

## Inclusive Growth in Indian Agriculture – Issues and Needed Policies

India has come a long way since early 1950s and has made notable achievements in the economic front. Agricultural growth has improved in recent years (averaging about 3.5 percent since 2004/05), but at a long-term trend rate of growth of 3 percent, agriculture has underperformed relative to its potential. The pockets of post-reform dynamism that have emerged evidently have not reached a sufficiently large scale to influence the sector's performance. The country's progress in irrigation development, use of modern inputs and adoption of HYVs and hybrids of various crops has been very impressive. Crop productivity has increased significantly. Wheat and rice among cereals stood at the top in reaching higher yields leading to relatively higher profitability besides emergence of rice as leading export crop. The food scarcity experienced in early 1960s has gone into oblivion. Genetic modification in cotton and adoption of *Bt* cotton made India self-sufficient in cotton and a leading exporter of short staple cotton. We made gigantic leap in milk production and this achievement has helped to reduce the poverty among millions of small and marginal farmers. The role of agriculture in avoiding hungry among millions has been an established fact. Concurrently, growth in agriculture warranted the creation of rural infrastructure and energy development and have been achieved to an extent but has to a long way still. Despite progress made in primary sector of the economy, still there are many gaps which need concerted action.

### What is inclusive growth in Indian Agriculture?

In this paper inclusiveness is defined as improving the ability, opportunity, and dignity of those disadvantaged; encompasses equity, and protection in market and employment transitions. In agriculture, equal opportunity needs to be ensured to small and marginal farmers and agricultural labourers in terms of access to markets and resources and assurance of unbiased regulatory environment. And regions with poor infrastructure such as areas practicing dry farming, with hilly and desert characteristics, prone to extreme weather events, problem soils, etc. must be allocated sufficient resources. Further these areas. Inclusiveness must ensure 'broad-based growth', 'shared growth', and 'pro-poor growth'. It is an essential ingredient of any successful growth strategy.

There are certain groups of farmers, who gain more from agricultural development projects which



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cover access to technologies and capital, price support programmes, input and output price subsidy schemes; representations in farmers' associations and other welfare programmes. At the same time small and marginal farmers, women farmers, agricultural labourers, tribal people who depend on hill agriculture and forest areas are often left behind in all dimensions indicated above. They do not gain their due share from projects and schemes implemented aimed at agricultural development. Another feature of inclusiveness is the wage discrimination between genders in agricultural and rural activities and is seen to be a social ill afflicting our society for a long period of time.

Efforts and programmes extended to certain crops are much more than other crops. For example, as indicated elsewhere, wheat and rice receive more attention than other food grains. Commercial crops such as cotton, sugarcane and select vegetables and fruits attracted more investment. Irrigated agriculture is a privileged activity compared to rain fed/dry land. Though there are economic reasons for this bias, due attention to neglected areas and crops in the development programmes is important because about half of population depending on agriculture earn their livelihood solely on these areas and crops for employment and income. Similarly people inhabiting in climatically vulnerable regions deserve special attention. As agriculture and agri- food systems are becoming more science- and capital-intensive, new skills and knowledge are required for producers, processors, managers and workers besides the need for huge investment into research and development which is meant for vulnerable farming population and environment. This not happening widens the already large knowledge gap between developed and poor regions. Food and agricultural systems need to improve their inclusiveness by linking smallholder producers (farmers, foresters and fisher folk and their organizations) with agribusiness enterprises and supply chains for their effective and sustainable participation in rapidly changing global, regional and national markets.

### **Current challenges for achieving inclusiveness**

While production of wheat and rice are in the forefront, millets and inferior cereals lagged behind; so also pulses and oilseeds. At present the country is importing 60 percent of edible oils and one-fifth of pulses demand. Year to year variations in their production offers no stability in the import bills causing stress to fiscal stability. The pity is that mostly small/dry land farmers grow the millets and oilseeds. These crops do not get policy support and consequent benefits which rice, wheat and other commercial crops get.

Crop productivity variations are still huge across the States and Districts in the country, the reasons for this state of affairs being many. Crop yield gaps are at still large despite the development efforts, this being a concern among agricultural scientists, development functionaries, policy makers and farmers alike. The factors which contribute for this gap include inefficient use of fertilizers and crop protection chemicals, poor management of irrigation water, lack of capital among small and marginal farmers for investment, inequities in delivery of technologies and knowledge to different groups of farmers/ different crops, existing agricultural marketing ills, risks and uncertainties associated with farming, etc. These problems are more pronounced in smallholder agriculture and dry farming environment.

Another key issue being voiced is the achievement in production not matched by profitability in crops. Bumper production of a crop in some years leads to fall in prices, thus farmers' incomes are not stable and consistent leading to borrowing of money from different sources. Production and marketing risks most often coupled with unfavorable policy environment make them debt ridden often ending up either unbearable sufferings or suicides. Thus farmer suicides continue to remain a very agonizing and deplorable issue for the past few decades and future looks dimmer. Water shortage is emerging as a formidable challenge given the demand due to burgeoning population, changing climate conditions, pollution of water sources and ever rising water demand from expanding industrial, service and urban sector. Poor performance of hundreds of major and medium irrigation projects has obviously limited the frontiers of expansion of irrigated area which is critical for future food supply and improving livelihoods of farmers. A whole lot of issues in water management needs continued attention. The natural resources that support productive agriculture (namely land and water) are declining in quality, and competition for them is intensifying. Climate change will certainly aggravate the challenges and fall short expectations in performance of agriculture. Impact of water shortage and climate change will be high among poor segments of agricultural population.

We have not succeeded in developing agricultural markets to the desired level despite various market reform schemes and policies implemented to enhance agricultural market environment. With agriculture becoming increasingly integrated with global market, the focus should be on making agricultural markets more effective and better performing so as farmers get better prices for their products. The past two decades have seen entry of modern supply chains for farm products. The progress however is slow and has not made any impact. Small

and dry land farmers are not yet connected to supply chains and more exposed to market gyrations. Capital needs of farmers are not adequately met so far both for long term and seasonal requirements. Institutional credit system has not covered all sections of farmers and also regions. Informal money lending has remained still significant and serviced on high and unreasonable interest rates resulting in indebtedness of farmers and consequent suicides. Dry land /rain fed farming though constitutes almost half of cultivated area has stagnated as a weak subsector and farmers practicing dry land farming have been stricken with high incidence of sufferings and poverty. The development projects aimed to promote dry land farming have again not made much progress.

India's green revolution belts which were fountain head of solving food scarcity is currently facing the 'food security-sustainability' trade off. These food basket areas experience diminishing returns to modern inputs. These areas singularly focused on increasing production are now facing overexploitation of natural resource base. Varying degrees of farm incomes, crop yields, use of modern inputs, access to credit and technology across farmer categories, lack of adequate representation of farmers with lesser resources in policy processes and governance are observed to be increasingly causing inequality among groups of farmers. Agricultural reform policies have not touched the marginal groups.

### Small holder agriculture

Indian agriculture is dominated by small and marginal farmers numbering 125 million; and of the total number of farm holdings, 85 percent own less than 2 hectares. Average size of farm holding in India is 1.15 ha. And marginal farmer category operates a farm holding of 0.39ha and that of small farmers 1.42 ha. Not only that, but these holdings are fragmented and scattered. These features make the farming economically unviable and act as a barrier for adoption of yield increasing technologies. With growing scarcity of farm labour, mechanization of farm operations becomes difficult due to small size and fragmentation. It is important to keep in mind that the average capacity of farmers to invest in farming becomes highly diminished as small farmers have to give the land on collateral to get institutional loans. The country has formulated and implemented programmes specially meant for small and marginal farmers such Small Farmers Development Agency (SFDA), Marginal Farmers and Agricultural Labourers (MFAL), Watershed Development Programmes, Dry land Development Programme, etc. These efforts have not yielded the desired outcomes. This calls for structural reforms in agriculture such as consolidation of

holdings by redefining property rights so that size of operational holdings may be made larger which will pave the way for adoption of modern technologies. The problem of small farm size will continue to be a problem in the future unless policy measures are implemented in such a way that small farms become economically viable. In direct words, the future of sustainable agricultural growth and food security of the nation depends on the performance of these small and marginal farmers.

Small and marginal farmers find adapting to climatic changes difficult and face challenges due to effects of economic liberalization, globalization, and integration of value chains, market volatility and other risks. Again small farmers access to canal water for irrigation purposes is much less and they mostly depend on ground water and are going to face more problems regarding water in future. Almost 40percent of the irrigated land of large farmers was from canals while it is less than 25 percent in case of marginal and small farmers. Smaller value realizations due to imperfect market for inputs/produce, low access to proper and suitable extension services restricting apt decisions regarding technology and innovative cultivation practices, low access to public irrigation, electricity grids, command area development and information regarding contingency situations constrain small farmers to earn a reasonable level of farm income.

These vulnerable groups depend a lot on money lenders and the share of formal source increases only with the increase of land size. In India, the share of formal source varies from 65-68 percent for medium to large farmers and 23-58 percent for small and marginal farmers. While globalization widens the opportunity for export of farm products, the pie shared by small farmers is less proportionate as their participation in export supply chain is little. When compared with medium and large farmers, the proportion of scheduled castes and scheduled tribes is higher among small and marginal farmers whose low social and economic power comes in the way to

**Table 1. Size of land holding and monthly income of a farm household (2012-13)**

Farm size category (Ha)	Monthly income of Farm Household
	(Rupees)
<2	7348
2-4	10730
04-10	19637
> 10	41388

(Source: Ministry of Agriculture; Government of India; New Delhi)

participate in economic progress. Table 1. shows that small farm category earns a monthly income Rs.7348 only against large farm income of six times more (Iqbal, 2018).

#### **Dry and Rain fed farming.**

Rain fed agro ecology is characterized by absence of access to dependable sources of irrigation. Dry regions are fragile regions which are highly vulnerable to environmental stress and shocks. According to the Fourth Five Year Plan of India, dry lands are defined as areas which receive rainfall ranging from 375 mm to 1125 mm and with very limited irrigation facilities. Dryland agriculture is important for the economy as most of the coarse grain crops: pulses, oilseeds, and raw cotton are grown on these lands. Dry land contributes about 44 per cent of the total food production and plays a critical role in India's food security. Farming in dry land is made more difficult by inadequate and uneven distribution of rainfall not matching with crop growing stages and periods, monsoon failures of varying degrees, low moisture retention capacity other than black soils and poor soil nutrient base. In India, about half of cultivated area is dry land/rain fed agriculture. The major problem in dry land farming is frequent crop failure making farmers more despair and highly indebted. The more striking gaps in dry land farming are: low cropping intensity, high cost of cultivation, poor adoption of modern technology, uncertainty in output, low productivity, increasing number of suicides among farmers, lack of institutional credit, inadequate public investment and high incidence of rural poverty (Singh *et al.*, 2010). The key issue is that dry land farming is relatively neglected in terms of investment needed for application of modern inputs, R&D efforts aimed to generate suitable technologies, coverage of risks and uncertainties, human resource development, allocation of institutional credit, rural infrastructure, ground water development, etc. For example, the share of small and marginal 1 agricultural households in total non-institutional borrowings is around 52.40 percent. Rain fed crops is likely to be worst hit by climate change because of the limited options for coping with variability of rainfall and temperature (Report on Doubling Farm Income [DFI], Vol.6, pp.20-21). Projected performance of rain fed agriculture in 2030 is:

Rain fed area (m ha).....	40
Rain fed yield (t/ha) .....	1.8
Rain fed production (mt).....	70

Source: Report on DFI, GOI, Vol.6, P.22)

The projected area, production and yield of cereals under various production systems in India for 2030 indicate that while irrigated systems can contribute an additional yield of 15 per cent, the rain fed system could remain the same. Thus, there would be a need for a strategic mix of better technology adoption, institutional innovations and incentives system to enhance productivity of rain fed cereals (DFI Vol, p.22). The multiple nutrient deficiencies in soils of rain fed fields meant for horticulture crops are estimated to be 89 per cent for N; 80 per cent for P; 50 per cent for K (Report on DFI, Vol 6, P.23). Markets for rain fed crops viz. millets, pulses and oilseeds are less developed as compared to rice and wheat and other commercial crops. These crops need processing facilities at farm gate / village level. There is need to improve the capacities of local communities which are chronically drought prone. By involving communities in disaster management planning at the local level preparedness, they can be enabled to gain better understanding. Drought preparedness planning will increase the society's capacity to cope more effectively with the extremes of climate.

The choice of crops and varieties is more relevant under highly complex rain fed production systems and areas frequented with weather vagaries. The choice of the crops and variety for an agro-ecosystem has to match with prevailing location specific climatic and soil information. These ecosystems require highly elastic crops and varieties which could give higher yields under normal conditions and also withstand the natural calamities effectively. Finally, research on watershed impact on socio-political aspects of the respondents shows that impact is much less in terms of income and employment. Further majority of participants from scheduled tribes did not get their due share of scheme benefits (Prabhakar *et al.*, 2010).

The farm-specific technical efficiency in cultivation of major crops has been quantified, and effect of various socio-economic factors has been estimated using data from a representative sample of 240 households selected from eight watersheds and eight control villages in the Bundelkhand region of Madhya Pradesh. The mean technical efficiencies of the farmers range between 0.45 and 0.76 in watersheds and 0.33 and 0.66 in control villages which indicate that there is a scope for further increase in production by efficient use of existing inputs and technology. The socio-economic factors like education, irrigation facilities, extension contacts and marketing contacts have been observed to be the significant determinants of farm-specific technical efficiency (Mondal, B *et al.*, 2012).

The different measures that can be adopted in watershed areas include: (i) land consolidation and soil conservation, (ii) improvement in till age leading to better soil texture and root penetration, (iii) addition of plant nutrients through deep placement of fertilizer, (iv) adoption of water harvesting procedures resulting in strong as much of moisture as possible for the use of crops, (v) use of improved seeds, (vi) cultivation of drought resistant and short duration crops, (vii) popularization of multiple cropping programme etc. The essential requisite of this dry farming is to encourage land leveling, land shaping, water harvesting and soil conservation practices by way of extending suitable financial facilities to the farmers. The Pradhan Mantri Fasal Bhima Yojana (PMFBY) scheme is new and due to lack of robust marketing, the message is not reaching the farmers. Insurance companies are not engaging with non-loanee farmers. In a micro level study in Telengana state, it was revealed that only 2 percent of the farmers owning below two hectare was aware of crop insurance scheme and one percent only insured (Pandaraiah and Sashidar, 2014).

In order to ensure long term sustainability for dry land agriculture in India, various components are to be taken into consideration like socio-economic resources, integrated water shed development, improvement of rain water use efficiency, diversification of agriculture through livestock farming, alternative land uses and integrated soil-nutrient-water-crop management (Roshni, 2016). Dry land farming areas needs much closer attention. Present allocation of research resources is disproportionate to the contribution of dry land agriculture to food security and livelihood of the farmers. Since returns from un irrigated crops are lower than irrigated, the efficiency of crop production must be higher and management practices on application of inputs must be cost effective. Synchronization of sowing seeds, fertilizer application, seed coating, mulching can be done in a single operation using multipurpose seed drill. The extension system in dry land/ rain fed areas must give attention as they do for irrigated agriculture. Moreover, access to institutional borrowings is lower because there is high degree of risks associated with dry land farming. Since 2014, India has seen large-scale loan waivers as a populist device and a short-term tool addressing the plight of delinquent farmers. But long term strategy to invest on rural infrastructure, watershed development, farm ponds, sprinkler irrigation for critical stages, creation of supply chain, strengthening of public extension must get priority over short term reliefs.

### **Risk management**

When disasters happen, farmers and/or poor farming households will have less access to risk management options needed to cope with the consequences of such events (Rola *et al.*, 2013). Results of discriminant analysis based on the criteria values of standardized canonical coefficient and correlation matrix identified that educational level, farm size, satisfaction level, awareness and access to source of credit are positive discriminators while negative coefficients are obtained for age, income level and number of earning members in managing risks (Kumari, M, *et al.*, 2017). Agriculture is a highly localized activity and therefore, e-information must be tailored to specific conditions. Thus, staying abreast with the modern technological innovations like digital sensor-based weather forecasting, GIS-based crop estimation, drone-based surveillance etc. can maximize the benefits of crop insurance scheme for farmers as well as agricultural output. The flagship crop insurance scheme, PMFBY was launched by the Government of India in 2016. Exclusion of coverage of non loanee farmers, lack of awareness, low coverage in rain fed and remote areas are found to be deficiencies of the scheme. Change agents or the field staff from the agricultural department, banks and insurance companies can play key role in the implementation of policy. There is a need to increase the efficiency of the operations ranging right from the functioning of weather stations to crop-cutting experiments, use of drones, satellite images and GPS-enabled mobile phones.

Combing three major crop insurance schemes, average coverage of number of farmers per year works out to 247.20 lakhs or 27.66 percent of the total 893.50 lakh farmers in the country (2017). An experiment was conducted which ran a suite of randomized controlled trials to test a pay-at-harvest insurance product, in partnership with a sugarcane contract farming company in Kenya. In main experiment, sugarcane growers were offered insurance to 605 farmers and randomized the timing of the premium payment. Taking of insurance and pay premium at the time of harvest encouraged 72 percent of the farmers to opt for crop insurance. In contrast, take-up of the standard, pay-upfront insurance model encouraged only 5 percent of the farmers to take up insurance (Casaburi and Willis, 2017).

### **Investment in agriculture**

Consistent investment in agriculture is critical to ramp up the productive base and accelerating development in the long run. The percentage of investment in agriculture and allied sectors in the total GDP is shown in Table 2.

**Table 2. Public and Private Sector Investment in Agriculture and Allied Sectors in the Total GDP at Market Prices of 2011-12 (Per cent)**

Year/Details	Public	Private	Total
2011-12	0.4	2.7	3.1
2012-13	0.4	2.4	2.7
2013-14	0.3	2.5	2.8
2014-15	0.3	2.1	2.4

The share of investment in agriculture out of total investment in the economy ranges from 2.4 to 3.1. At the same time, share of agricultural GDP in total GDP ranged from 13 -17 percent for the above period as can be seen from different sources of estimates. Thus, neglect of agriculture in terms of total investment is clear. Investment normally reflects the capital formation and directly related. The share of agriculture in Gross Capital Formation (GCF) is shown in Table 3.

**Table 3. Share of Agricultural and Allied sectors in Total GCF (Per cent)**

Year/ Source	Public	Private	Total
2011-12	5.4	9.4	8.6
2012-13	5.3	5.1	7.6
2013-14	4.5	9.1	8.1
2014-15	4.4	7.9	7.1

Source: Agriculture at a Glance, Ministry of agriculture, GOI.

Capital formation in a sector is an important indicator of how healthy, a particular sector is. Capital formation will strengthen the productive capacity of a particular sector in the long run. The figures show low degree of capital formation which is responsible for stagnation in crop yields during past one decade. Capital formation in small farms is a necessary condition to make it economically viable. Given that Indian agriculture being dominated by small and marginal farmers, low investment in agriculture is not facilitating inclusive growth.

### Regional disparities

Report of the Committee on Doubling Farmers' Income, volIII, analysed the regional disparities across the country in annual farm household income, based on 70<sup>th</sup> Round NSSO data dividing the country into eight zones. The findings included: i. Union Territories topped with highest income and lowest income was observed in the Eastern Zone comprising Bihar, Jharkhand, Odisha, and West

Bengal; ii. The share of cultivation in household income ranges between 33 and 64 per cent; iii. By and large, non -farm business is the predominant source of income next to cultivation in many zones; iv. The share of livestock income is the highest at 16 per cent in the Eastern zone and overall, it varies between 9 and 16 per cent, with an average of about 11 per cent. Wages and salaries play a minimal role as a source of income in all the regions. These facts throw light on existence of variations in performance of farm households in income generation across States. Agricultural growth strategies must take into account to support States with slow growth.

### Gender in agriculture

According to 2011, Census there is 36.04 million female cultivators and 61.59 million female agricultural labourers. Thus female cultivators constitute 30.34 percent of total cultivators and share of female in the total agricultural labourer sis 42.67 percent. Evidently female population plays a well pronounced role in agricultural production. Labour markets in India are characterized by gender based disparities in wages irrespective of labour status, region, sector or occupation. For example, based on 2009-10 prices, male wage rate per day is Rs.65.4 as against female wage rate of Rs.49.7. Rural women's access to training and information on modern farming is much less as compared to their male counterparts. Knowledge of farming techniques is critical to productivity; however women farmers have inadequate access to agricultural extension and training services. It is also important that training and agricultural technologies are accessible and adapted to rural women's needs and constraints. Linking women to agricultural value chains is very little. Similarly women's access to land and rural finance show a poor picture. Only few States in India have legalized inheritance of land property by female children on par with male counterparts.

It is well recognised that marginal women farmers, especially those engaged in farm labour on other people's lands and forest-produce gatherers, are extremely disadvantaged when it comes to accessing formal agricultural service delivery mechanisms and informational channels of departments and agro-universities. The loss of a day's labour in accessing agencies at the block level, social controls on mobility, intimidation in processing entitlement applications at official channels - all of these act as stumbling blocks to access to information and scheme benefits. The mobile phone seems to offer the promise of overcoming some of these barriers. As men migrate to urban areas seeking employment, women's responsibility increases in managing agriculture.

Equipping women in farming assumes greater importance due to changes in the occupation of male members. Designing policies and programmes to train women at the grass root level imparting skills in use of modern inputs, crop management practices and marketing is need of the 21<sup>st</sup> century. Training them in the use of IT tools to get information and gaining knowledge must assume greater importance.

#### Sources of Farm Household Income

Farm households draw their income from different activities namely crop cultivation, livestock production, wages and non-farm business. There is uncertainty in depending wholly on cultivation. Hence farmers resort to livestock production, wage earnings and non-farm business activities. It may be seen from Table 4 that though share of income from cultivation has increased marginally, the share of wage earnings and non-farm business has declined considerably.

**Table 4. Share of farm household income sources (percent)**

Source	2002-03	2012-13
Cultivation	46	48
Livestock	4	12
Wage	39	32
Non-farm sources	11	8

Source: NSSO 2005 and 2015 Surveys

As wage earnings and employment in non-farm businesses provide employment largely to small and marginal farmers, strengthening the activities under MNAREGA and provision of institutional loans for informal sector should get priority. Some of the policy announcements in 2019 budget of GOI is very encouraging to inclusive growth in agriculture.

#### Strategies for inclusive growth

The most important constraint of Indian farmers is their small and uneconomical size of holdings. This can be overcome by encouraging the formation and working via Farmer Producer Organisations (FPOs) that act as aggregators and help farmers overcome their unorganised nature. Farmers continue to hold their produce both for the want of immediate cash requirements and the lack of access to quality storage. Hence, government must sharply enhance the support to FPOs, commodity based farmer groups and other categories to realize cost effectiveness in purchase of inputs and marketing of products. Lack of access to quality storage is a constraint and, hence, government spending in the creation of suitable storage capacities - either

independently or in public-private partnership (PPP) model - will not only help farmers to store their produce, but also connect them to institutional finance through a much more secure mechanism of warehouse receipt finance through FPOs.

One of the big hurdles is lack of availability of comprehensive information and advisory support to make farming decisions. Markets for agricultural commodities are largely disconnected due to weak information flow across long supply chains. An independent national set-up could be created with a PPP at the block/district level to provide necessary information that would empower farmers to make the right decisions in choice of crops and cropping systems, technology acquisition, marketing, and so on. A closer examination of functioning of KVKs and improving their performance can meet the needs indicated above partially.

To begin with, agriculture has received only 7 percent of budgetary allocation in the recent past, down from about 20 percent in the 1980s. Considering the demand- supply imbalances and its importance as a source of livelihood for the rural economy, the budgetary allocation to agriculture should improve. On top of this, investment in the agriculture sector is 2.3 percent of gross domestic product. Policy environment has to encourage the private and public sector for higher investments in agriculture. The long-term target should be at least close to 4 percent of GDP. Increased spending in agricultural research and farm extension always provide incremental benefits (with few exceptions). Over the last decade, wheat yields in the country have grown at 0.1 percent and rice at 1.3 percent per annum. Crops like pulses and sugarcane have actually witnessed a decline in yields to the tune of 0.2 percent and 0.4 percent respectively. If the growth story in India is to be inclusive, farm productivity has to rise for income levels to increase. The research should focus on better farm practices, optimal use of fertilizers and pesticides, productive seed varieties inclusive of GM crops, multiple crops in the same land etc. Equally important is the dissemination of such knowledge to farmers. Another area which needs an urgent revamp is the supply chain. India's vegetable production increases by 5 percent per annum in recent years but vegetable prices cause worry to both producers and consumers. Better crop planning, demand estimation, transportation, warehousing facilities inclusive of both normal and cold storage should be targeted and achieved. The government can also design tax incentives like tax holidays for setting up agricultural supply chains to boost private infrastructure development. Spending on real productive assets will win over the government doling out relief in terms of loan waivers. Fertilizes



subsidies constitute a large part of total farm subsidies. The government can take some stern and correct steps in the subsidy arena by linking subsidies to the nutrient content of fertilizer and reducing overall allocations. And such savings can be diverted towards the capital formation by public sector in agriculture.

Government policy measures relating to increased spending need to go beyond short-term populist measures but targets at long term growth with a. conceived goals of achieving 4 percent growth in agriculture through raising incomes by increasing productivity of land and labour, turning to high value agriculture and ramping up rural nonfarm economic activities; b. sharing growth (equity) by focusing on small and marginal farmers, lagging regions, women, farm labourers, etc.; and c. by maintaining sustainability of agriculture by focusing on environmental concerns. What are the policies needed to achieve the above goals? So national agricultural policy must focus on: demand driven farm enterprise diversification; well-reasoned and fair price policy; rational allocation for subsidies and investments; land consolidation; improving irrigation and water management; a closer examination of research and extension and improving efficiency; farm credit policy with economic viability as well as equity considerations; domestic market reforms and creation of modern supply chains.

Existing institutions have to be improving their performance covering all the above aspects. External sector is not adequately favoured to make full use of agricultural exports, imports, global supply and demand potentials. Tax and tariff regime should favour agricultural production. There is a need to balance between producer prices and consumer prices by careful calibration of minimum support prices and tariff policy (Kaur, 2013). Availability and cost of labour has become a major constraint in the agriculture sector and farm mechanization must get priority. Therefore, rural development and poverty alleviation programmes like Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA), and National Rural Livelihood Mission (NRLM) should be integrated with agricultural and allied sectors, irrigation and watershed development, soil and water conservation programmes, rural infra-structure, and non-farm activities.

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