agricultural Produce and Livestock Contract Farming and Services (Promotion & Facilitation) Act 2018*” to integrate farmers with bulk purchasers including exporters, agro- industries etc. for better price realization through mitigation of market and price risks to the farmers and ensuring smooth agro raw material supply to the agro industries.

The model APLM Act and Contract Farming Act are the most significant reforms for progress of agriculture sector. As agriculture marketing is a state subject, the implementation of these acts and resulting benefit will depend upon their adoption by states/UTs.

According to CSO, corporate private investments constitute less than 1 per cent of total investments in agriculture sector. These two reforms are expected to pave the way for ploughing private sector investment in agriculture sector which is awfully low at the moment.

3 Output price support

Output price support and input subsidies are used as important policy instruments by almost all countries to create stable and remunerative economic environment for agricultural commodities. Government support for this becomes essential when markets are not competitive and production follows large year to year fluctuations. India is using procurement as an instrument of price support and supply of input at concessional rate to provide subsidy on input. Both these methods involved heavy cost, leakages, and inefficiency. Due to this only a fraction of total resources spent by the government reaches ultimate beneficiaries. These interventions also involve distortion of prices and affect functioning of market. Due to these limitations many countries have moved to the mode of direct benefit payment to the targeted population.

3.1 Minimum support prices

India developed the system of MSP (Minimum Support Price) in 1965 mainly to address the serious shortage of staple food in the country. Initially MSP was announced for

paddy and wheat and subsequently expanded to 24 crops including all major cereals, pulses and oilseeds and cotton and jute. Historically MSP has been implemented very effectively for paddy, wheat and cotton through the system of procurement by official agencies. During recent years procurement operations have been expanded to pulses, oilseeds and coarse grains. It has been learnt from the experience that use of procurement to implement MSP turns out to be very costly as procurement agencies has to incur heavy cost in procurement, handling, movement and storage (Table 1). Disposal of procured quantity is also a serious problem and often involves further losses. Cost incurred by FCI and NAFED, two major parastatals in procurement of food, in recent years are indicated in table 1.

Table 1. Cost incurred in procurement and distribution of selected commodities by public agencies

Agency	Years	Commodity	Procurement incidental as % of cost price	Distribution cost as % of cost price
FCI	2015-16	Wheat	26.1	25.2
	2016-17	Wheat	25.0	24.7
	2015-16	Rice	30.8	25.1
	2016-17	Rice	28.8	20.8
NAFED	2017-18	Pulses	7.5	12.0
	2017-18	Oilseeds	10.5	14.8

FCI incurred 25 to 30 per cent of the price paid to farmers as cost of procurement incidentals and 20 to 25 per cent as distribution cost. The total comes to around 50 per cent of cost price of FCI. On per quintal basis, FCI incurred a cost of Rs. 730 per quintal to pay MSP of Rs. 1467 to farmers in year 2015-16. Similarly, NAFED incurred 19.5% cost in pulses and 25.34 per cent cost in oilseeds procurement, carry over and administrative charges. This does not include losses incurred in sale of produce below the price at which it was procured.

An alternative option is to make direct payment to farmers in cash to compensate for the deficiency in price received by him as compared to the MSP. This require information on quantity produced and sold by each farmer and price at which produce was sold. To overcome such requirement it is suggested to compensate farmer in each district on per acre basis by using district level estimate of marketable surplus and prices in the harvest season. This is doable as prices data is reported on daily basis for 3084 markets in the country. This will take care of productivity variations as well as price variations across mandis. States/district where government procure produce for reasons like PDS, market price will be at MSP and there will be no deficiency in price. The alternative method “Area Based Income Compensation (ABIC) is illustrated in table 2 for Belgaum district of Karnataka for real data. The table presents the difference between receipt of farmers at market price and at MSP for various crops.

Table 2. Difference in gross returns from major crops at Agmarket price and at MSP in Belgaum district, 2017-18

Crop	Output (tons)	Mkt surplus (ton)	AgMarket price (Rs/ctl)	MSP 1.5* (A2+FL)	Price deficiency (%)	Value of produce at Agmarket price (Rs. crore)	Value of produce at MSP (Rs. crore)	Increase in farm receipt due to MSP (Rs. crore)
Arhar	1700	1500	4355	5450	20.09	6.53	8.18	1.64
Moong	3800	3445	4897	6429	23.83	16.87	22.15	5.28
Urd	1300	1112	5367	5400	0.61	5.97	6.00	0.04
Groundnut	39200	35919	5147	4739	-8.61	184.88	170.22	0.00
Sunflower	7100	6329	2760	5222	47.15	17.47	33.05	15.58
Soyabean	49200	34932	2629	3182	17.38	91.84	111.15	19.32
Maize	496200	436954	1264	1566	19.28	552.31	684.27	131.96
Jowar	123500	82300	2352	2334	-0.77	193.57	192.09	0.00
Bajra	8200	5610	1000	1425	29.82	5.61	7.99	2.38
Ragi	1100	524	2343	2792	16.08	1.23	1.46	0.24
Seamum	100	94	5573	6101	8.65	0.52	0.57	0.05
Sum						1076.79	1237.14	176.49

If the produce of farmers in Belgaum district was sold/procured at MSP they would have received Rs. 176 crore more than what they received at actual market price. This amount should be distributed to farmers as income compensation for price loss at the rate of Rs. 1670 per acre. If the MSP for this district was implemented using procurement the cost turns much higher than the cost of ABIC. Further it does not include losses that would be incurred in disposing off the produce. ABIC also allows free play of market forces and will not cause adverse effect on export.

International experience at price support also indicate shift to direct price compensation approach from procurement backed system of paying higher prices to farmers. China's experience of last decade in this area is particularly instructive and revealing. China introduced systems of "minimum support price procurement program" targeting staple foods of rice and wheat and non staples like corn and soyabean. This was done in the wake of high global prices to incentivise domestic producers to raise production. During a period from 2007 to 2014, the support price for Japonica rice jumped up by as much as 106.7 per cent, followed by wheat 71.0 per cent up, and corn 60.0 per cent. This production-encouraging policy brought about a reversal of prices and prices of domestically produced grains were almost constantly exceeding those of imported ones in the market for the first time in the modern history of China. Since the government's support price for corn producers came to constantly exceed the market price in fiscal 2012, farmers began to sell most of their products to governmental agencies at a profitable level of the support price. Purchases by the government at the support price increased from 30 million ton in 2012 to 83 mt in 2015. Stockpile of corn with government increased from 40 mt to over 200 mt between 2007 and 2016. Higher prices in China led to increase in import of corn from a few tonne till 2011 to 42 million tonne by 2015. Chinese authorities found it difficult to continue the price support policy for corn producers in effective manners and transformed the policy into a direct payment program, named as the "producer compensation system", in 2016. In the first year of shift from procurement to compensation system showed significant effect – domestic prices declined and turned lower than import price, thus reducing import and excess production of corn¹. India's situation after introducing the new MSP is exactly same as the situation of Corn in China during 2007 to 2015. To avoid the problem China faced with MSP Procurement program India should better follow direct payment to producers through mechanism like ABIC.

4 Input subsidies

Input subsidies have been given to promote use of subsidised inputs and practices to get higher productivity and production, contribute positively to farmers' income and to promote sustainable use of natural resources. Though subsidies have played significant

¹ Ruan Wei (2017). China's corn policy shifting into producer compensation system from price support to direct payment, Research Report, Norinchukin Research Institute Co., Ltd. Available at: https://www.nochuri.co.jp/english/pdf/rpt_20171121.pdf. Accessed on 3.8.2018.

role in raising agriculture output and farmers income, it is believed that subsidies are not being used in an equitable and efficient manner, and in some cases they are having an adverse effect on natural resources and long term sustainability of agriculture production. There are also reports of excessive and indiscriminate use of some inputs and water and misuse of subsidies for non-targeted purposes. Therefore, ways and means are being discussed to pay subsidies directly into the accounts of farmers through the Direct Benefit Transfer (DBT) route rather than supplying input at subsidised price. Suggestions also include merging all kind of subsidies into one pack and distributing the total subsidy amount to farmers on per acre basis. This requires precise estimate of various subsidies being given by the Centre and states and proper understanding of nature of subsidies.

The Government extended financial support of Rs 2.05 lakh crore as input subsidy to agriculture sector in the country during biennium ending (BE) 2015-16, (Table 3). In terms of per hectare net sown area, the input subsidy amounts to Rs 14659 and accounts for 18.8 per cent share in agricultural cost. Power and fertilizer are two major constituents of input subsidy with respective shares of 42 per cent and 35 per cent during BE 2015-16. The subsidy towards interest subvention of short term credit to agriculture was 4.6 per cent of agricultural subsidy during BE 2015-16.

Table 3. Level and composition of input subsidies in Indian agriculture during BE 2015-16

Inputs	Level of input subsidy		Composition of input subsidy (per cent)
	Total (000 crores)	Per hectare net sown area (Rs/ha)	
Power*	86.8	6173	42.1
Fertilizer	71.9	5134	35.0
Interest subvention	9.5	678	4.6
Others	37.5	2674	18.2
Total	205.4	14659	100

Notes: * Power subsidy for agriculture sector has been estimated as a gap between revenue realized from agriculture consumer and cost of power supply incurred to power distribution utilities.

4.1 Alternative mechanism of subsidy distribution

Major argument against uniform area based input subsidies is that those who use higher quantity of input and thus avail higher subsidy also produce more output per unit of area. Ignoring productivity differential will imply that low productivity farms get much higher support in terms of per cent of value of output as compared to the farms having high productivity. The model below take care of such situations. It suggests payment of subsidy in proportion to aggregate crop productivity using district as a unit. Total subsidy for the sector should be divided in two categories viz subsidy for irrigated area and

unirrigated area in proportion to their share in crop production. Country level subsidy should than be allocated over districts based on the contribution of each district to national output of crop sector as estimated by CSO. District level subsidy should be distributed over irrigated and unirrigated acreage in proportion to their production share. These coefficients would ensure that subsidy is linked to productivity under varying agro-ecosystem. The distribution should be revised every 5 years to factor in changes in productivity over time.

The amount of subsidy should be credited to the bank account of farmers each *khariif* and *rabi* season through DBT based on the cultivated area and its status as irrigated or unirrigated. Further, area based subsidy should be based on the land record maintained by the revenue departments and the entitlement should be of cultivators, who can be different than landowner, as entered in the land record. Revenue department will be required to submit complete land record of all land owners showing land under cultivation and its status as irrigated or unirrigated in the previous year, to the office given responsibility for disbursal of subsidy.

It is often said that direct transfer of subsidy based on land title will exclude tenant farmers who do not have legal document of tenancy unless some alternate mechanism is developed to entitle them. However, there is every possibility of subsidy payment to landowner getting adjusted in the terms and conditions of rent.

5 New development initiatives

Several development initiatives have been launched for agriculture and allied sector during the last four years. Two initiatives where new approaches have been adopted are:

- Pradhan Mantra Krishi Sinchai Yojana (PMKSY)
- Pradhan Mantra Fasal Bima Yojana (PMFBY)

5.1 PMKSY

Irrigation has been accorded high priority since the First Plan to reduce the dependence of agriculture on vagaries of monsoon and to raise productivity of agriculture. Initially the emphasis was on major and medium irrigation and surface irrigation development through public investments. With the onset of green revolution lot of private investments went into development of groundwater irrigation through tubewells. Despite this, a little more than half of area under cultivation does not have access to irrigation and suffers from low productivity and high production risk. An important reason for slow growth of irrigation in the country has been that the investments made in major and medium irrigation did not bring commensurate increase in area under irrigation and the country has faced widening gap between irrigation potential created and utilised. Every year resources worth thousand of crores of rupees are spent in development of medium and major irrigation projects but since 1991-92 area under irrigation first stagnated and

then declined at all India level (fig. 3)! The decline has been quite high in some states. It is pertinent to mention that during this period (1992 to 2014) Rs. 17663 crore were spent per year on medium and major irrigation. Major reason for the investments in medium and major irrigation not leading to increase in area under canal irrigation has been that irrigation potential created could not be converted to utilisation.

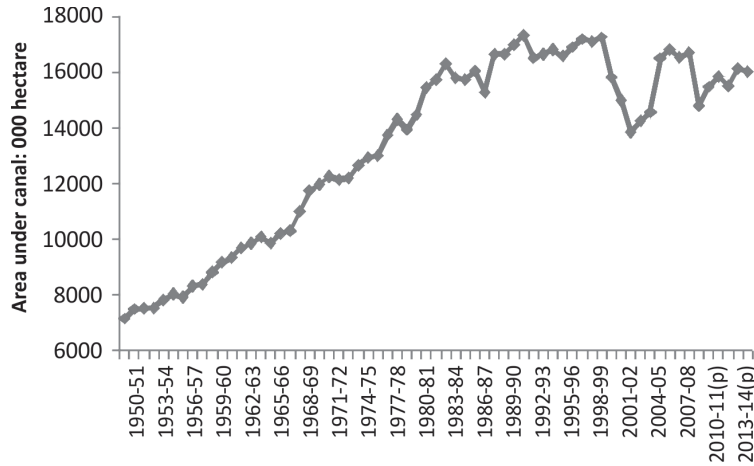


Figure 3. Net Area under public canal irrigation, 1951 to 2014

Future development of irrigation sector required addressing this challenge. The other major challenge in expanding area under irrigation is sustainable and efficient use of water. PMKSY has been designed to address these challenges so that investments made in public irrigation projects lead to desired increase in area under irrigation, water is used efficiently and each field is provided some access to water.

“Pradhan Mantri Krishi Sinchai Yojana” is designed to address above challenges and to achieve goals of assured or protective irrigation to all area under cultivation through a new approach to irrigation. It is being implemented in mission mode with four components namely (i) Accelerated Irrigation Benefit Programme (AIBP); (ii) *Har Khet ko Pani* (iii) Per Drop More Crop and (iv) Watershed Development.

AIBP component focus on faster completion of ongoing major and medium irrigation projects. NITI Aayog has prioritised 99 projects for completion in a period of 2 to 3 years. These are expected to provide additional irrigation coverage over 76 lakhs hectare. These 99 projects are further prioritised in three categories for completion in a phased manner. These include 23 early bird projects where small investments and last mile connectivity will lead to fruition of delayed outcome. Similarly, all the 99 projects under AIBP include Command Area Development works to ensure that endemic problem of irrigation potential created remaining unutilised does not come in the way of utilising full potential.

Per drop more crop component is aimed at increasing own farm water use efficiency by adoption of per season water application devices like drip, sprinkler, pivot and rain guns in irrigation. The programme component, '*Har Khet Ko Pani*' covers Command Area Development and Water Management (CAD&WM); Minor Irrigation (both surface and ground water); and Repair, Renovation and Restoration (RRR) of water bodies. Under watershed development, priority is accorded to rainwater harvesting; effective management of the run-off water; prevention of soil erosion; regeneration of natural vegetation; and re-charging of the ground water table.

The strategy adopted under PMKSY focus on faster completion of on-going projects, which involved huge investments with considerable time overrun while other components aim at addressing the issue of early coverage of more and more area under assured irrigation or protective irrigation, and to make efficient use of precious water resources.

5.2 Crop insurance

Agriculture is vulnerable to weather related events like floods and draughts and natural hazards like hailstorm, cyclone, high speed winds, heat waves, frosts etc. These events are becoming frequent and intense and almost regular in some pockets of the country. With shifts in acreages towards cash crop need for mechanism for safeguarding farmers against production risk is becoming more pressing.

Government of India started crop insurance scheme first time on a limited scale in the year 1972-73 and a pilot crop insurance scheme in year 1979 as a mechanism for providing cover against decline in crop yield from a threshold level. Because of its several limitations, the crop insurance mechanism had to be modified from time to time. Based on the experience gained during last more than forty years Government of India adopted a comprehensive crop Insurance scheme named as "Pradhan Mantri Fasal Bima Yojana" from the kharif season of crop year 2016-17. It involves public as well as private companies in crop insurance. This is Commercial Model of Crop Insurance which is highly subsidised by the Centre and States in equal proportion.

The two years of implementation of PMFBY have been normal from rainfall point of view and from point of view of production at national level, though some states faced serious calamities. Therefore PMFBY has not yet faced the tough test of providing compensation to farmers in the wake of below normal production at national level. However, there are some useful lessons from the two years of implementation of PMFBY.

Like any other commercial model of crop insurance, PMFBY has faced certain problems. It is costly and have to be heavily subsidised. The coverage and farmers satisfaction are low. Payout of claims are highly conservative and slow. More than 80 per cent of premium is paid by the Centre and States. Admissible claims remained below two third of premium and thus more than one third of the premium is retained by Insurance companies. Even with 80 per cent subsidy, crop insurance covers around one fourth of gross cropped area of the country. During the year 2017-18, Centre and States contributed Rs. 20390 crore

towards the premium for crop insurance on 49 million hectare. This amounts to premium subsidy of Rs. 4161 per hectare.

It is high time to take a pragmatic view on crop insurance and put in place a mechanism which can satisfy the farmers and provide needed assistance to counter adverse effect of yield loss and acreage reduction at farm level.

5.2.1 Welfare model of insurance as an alternative

The core of principle of commercial model of insurance is to collect premium from a large number of persons to be paid to a few affected by specified calamity. There is an alternative model which is termed as 'welfare model of insurance' in which the State takes the responsibility for agriculture insurance. Under this model, there is no need to collect premium from a large number of farmers to pay to a few affected by any calamity in a given period. Under the welfare model, every piece of land under cultivation is deemed to have been insured by the state. Farmers are asked to pay nominal amount and register themselves at a Central portal to get the benefit of insurance. The model involves setting up of central agencies "National Agricultural Insurance Management Agency (NAIMA) like NDMA (National Disaster Management Authority). This agency should have technical manpower and expertise for assessment of crops loss and should be fully trained in loss assessment like surveyors of insurance companies. Such persons should also be posted in smaller numbers at regional/state level. States should be asked to report loss to crop at village level through a well-established monitoring and reporting system. A team of NAIMA drawn from various states should rush to the affected state and undertake assessment of loss promptly. States should also be asked to set up their own state level agency SAIMA (State Agricultural Insurance Management Agency). As natural calamities are area specific, manpower available at national and in other states can be used for loss assessment in particular area and region.

We can expect use of latest advances in crop loss assessment technology (i.e. use of satellite imagery; drones; automatic weather stations etc.) to fine tune the process of assessment of crop loss. By this method the time lag between crop damage and payment of compensation can be reduced to a few weeks (instead of almost one year at present) and enable the farmer to face the next crop season with hope and confidence. Loss assessment by public agency is also expected to be objective and free of any bias. This is also the most effective way for the GOI to reach out to all farm households. This type of model is expected to be much more cost effective and efficient than commercial model operated by insurance companies.

6 Corporate investments in agriculture

Indian agriculture is characterised by poor state of science and technology in production, inefficient and exploitative markets for farm produce, and unviable low scale smallholders. Our agricultural production systems are decades behind many other sectors in adopting technology innovation. Low yielding varieties and traditional practices still

dominate the sector. Age old methods of farming like flood irrigation, broadcasting fertiliser, indiscriminate use of agro-chemicals dominate agriculture scene leading to low efficiency, high cost and low quality produce beside adverse implications for sustainability. Second, marketing scene is characterised by large price spreads with depressed prices in harvest period and high prices in lean period. In a short period price crash for the same commodity is followed by price spike. Despite progress in transport and communication network markets for farm produce show poor integration. With the rise in commercialisation of agriculture the incidence of farmers forced to sell at throwaway prices and consumers forced to pay above normal prices are becoming frequent. Third, half of farm households operate on less than 1 acre of cultivated land. In big states like U.P., West Bengal and Bihar 80 to 92% land holdings are of marginal category. Scale disadvantage and low bargaining power of such tiny landholders make them unviable despite their much higher productivity per unit of land compared to medium and large farmers.

Private sector can play significant role in addressing all these challenges. However, they need to look at agriculture beyond market for their inputs and link innovation with supply of inputs. In a few cases where corporates are taking innovation to farmers with inputs, wonderful results have been achieved. One such case is banana revolution in Jalgaon district of Maharashtra where farmers are using tissue cultured banana saplings supplied by a Private Tissue Culture Lab for disease free banana cultivation and getting much higher yield and better quality fruit. The Lab is now expanding the same technology to other states and fruits. If such experience is replicated in other fruits and vegetables India can become a global hub for horticulture production. Similarly, supply of seed with seed treatment with suitable inoculum and rhizobium can protect seed and plant against diseases and result in better growth. Many private enterprises are now promoting protected agriculture, precision farming, and precision farming which are multiplying income of the farmers.

The second major challenge in agriculture relates to inefficient, fragmented, traditional and often unfair system of marketing thriving under the protection of regulation. Market regulation like APMC and ECA favours small sized, traditional traders and middle men and inhibits entry of modern capital into the system which can bring innovative method, competition, e-commerce, investments and integration of value chain. A few cases where corporate players have entered into marketing, farmers received huge benefits like procurement of apple in Himachal Pradesh, maize in North Bihar and banana and potato in Gujarat.

Private sector can improve viability and income of small holders in many ways. One, through supply of services as owning machines and equipment are uneconomical and also beyond the capacity of smallholders. Last few years have seen some growth in number of private sector service providers, particularly for farm machinery rental services. Besides reducing cost, modern and sophisticated machines improves efficiency. Some services providers have started even using mobile “apps”. A large number of

farmers are now using laser guided land levelling technology on rental basis which brings large benefit in terms of saving in irrigation water, reduction in irrigation cost and time and increase in yield. Second, private sector has huge scope to raise income of smallholders through contract farming. Small holders has great advantage in terms of labour and supervision, much needed for quality, traits, and timely supply of farm produce. If a private firm like modern retailers, processors, traders or a corporate provide quality seed and plant material, technical advice, financial support and assured price it can lead to win –win situation for farmer and firm. There are success stories of contract farming in almost all the regions of the county but coverage and penetration remains small.

During the recent years Start-ups have shown lot of interest in agriculture and they are riding on state of the art technology and modern value chains. Some of these start-ups are led by highly motivated well qualified entrepreneurs who aspire to change face of agriculture and farmers. This is also putting pressure on traditional agri-business corporates to rethink their strategy of sale of input to become partner with farmers. Promising Start-ups in agriculture should be given required policy support.

CSO data for year 2015-16 shows that private corporate sector constitutes only 2.0 per cent of annual investments in agriculture sector while public sector constitute 18.6 % and farmers (termed as private sector in CSO parlance) constitute remaining 79.4 % share. Out of their total investments in Indian economy private corporate sector invested 0.43 per cent in agriculture and allied sectors. These figures show awfully low investments by private corporations in agriculture sector. This should be at least doubled to help achieve the goal of doubling farmers' income.

Indian agriculture require active involvement of private sector right from extension and seed to post harvest value addition, to move to next stage of development. Therefore both, States as well Centre need to attract and facilitate the private sector involvement in agriculture.

7 Linking production to processing

Experience of various developed countries show that as an economy grows and move from agrarian to industrial economy the consumers preferences and economic activities shift from primary produce to value added and processed produce/activities. The shift in consumers preference towards processed and value added products is evident in the case of India. However, this shift has been very slow in the case of growth of processed food sector. This can be seen from the Output of food sector vis a vis output of output of food and beverage manufacturing. Due to very slow growth in food processing sector consumer demand is being met from imported products. This also has very serious implications for growth in jobs in the country. Government has been emphasising growth of food processing sector and offered various incentives from ime to time to attract investments in the sector. However, growth of value added in manufacturing in food

and beverage remains awfully low – 2.8 per cent compared to 8.2 per cent in total manufacturing sector during 2011-12 to 2015-16. In a growing economy food manufacturing is expected to have much higher growth rate compared to the growth in production of raw food. But this is not happening in the country.

Government of India has offered various incentives to attract investments in food processing sector like food park. The recent initiatives include a new Central Sector Scheme – Pradhan Mantri Kisan SAMPADA Yojana (Scheme for Agro-Marine Processing and Development of Agro-Processing Clusters) with an allocation of Rs. 6,000 crore for the period 2016-20. It covers (i) Mega Food Parks (ii) Integrated Cold Chain and Value Addition Infrastructure (iii) Creation/ Expansion of Food Processing/ Preservation Capacities (Unit Scheme) (iv) Infrastructure for Agro-processing Clusters (iv) Creation of Backward and Forward Linkages (v) Food Safety and Quality Assurance Infrastructure (vi) Human Resources and Institutions. The scheme envisages assistance of around 50% of capital cost subject to a ceiling. Kisan SAMPADA Yojana is expected to leverage investment of Rs. 31,400 crore for handling of 33 million MT agro-produce valued at Rs. 1,04,125 crore, benefiting 20 lakh farmers and generating 5,30,500 direct/ indirect employment in the country by the year 2019-20. (MOFPI 19 May, 2017).

A major deterrent for investments in food processing is assured supply of specified quality/grade raw material from farmers.

8 Promoting producers organization

In order to enable smallholders to overcome the constraints like low scale, poor bargaining strength, low risk taking ability and reach to market provisions have been created in law to facilitate formation of Farmers Producers Companies (FPC) to undertake agribusiness activities like other business entities. At the level of Central government, SFAC and NABARD are promoting Farmers Producers Organizations (FPO) in the country. Latest data shows that SFAC promoted 769 FPO with membership of about 7.48 lakh farmers while NABARD promoted 2154 FPOs till March 2018. According to NABARD 5000 FPOs are in existence in the country at present of which 3200 are FPCs.²

These FPOs are benefiting their members through bulk input procurement and distribution, aggregation and marketing of output, agro processing, and by helping their members take high paying activities like fruits and vegetable production, dairying, organic farming, seed production and marketing, and other allied activities. Some success stories of FPOs documented by SFAC (available at: <http://sfacindia.com/FPOSucessStory.aspx>) provide convincing evidence of substantial increase in income of smallholders through FPO. However, the penetration of FPOs in the country is quite low with miniscule coverage of farmers. An important hurdle in expansion of FPO is provision of credit to

² NABARD (undated). Farmer Producers' Organizations (FPOs): Status, Issues & Suggested Policy Reform, National paper PLP 2019-20, available at: <https://www.nabard.org/auth/writereaddata/CareerNotices/2708183505Paper%20on%20FPOs%20-%20Status%20&%20%20Issues.pdf> accessed on 6.11.2018.

them by financial institutions. As FPO shows lot of promise for raising income of small holders they should be given strong support and attention.

9 Scaling up success stories of “innovative farmers”

States and Central governments are actively undertaking a large number of initiatives to address development needs of agriculture sector. This can be termed as “Development approach” towards achieving goals of agriculture sector. This process is time taking and resource intensive. On the other hand a lot of anecdotal evidence and media stories claim that there are some innovative farmers in various parts of the country who are like the shining stars in the locality. There are reports of some individual farmers multiplying their income by using some grassroots innovation, sometime in combination with modern technology and marketing innovation. This can be termed as “Innovation route” to transform farm sector. This also seems to be the easier and effective approach to achieve the goal of doubling farmers income, as, such farmers are already having more than double the average income of their locale. However, such success stories do not spread own their own. Development agencies should be asked to demonstrate adoption of such innovative models in a few villages then it can be adopted at national level as well. This idea deserves serious consideration for achieving quick results like doubling of farmers income.

I would be very happy if the ideas and suggestions presented in my address are debated in relevant sessions of AERA Conference to examine their merit and to arrive at suitable recommendations to implement these ideas.

Thank you and Jai Hind.

Discalimer: Views presented in the paper are personal.