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Performance of the Farm Sector in India and the Question of Inclusive Growth: Agenda for Twelfth Five-Year Plan¹

Apurba Kumar Chattopadhyay²

I

Introduction

Achieving increased social welfare and well-being of the people is the ultimate objective of development planning. Despite more than six decades of planned economic development, a large part of the population in India is still excluded from the share of economic development. This includes landless agricultural labourers, marginal farmers and socially backward people, among others. The Indian economy, however, has become one of the fastest growing economies of the world in recent years. The economy, it is believed, has moved to a higher growth plane, with growth in GDP at market prices exceeding 8 per cent every year since 2003-04. The per capita income grew by an annual average rate of 3.1 percent during 1980-81 to 1991-92, which marginally accelerated to 3.7 per cent per annum during 1992-93 to 2002-03. However, since then there has been a sharp acceleration in the growth of per capita income—from 3.7 percent to 7.2 per cent per annum during 2003-04 to 2007-08¹. The impressive increase in savings, both household and corporate, and investment, substantial flow of Foreign Direct Investment, growth of manufacturing sector, export, etc. all contributed to the impressive growth in GDP during this period. The global financial and economic crisis halted the good run of GDP growth in India in 2008-09 but the economy seems to have emerged from the global crisis since then. While the return to the higher growth path is encouraging it could not hide the intrinsic imbalances in the overall growth profile of the country. These imbalances have seriously dented the government's effort to achieve 'inclusive growth'. The poor performance of the agricultural sector, which provides livelihood to the half of the Indian population, has raised the question of food security. In the employment front also the picture is dismal. The jobless growth in the 1990s had been followed by distress-driven employment growth during 1999-2000 and 2004-05 because of the

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agrarian crisis and a deceleration of real wage rate. Further, the recent NSS report (64th Round) suggests that during 2004-05 to 2007-08 the growth rate of employment was the lowest in the post liberalization era at meager 0.17% per annum. The Planning Commission Expert Group (Tendulkar Committee) has calculated the rural poverty ratio in India to be 41.8 percent and overall poverty ratio to be 37.2 percent in 2004-05 as opposed to the official estimates of 28.3 percent and 27.3 percent respectively². Thus, the Committee emphasized on expansion in the coverage of the public distribution system and other government schemes where beneficiaries are decided on BPL basis. Though the government programs like Bharat Nirman aimed at improving the quality of life of people living in the rural areas are expected to do a decent job and the schemes like the MGNREGS have ensured, albeit, with numerous implementation difficulties, that the rural poor are left with sufficient purchasing power for their basic requirements, especially food through guaranteed employment; unless inherent structural imbalances are removed with proper implementation of planning, the inclusive growth will remain an ever eluding goal of Indian planning process.

There have been many studies on different aspects of agrarian economy of India. The growth crisis in Indian agriculture and its impact on the wider economy have also been studied by a number of researchers (Chand et.al, 2007; Bhalla 2007; Krishnaraj 2006; Bhaduri 2008; Rao 2010; Chattopadhyay 2011). The general view is that the coexistence of high rate of growth of the whole economy and lack of reasonable growth in the agricultural sector may have led to accentuation of income inequality in India. Agricultural GDP growth is believed to be at least twice as effective in reducing poverty as GDP growth originating outside agriculture (WDR 2008) while it has been found that only agricultural growth reduces inequality, and growth in heavy manufacturing and services sectors raises inequality (Pieters 2009). Population growth calls for increased food production and crisis in agriculture may impinge on food security. On the other hand, accelerated agricultural growth impacts favourably on rural income distribution. It has been found that there exists almost one-to-one correspondence between agricultural growth and improvement in rural income distribution (Chattopadhyay, 2005).

We have organized the paper as per the following. In section II we analyse the problems of the farm sector which does not allow this sector to play the complementary role to the non-farm sector. The impact of the stagnation of the farm sector on employment and livelihood of the majority of the population has been taken up in section-III. Section-IV evaluates the government

measures undertaken to remedy the shortcomings of the farm sector and make an agenda for the twelfth five-year plan to make the development process more inclusive. Finally, in section V we make concluding observations. The data required for this study have been collected from the secondary sources like, NSSO Reports, Census Reports, various reports of the Planning Commission of India, Economic Survey and from the existing literature on the issue at hand.

II

The quick estimate of the Central Statistical Organisation (CSO) has placed the GDP growth rate for 2009-10 at 8 percent at 2004-05 prices. The run of good GDP growth rate began in 2003-04 and it continued until 2007-08 (Table-1).

Table -1 **Average GDP Growth Rates—Overall and in Agriculture**
(% per Year at Constant Price)

Period	Total Economy	Agriculture & Allied Sectors	Non- Agriculture
1. Pre-green revolution 1951-52 to 1967-68	3.7	2.5	4.9
2. Green revolution period 1968-69 to 1980-81		3.5	2.4
3. Wider technology dissemination period 1981-82 to 1990-91	5.4	3.5	6.4
4. Early reforms period 1991-92 to 1996-97	5.7	3.7	6.6
5. Ninth Plan	5.5	2.5	6.6
2002-03	3.8	-7.2	7.3
2003-04	8.5	10.0	8.0
2004-05	7.5	0.0	9.6
2005-06	9.4	5.9	10.3
2006-07	9.6	3.8	11.1
6. Tenth Plan	7.8	2.50	9.3
2007-08	9.2	4.6	10.3
2008-09	6.8	-0.1	8.09
2009-10	8.0*	0.4*	9.3
7. Eleventh Plan (First three years)	8.0	1.63	9.23

* Based on quick estimate.

Source: Economic Survey 2007-08 and 2010-11, Government of India.

The real GDP averaged 8.9 percent per annum during this five-year period. The global financial and economic crisis halted the good run of GDP growth in India in 2008-09 and as a result, the GDP growth rate reduced to 6.8 percent. The growth of the industry and the service sectors provided the required stimulus for the overall impressive GDP growth during the period.

However, the agricultural sector performed poorly during last few years and may prove to be a bottleneck to the overall GDP growth in India. When the overall GDP growth was 6.8 percent in 2008-09, the agricultural sector declined by 0.1 percent. In 2009-10, when the overall GDP growth recovered to reach at 8 percent, agricultural GDP has almost stagnated with a meager 0.4 percent growth rate.

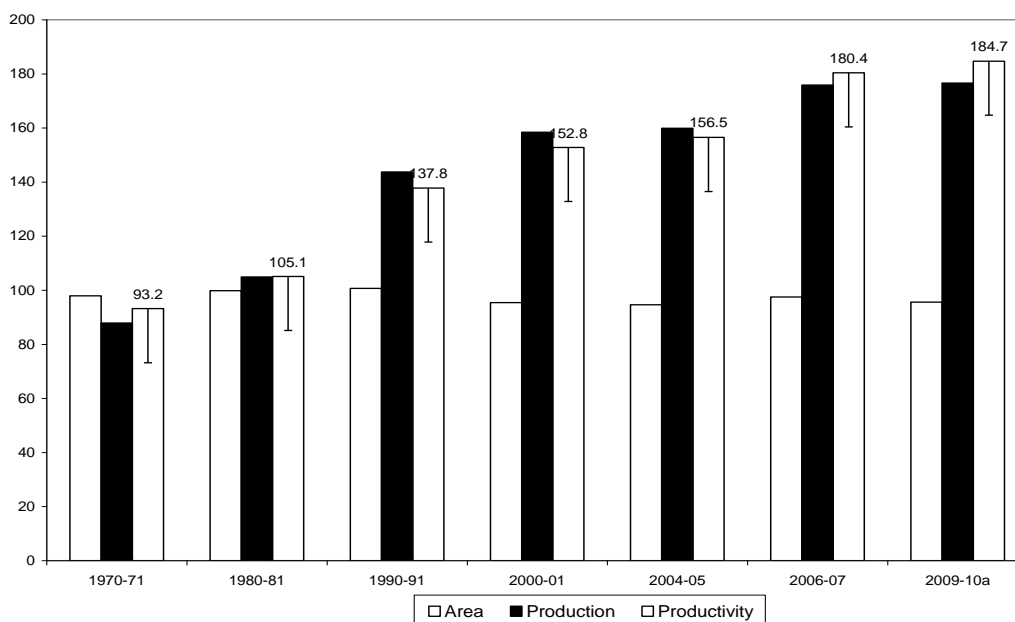
Although the share of agriculture and allied sector in the GDP has registered a steady decline from 40 per cent in 1980-81 to 15 percent in 2009-10, agriculture remains the mainstay of Indian economy because of its high share in employment (52.1 per cent) and livelihood creation.³ The growth rate of agriculture and allied sector remained lower than the growth in non-agriculture sectors for fairly long times. The gap between the growth of agriculture and non-agriculture sector began to widen since 1981-82, and more particularly since 1996-97, because of acceleration in the growth of industry and services sectors. The mismatch between the share in GDP and share in total employment indicates an ominous sign in so far as the agriculture sector is concerned. With more than 50 percent of the workforce producing only 15 percent of the GDP, the per capita GDP of agricultural workers is less than even one fifth of those in the non-agricultural occupations. There can be no doubt that the increasing gap in the productivity and thus average incomes of workers engaged in agricultural and non-agricultural occupations should be a matter of grave concern for the policy makers in India (Bhalla 2007). Further, the yields of most of the agricultural product are very low compared to the international standard even after green revolutions which have enabled the country to achieve self sufficiency in foodgrains. India's yields of cereals are one third of Egypt and less than half of China and about four-fifth of Brazil.⁴

The Ninth Five Year Plan targeted the growth rate of agriculture to be at least 4 percent for sustaining more than 8 percent GDP growth rate. But the actual growth rate had been far lower than the targeted figure (Table-1). The poor performance in agriculture in the face of a spectacular growth of the overall economy has serious implications. As stated earlier, it has caused to increase disparities between income in agriculture and non-agriculture. In fact, there would have been no cause for concern with the lower growth rate in agriculture, had the population dependent on agriculture declined. But on the contrary, the workforce in agriculture has grown at the rate of 2.36 per cent and 1.61 percent respectively between 1991 and 2001 (Chand et al 2007). Further, though the growth rate of agriculture remained lower than the non-

agriculture sector growth rate for fairly long time, it had at least remained higher than the growth rate of population. As a result, particularly after 1980, India became self sufficient in food grain production. This has almost eliminated India's dependence on imports of foodgrain. However, during last few years the agricultural growth rate has even fallen below the population growth rate. Thus, it is obvious that the majority of population dependent on agriculture (more than half of the population) for their livelihood would be in distress.

Figure-1

Index Numbers of Area Production and Yield of Foodgrains in India during 1970-71 to 2009-10
(Base : Triennium ending 1981-82 = 100)



Note: a. Data corresponding to 2009-10 indicate fourth advance estimate as on 19.07.2010.

Figure-1 gives index numbers of Area, Production and yield of foodgrains, which is the main constituent of agricultural output, for the period 1970-71 to 2009-10. It brings out the fact that the index of production rose modestly during the pre-1980s and increase in area had some role in the output growth during this period. Yield growth also had important role behind this increase in output. However, the production index rose impressively from around 1980 and continued its good run till the turn of the last century indicating acceleration in the growth rate of production during the 1980s and 1990s. The major contributory factor to this growth was growth of yield as a result of extension of new technology to wider areas. On the other hand, the area index remained more or less at the same level during this period. However, the trend growth

rates of production and yield started to decelerate from the late 1990s. Thus the goal of achieving at least 4 percent growth in agriculture remains elusive.

Factors responsible for agricultural crisis

The agricultural growth depends mainly on the monsoon rainfall, gross cropped area (GCA), irrigation, fertilizer use, prices, technology and rural infrastructure. A recent study (Chand et al 2007) has estimated that a 1 per cent increase in rainfall results in 0.21 per cent increase in agriculture GDP. Improvement in terms of trade in favour of agriculture by 1 per cent leads to a 0.42 per cent. Similarly a 1 per cent increase in stock of capital in agriculture and institutional credit increases agricultural output by 0.61 per cent and 0.14 per cent respectively. The Planning Commission of India has made an assessment of trend growth of various parameters that contribute to agricultural growth for the period 1980-81 to 2005-06.⁵ It has been found that Indian agriculture experienced an accelerated growth during 1980-81 to 1990-91 with the spread of new technology and also that all the factors that influence agricultural output had robust growths except the net sown area which declined by 0.1 percent per annum. However, the impact of this decline in the net sown area was more than compensated by the increase in cropping intensity (0.5 percent per annum) and gross irrigated area (2.3 percent per annum). This growth momentum continued, albeit at a reduced pace, till 1996-97 in spite of reduced growth rates of all factors excepting gross irrigated area, fixed capital stock of the private sector and credit supply. However, the agriculture sector suffered a set back in the later period when except for an increase in the rate of growth of credit supply to farmers, there has been deceleration in the growth of all the other factors. But the greatest set back to agricultural growth came from the decline in terms of trade for agriculture (1.7 per cent per year) and slowdown of the expansion of irrigation (from 2.6 percent per annum during 1990-91 to 1996-97 to a mere 0.5 percent per annum in the subsequent period) (Chattopadhyay 2011).

The slow down in irrigation is the direct consequence of the deceleration in public and private sector capital formation during the period and decline in electricity consumed in agriculture, which is mainly used to run the tube wells. Further, rapid loss of underground water resources in several parts of the country added to the problem. On the other hand, the adverse terms of trade for the agriculture after 1996-97 are believed to be the result of increased integration of the domestic market with the international market. Accordingly, declining trend of

prices of agriculture in the international market has been transmitted to the domestic market resulting in deterioration in the terms of trade for agriculture. Further, risk factor, measured in terms of year-to-year variability in agricultural production, has increased by 50 per cent in the post 1995-96 periods in comparison with the immediately preceding period.⁶

Thus, the above analysis clearly reveals that the main factors responsible for agricultural crisis are deterioration of terms of trade for agriculture, poor progress of irrigation and fertilizer use, decline in supply of electricity to agriculture, decline in net sown area and very poor progress of cropping intensity.

III

Impact on Rural Employment and Livelihood

It is now well recognized that the crisis in farm sector has adversely affected the people dependent on it. The growth of employment decelerated from 2.06 per cent per annum during 1983 to 1993-94 to only 1.82 percent per annum during 1993-94 to 2004-05. It may be noted that almost all the sectors of the economy witnessed a decline in employment growth during this period. However, decline in employment growth in agriculture was the greatest. The 2004-05 NSS survey suggested an employment growth of 2.85 percent per year during 1999-2000 and 2004-05. Interestingly, this impressive employment growth occurred during the period when agricultural sector witnessed stagnation. Abraham (2009) has shown that the rural employment growth during this period was distress driven. Under conditions of distress, when income levels falls below sustenance, it is likely that normally non-working population is forced to enter the labour market to supplement household income. Thus the observed increased participation of female population and aged population in work point to forced participation in the labour market, owing to the declining earning capacity of the normal income earners. The 64th round NSS data (2007-08) which shows substantial decline of rural female labour force participation rate (LFPR) and work participation rate (WPR) corroborates his thesis. In fact, female WFPR declined from 249 per 1000 in 2004-05 to 220 per 1000 in 2007-08. Similarly, female WPR has declined from 242 per 1000 to 216 per 1000 during the same period⁷. Further, the latest NSS figures (2007-08) indicate significant reduction in the share of self employed and corresponding increase in the share of casual labour which lead us to conclude that the vulnerability of rural workforce has increased in spite of very impressive overall GDP growth of the Indian economy.

In fact, the Indian economy has failed to create a sufficient volume of additional quality employment to absorb the net addition to the labour force over time. Neither had it created enough work opportunities for the surplus labour that currently exists in agriculture. It is widely accepted that the ‘inclusive growth’ requires migration of such surplus workers to other areas for productive and gainful employment in the organized or unorganized sector. This did not happen in India. Further, the spectacular rate of growth of GDP in last few years might have very limited impact on the livelihood of the rural poor. Since agricultural growth is a powerful engine of poverty reduction, the recent pattern of growth in India cannot be termed as pro-poor. It is believed that in the post-globalisation period only the better off sections of workers have gained at the cost of the more vulnerable sections (Bhaduri 2008; Sarkar and Mehta 2010).

Table- 2

Annual Compound Growth Rate of Average Real Daily Wage Earnings of Regular and casual Workers (All India, Rural), 15 to 59 Years (in Rs. /day at 1993-94 prices)

NSS Survey Year	Regular Salaried workers				Casual Workers			
	Agriculture		Non-Agriculture		Agriculture		Non-Agriculture	
	Male	Female	Male	Female	Male	Female	Male	Female
1983 to 1993-94	4.3	0.4	3.5	3.8	2.4	2.7	2.0	3.6
1993-94 to 1999-2000	8.2	5.3	5.3	14.5	2.8	3.0	3.7	5.1
1999-2000 to 2004-05	-1.4	0.3	-0.6	-10.8	1.7	1.4	1.0	1.9

Source: Computed using data in Table 2, p. 197 in Unni and Raveendran (2007).

It may be noted (Table-2) that the direct consequence of the uneven sectoral growth or more specifically, decline in the agricultural growth has been the stagnation in the growth of rural wages. This is true for all the segments of rural workers during 1999-2000 to 2004-05. In fact, there had been a deceleration in the real wage rates during this period for male salaried workers in agriculture and outside agriculture as well as for female workers in non-agriculture. The overall decline in growth of rural wages may be the result of the decline in demand for casual workers because of reduction of farm yield and the consequent entry of unpaid family workers as agricultural workers (Abraham 2009).

Moreover, the NSSO conducted Situation Assessment Survey (SAS) of Indian farmers as part of its 59th round survey in 2003 and it has revealed that 60 percent of the rural households are farmer households. The average monthly per capita consumption (MPCE) expenditure of farmer households is lower than the same for all rural households. The incidence of poverty

among farmer households was higher than among all rural households. Bhalla (2005) has compared poverty among all rural persons and farmers during 1999-00 and 2003 based on NSSO data. He has found that while the incidence of poverty for the rural households declined from 27.09 per cent to 23.99 per cent during the period but for farmer households the incidence was higher at 30.73 per cent in 2003. Moreover, the report (SAS) brings out that about half (48.6 per cent) of farmer households were indebted and that 42.3 per cent of their debt was from non-institutional sources. Thus, farmers are poorer and more vulnerable than non-farmers in rural India are.

IV

Agenda for the Twelfth Five-Year Plan

Our analysis in the last two sections revealed that decades of planning notwithstanding, a large section of the population particularly in rural area has been suffering from economic exclusion. The Eleventh Five Year Plan sought to address this problem by providing a comprehensive strategy for inclusive development, building on the growing strength of the economy. An important aspect of ‘inclusive growth’ in the Eleventh Plan is its target of 4 percent per annum growth in GDP from agriculture and allied sectors. This target was assumed necessary to achieve the overall GDP growth target of 9 percent per annum without undue inflation and that it was expected to help reduce poverty and thus, enhance inclusiveness. Table-1 clearly depicts that during the first three years of the current plan period, overall GDP grew by 8 percent per annum. The shortfall may be attributed to the global financial crisis and achieving the overall target would depend, among other things, on the recovery of the global economy. However, agricultural sector has shown a dismal performance during the period. During the first three years the farm sector grew by just 1.63 percent per annum and an average growth rate of about 7.55 percent per annum will be required in the remaining two years if the Eleventh Plan target of 4 percent is to be achieved.

Apart from providing livelihood to the large section of the population, the farm sector is a supplier of food, fodder, and raw materials for a vast segment of industry. More recently, the rural sector (including agriculture) is being seen as a potential source of domestic demand, a recognition that is even shaping the marketing strategies of entrepreneurs wishing to widen the demand for goods and services. Hence, the growth crisis of Indian agriculture has severely

compromised its ability to achieve 'inclusive growth'. Further, the current rates of overall GDP growth is increasing agricultural demand and putting pressure on food prices.

It is thus imperative on the part of the planners and policy makers to devise a perspective and strategy planning for agricultural development to achieve faster, sustainable and more inclusive growth. To this end in view many centrally sponsored schemes have been undertaken in spite of the fact that agriculture is a state subject. Some of the major Schemes are National Food Security Mission (NFSM), The Rastriya Krishi Bikash Yojana (RKVY), and The National Horticultural Mission (NHM).

The NFSM was launched in 2007-08 with a view to enhancing the production of rice, wheat, and pulses by 10 million tonnes, 8 million tones, and 2 million tonnes respectively by the end of the Eleventh Plan. The Mission aims to increase production through area expansion and productivity; create employment opportunities; and enhance the farm-level economy to restore confidence of farmers. The NFSM is presently being implemented in 476 identified districts of 17 States of the country. Besides, a series of activities for more vigorous promotion of pulse crops has been adopted under the NFSM to intensify the pulse production programme from 2010-11. The RKVY was also launched in 2007-08 with an outlay of 25,000 crore for the Eleventh Plan to give incentives to the states to enhance public investment so as to achieve a 4 per cent growth rate in agriculture and allied sectors during the Plan. On the other hand, the Ministry of Agriculture has been implementing the centrally sponsored NHM for the holistic development of the horticulture sector since 2005-06, duly ensuring forward and backward linkages, and with the active participation of all the stakeholders. All the States and the three Union Territories of Andaman and Nicobar Islands, Lakshadweep, and Puducherry are covered under the Mission except the eight northeastern States including Sikkim.⁸

According to the Mid-term appraisal of the Eleventh Five Year Plan these programmes and programs like Bharat Nirman aimed at improving the quality of life of people living in the rural areas are doing well. Further, Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) have ensured, albeit, with numerous implementation difficulties, that the rural poor are left with sufficient purchasing power for their basic requirements, especially food through guaranteed employment. However, in spite of these special schemes the farm sector is not going to reach anywhere near to the Eleventh Plan target. Thus it is believed that unless inherent structural imbalances are removed with proper planning, the inclusive growth will

remain an ever eluding goal of Indian planning process. The Twelfth five year plan thus, should try to adopt and implement the following agenda for the farm sector development.

The first and foremost agenda would be to accelerate the growth in agriculture and allied sector and also to reduce the year-to-year volatility in growth in this sector. The rising demand for food items in the face of relatively slower supply response is fuelling food inflation. The technological breakthrough achieved in the 1960s might have lost its edge. There is an urgent need for a second green revolution in India to increase agricultural productivity.

Thus, the second agenda should be to improve technology of agricultural production. It is widely recognized that technology is one of the prime movers of agricultural productivity and growth. Therefore, the new technology must focus on land productivity and water use efficiency the two most important and critical constraints in agriculture. India currently spends about 0.6 percent of agri-GDP on agri-R&D. India needs to raise this to at least 1 percent of agri-GDP, which is an average of the developing countries, if it has to raise productivity in a sustained manner.⁹

Third, the MGNREG programme must be more focused on schemes that improve water conservation together with enhanced efforts at watershed management. This will greatly improve access to water in rain-fed areas.

Fourth, capital investment in agriculture as a percentage of the GDP has been stagnating for long.¹⁰ The real challenge in agriculture sector is to enhance capital investment in the sector both by public and private sector in a sustained way.

Fifth, the Situation Assessment Survey by NSSO has clearly revealed the disenchantment of farmers in farming because of very low return from agriculture. Thus, measures have to be taken to enhance the returns from farming, which would act as incentive to produce more. There is need to make farmers realize the importance of the market. Setting up of efficient supply chains is not only essential for ensuring adequate supplies of essential items at reasonable prices but also to ensure that producers get adequately compensated. It is necessary to break farmer's isolation from the market.

Sixth, it is very common fact worldwide that with the increase in income, demand for processed food increases. It is necessary to cater to this changing demand and at the same time enhance the income of farmers. In India, the focus of the farm sector has been on cereals, mainly rice and wheat. This rice and wheat centric mentality needs to give some room for

diversification. The demand for processed food is expected to increase. Investment in food processing, cold chains, handling, and packaging of processed food needs encouragement.

Seventh, it has been revealed that in recent years per capita availability of foodgrains has declined. But for ensuring nutritional security, it is not only important to increase the per capita availability of foodgrains but also to ensure that right quantities of food items are there in the food basket of a common man. A thrust on horticulture products is required for enhancing per capita availability of food items as well as ensuring nutritional security. So there is a need to diversify agricultural production without compromising food security.

Eighth, there has been very inadequate development of rural infrastructure in India. Therefore, addressing infrastructure requirements in the agriculture sector, especially storage, communication, roads, and markets should be a priority. Public-private-partnership models can be of help in ensuring faster development of these requirements which are of vital importance for the growth of agriculture sector.

Ninth, with the increase in income demand for livestock and dairy products are also increasing. Inelastic supply of these products is also one of the important causes of rising food prices. A strategy to enhance the supply of these products will not only reduce pressure on food prices but it will also give a supplementary source of income in rural areas.

Finally, the non-farm sector must grow in such a way that it can create enough job opportunity for the rural people. Faster creation of jobs, particularly in manufacturing sector will help increase labour productivity in farm sector thereby it will make growth more inclusive.

V

Concluding Observations

It is now well recognized that despite more than six decades of planned economic development, India is yet to achieve desired level of inclusiveness. The poor performance of the agricultural sector which provides livelihood to the half of the Indian population has raised the question of food security. In the employment front also the picture is bleak. The jobless growth in the 1990s had been followed by distress-driven employment growth during 1999-2000 and 2004-05 because of the agrarian crisis and a deceleration of real wage rate. The main factors responsible for agricultural crisis are deterioration of terms of trade for agriculture, poor progress of irrigation and fertilizer use, decline in supply of electricity to agriculture, stagnation in capital formation in agriculture, decline in net sown area and very poor progress of cropping intensity.

The widening gap between the growth of agriculture and non-agriculture sector and the mismatch between their share in GDP and share in total employment has posed a structural problem that needs to be addressed immediately. Particularly, the increasing gap in the productivity of different sectors and thus average incomes of workers engaged in agriculture and non-agriculture occupations has accentuated the existing inequality and thus has promoted imbalances. A detailed agenda for action is spelt out in section IV. The strategy for the Twelve Five year would be to raise substantially the farm productivity. This calls for focus on the rain-fed areas, diversification of agriculture from just crop farming to livestock and horticulture while simultaneously addressing environmental concerns. Further, the investment levels have to be increased for increasing farm productivity and creating adequate infrastructure for transport, storage and distribution of agricultural produce.

Notes:

1. The rate of growth of per capita income as measured by per capita GDP at market prices (constant 1999-2000 prices). Economic Survey 2007-08, GOI.
2. Economic Survey 2009-10, p. 274.
3. Employment in the agriculture sector as share of total employment in 2004-05 as per CDS is about 52.1 percent. The share of the Agriculture and allied sector in overall GDP is about 14.6 percent in 2009-10. This is based on the revised National Accounts statistics which has considered the year 2004-05 as the base year. Source: Economic Survey: 2010-11.
4. The data concerns 2003-05 period. Source: World Development Report -2008, p. 326.
5. The Planning Commission of India has made an assessment of trend growth of various parameters that contribute to agricultural growth. The estimated data have been reported in the Economic Survey of 2007-08. The data used in this section has been taken from Economic Survey 2007-08 Chapter 7 p.160.
6. Risk in the agricultural production is revealed by instability in agricultural GDP. It is measured as: $\text{stdev} [\ln(Y_{t+1}/ Y_t)]$. During 1985-86 to 1995-96 it was 4.16 percent. This instability increased to 6.58 percent during 1995-96 to 2004-05. See, Chand, R., S.S. Raju and L.M. Pandey.2007. p. 2530.
7. 2007-08 data is based on the thin sample data (64th Round) as reported in NSS Report no. 531. However, a clearer picture will be available after the release of the latest quinquennial survey on employment and unemployment situation in India.
8. Economic Survey 2010-11, pp. 200-02.
9. Planning Commission, Mid-Term Appraisal of the Eleventh Five Year Plan, p.66.
10. The share of the agricultural sector's capital formation in GDP declined from 2.2 % in 1999-2000 to 1.9 percent in 2005-06 (at 1999-2000 prices) (Economic Survey 2006-07, p. 176). At 2005-06 prices, the figure for 2005-06 is 2.56 percent, which increased marginally to 2.97 percent according to the quick estimate of 2009-10 (Economic Survey

20010-11, p. 189). However, if we change the base to make it comparable with 1999-2000 data, the share of agricultural sector's capital formation in GDP stands out to be 2.2 % indicating long-term stagnation in real terms.

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