Capital Formation via Public and Private Investmentin Indian Agriculture

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Agriculture continues to be a main pillar of the Indian economy and is at the core of socio-economic development of the country. This sector accounts for around 19 per cent of GDP and about two-thirds of the population is dependent on this sector for livelihood. Growth of other sectors and the overall economy depends up on the performance of agriculture. It is the only source of livelihood and food security for a large chunk of population of India but the people engaged in this sector have low income, and are of impoverished and vulnerable sections. The Indian agriculture suffers from various constraints such as traditional methods of cultivation, heavy dependence on monsoon, fragmentation of land holdings, low productivity and low investment. Among others, declining investment over time has emerged as a major hindrance on the performance of agriculture. Insufficiency of new capital formation has slowed down the pace and pattern of technological change and the infrastructural development with adverse effects on agricultural productivity. On the contrary, there has been a large increase in the capital intensity of agricultural production during the 1990s, doubling the incremental capital-output ratio from about 2 to 4, implying higher cost of production and lower profitability. In the globalization era, when agriculture was expected to satisfy not only the domestic demand but also to liquidate on its comparative advantageand contribute substantially to foreign exchange earnings through exports, upgradation and modernization of technology and management practices, a huge public and private investment required for capital formation. Besides, attaining sustainable growth has become an imperative in order to meet the steadily rising need of food and fiber for the exponentially growing population. Hence, the need for increasing the investment in agriculture is necessary. The issue of augmenting agricultural production on a sustainable basis assumes significant importance when seen in the context of recent turbulent world of food crisis.

Methodology and Data Collection:

The present study is entirely based on secondary data and data were obtained from the various reports of Reserve Bank of India (RBI), Central Statistical Organization (CSO), National Accounts Statistics, various publications of Indian Government, National Bank for Agriculture and Rural Development (NABARD), several Economic Surveys and Internet. The data collected, tabulated was subjected to statistical analysis as per the objectives of the study. Tabular analysis and graphical representation have been used for analysis the data.

Objectives of Study:

The main objectives of this paper are –

- Focus on the nature and trends of public and private investment in agriculture sector in India.
- Focus on relative shares of public and private investment and gross capital formation in agriculture sector in India.
- Interdependence between public and private investment.

Nature and Trends of Public and Private Investment in Agriculture

The investments in any sector generate a hugecapital which can be in the form of infrastructure, improvement in the quality of natural resources and assets, and lead to the creation of productive assets. The importance of capital in a country's economic development is well recognized. Several studies have shown investment as the single most important factor in the growth process (Lewis, 1955; Rostow, 1960). There has been a considerable interest in the factors affecting investment during different periods and phases of development, given the importance of investment in economic growth. While public investment is determined largely as a matter of policy and by the availability of funds, the private investment is affected by various factors, which differ over time and space.

Investment in agriculture is generally undertaken for realizing the long-term potential by augmenting natural resources, enhancing efficiency of use of existing resources and generating value addition. Thus, in simple terms, investment refers to the acquisition of physical assets that result in the creation of a stream of incremental income over a period of time. Capital formation through investment in agriculture helps in improving productivity of natural resources, which, in turn, enables the farmers to use their land and labor, more productively. Hence, creation of capital goods is necessary for raising productivity of existing resources and realizing the long-term growth potential. The relationship between capital formation and agricultural growth, and agricultural growth and poverty alleviation are very well documented. Agricultural growth gives the positive impact on poverty alleviation. The role of capital formation is one of the major factors of agricultural growth.

Public investment helps in curtailing rural poverty through improved growth in agricultural production, agribusiness, rural non-farm employment and lower food prices. Despitelong-timegaps between investment and visible impact of that, investments in agricultural research, education, and rural infrastructure are often the most effective in promoting agricultural growth and poverty alleviation.

Table- 1

Trends in Public and Private Investment in Agriculture

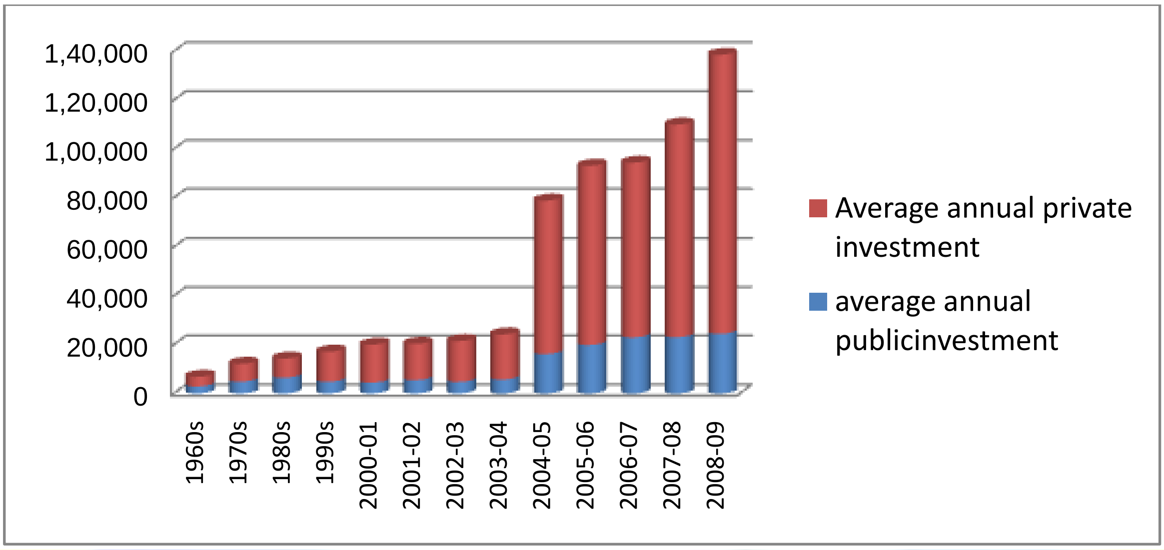
Decade /Year	Average Annual Investment in Agriculture (in crore)			Share of investment (in percent)	
	Public	Private	Total	Public	Private
1950s	-	-	4,370	43	57
1960s	2,904	3,929	6,833	40	60
1970s	4,851	7,297	12,149	45	55
1980s	6,443	7,840	14,283	28	72
1990s	4,837	12,299	17,136	23	77
2000s	14105	52676	66781	21.13	78.87
2000-01	4,435	15,574	19,809	17.29	82.71
2001-02	5,488	14,872	20,360	17.04	82.96
2002-03	4,760	16,740	21,500	15.69	84.31
2003-04	5,699	18,487	24,186	20.18	79.82
2004-05	16,183	62,665	78,848	20.5	79.5
2005-06	19,909	73,211	93,121	21.4	78.6
2006-07	22,978	71,422	94,400	24.3	75.7
2007-08	23,039	86,967	1,10,006	20.9	79.1
2008-09	24,452	1,14,145	1,38,597	17.6	82.4

Source:Computed from National Accounts Statistics and Agricultural Statistics at a Glance, Ministry of Agriculture, GOI and Economic survey 2009-10.

Note – Data of 2004-05 and onwards are at 2004-05 prices.

Table- 1 is showing trend of decade/year- wise public and private investment and total investment in agriculture sector. Table and above figure are showing public investment in agriculture sector increases till decade 1950 to 2009; after 1990 public investment has increasedbut rate of investment is reducing continuously, so the share of public investment in total investment decline; which shows adverse effect on agriculture.

Figure- 1:Trends in Public and Private Investment in Agriculture



Source: Compiled from Table-1

Private investment is showing increasing trend after 1980 and share of private investment in total investment is increasing continuously, but private investment is not complementary of public investment, because public investment is mainly concerned with major irrigation project, rural road, rural electrification, storage facilities and research; which boost the potential of agricultural sector indirectly and directly and increase efficiency. So, public investment is essential for development of agriculture sector. If public investment in agriculture sector ispoor, growth rate of this sector will also reduce.

Table-2

Trends in Public Investment in Agriculture and Allied Sectors in Five Year Plan (at 1999-2000 prices)

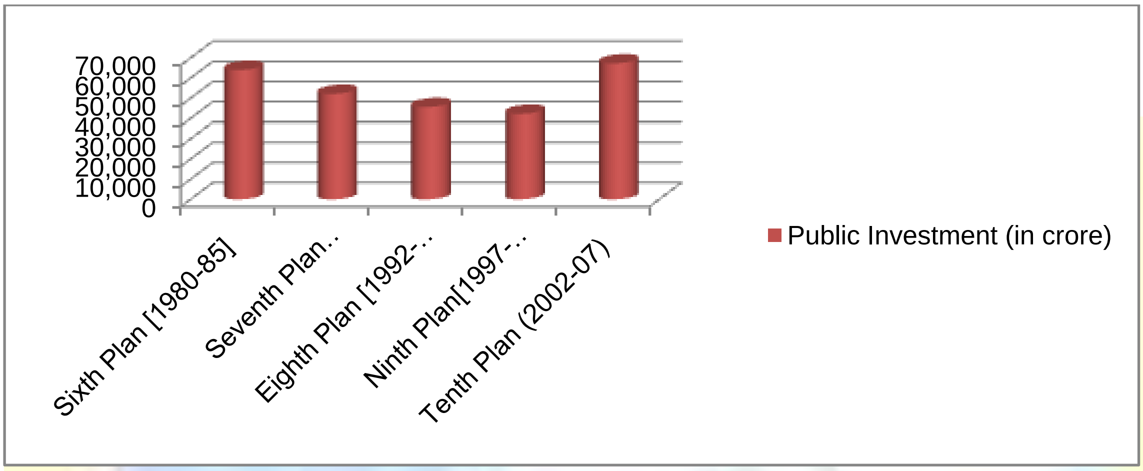
S.N.	Five Year Plan	Public Investment (in crore)
1.	Sixth Plan [1980-85]	64,012
2.	Seventh Plan [1985-90]	52,108
3.	Eighth Plan [1992-97]	45,565
4.	Ninth Plan[1997-2002]	42,226
5.	Tenth Plan (2002-07)	67,260

Source: Source: Economic Survey 2009-10

The public investment in agriculture in real terms has witnessed steady decline from the Sixth Five Year Plan to the Tenth Plan as shown in table -2 and figure-2.

Figure-2: Trends in Public Investment in Agriculture and Allied Sectors in Five Year Plan

(At 1999-2000 prices)



Source: Compiled from Table-2

Trends in public investment in agriculture and allied sectors has continuously declined from the Sixth Plan to the Ninth Plan. In Sixth Plan public investment is Rs 64,012 crore, in Seventh Plan it is Rs 52,108 crore, in Eighth Plan it is Rs 45,565 crore and in Ninth Plan it is Rs 42,226 crore. However, this trend was altered in the Tenth Plan (2002-07), public investment in agriculture sector has increased by Rs 25, 034 crore and become Rs 67,260 crore, which is a positive and welcome trend.

The public investment in agriculture has declined from the Sixth Five Year Plan to the Tenth Plan. There are some reasons which are responsible for slower growth particularly in public investment in agriculture are as follows:

i) Existing projects required large expenditureon maintenance;

ii) Excessive delays in completing the projects,

iii) Lower allocation for irrigation;

iv) Inadequate rural infrastructure and research;

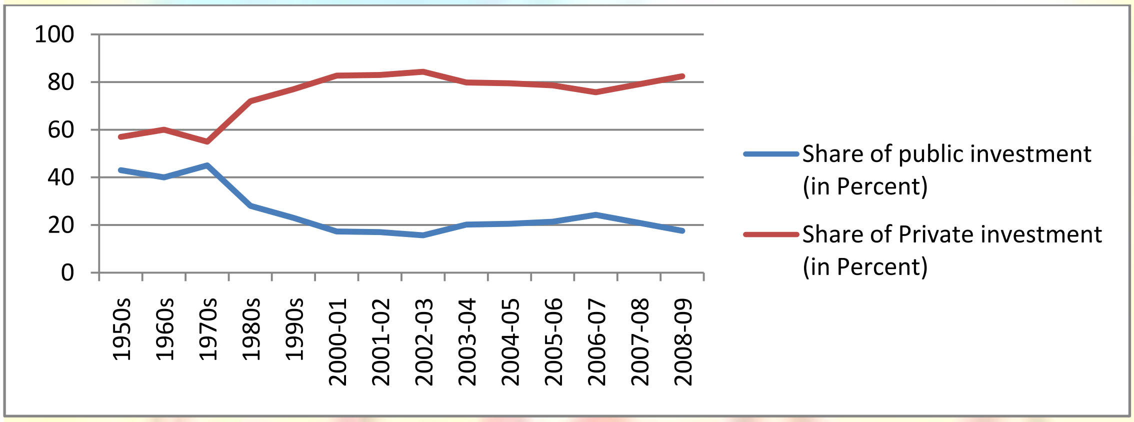
v) Delayed growth in private investment in agriculture.

Relative Shares of Public and Private Investment and Gross Capital Formation in Agriculture Sector

Share of public investment in total investment in agriculture has continuously declined from1970. It is 45 percent in decade 1970 to 28 percent in 1980. In decade 1990, it further declined and became 23 percent. Share of public investment is 17.29 percent in 2000-01 and it continuously declined in 2002-03; it shows gradually increment in trends of share of public investment from 2003-04 to 2007-08; it further declined 2008-09 as shown in figure -3.

Figure-3 Share of Public Investment and Private Investment in Total Investment Agriculture Sector

(In percent)

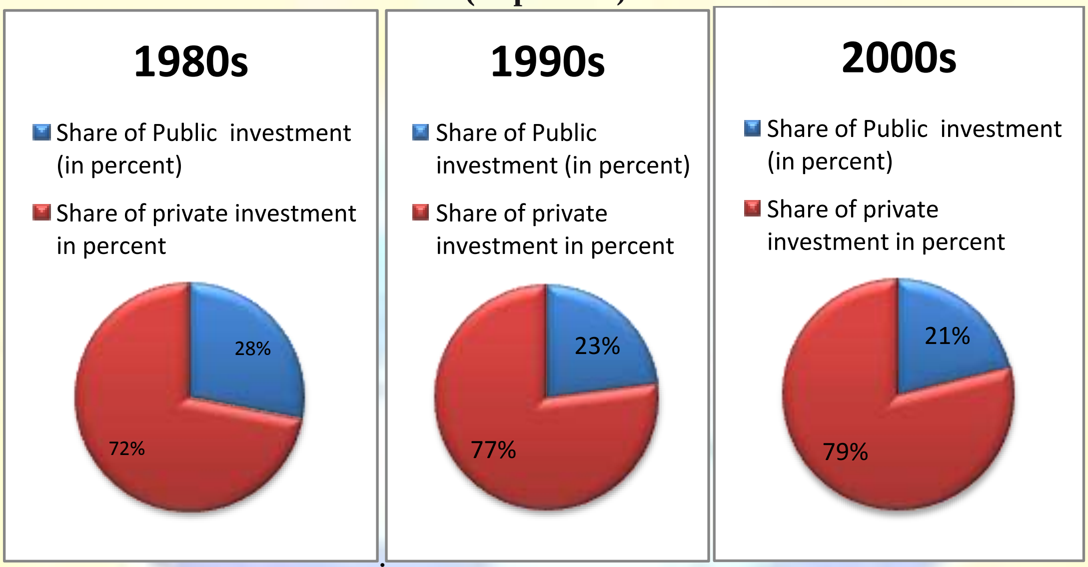


Source: Compiled from Table-1

The share of private investment in agriculture increases from 55 percent to 85 percent in between decade 1950 to year 2008-09. Decline in the Public investment in agriculture sector is a serious problem because its impact is negative on agricultural growth in long term. Share of Average Annualprivate investment in agriculture sector was 12,299 crores in decade 1990’s which has increased to 1,14,145 crores in 2008-09. Share of private investment in total investment in agriculture is higher than public investment. Share of private investment increases in agriculture sector from 1999-2000 to 2002-03, but share of private investment has slightly decreased and reaches up to 75.72 in 2006-07 and 79.1in2007-08, it again increased to 82.4percent in year 2008-09.

Figure -4 shows the share of public and private investment in different decade. Ratio of public and private investment in decade 1980s is 28:72; share of public investment gradually declined in decade1990s and ratio shifted towards private investment and become 23:77; ratio of public and private investment revised and again itturnstowards private investment and reflected the ratio to 21:79.

Figure-4: Share of Public Investment and Private Investment Agriculture Sector before and after reform (In percent)



Source: Compiled from Table-1

As the economy of the backward country develop, the share of primary sector in GDP declines, and the share of secondary and tertiary sector is increased, so the contribution of agricultural sector in GDP also declined. This is borne out by Indian data also, as the share of agriculture in GDP at factor cost has registered a fall from 55.1percent in1950-51 to 17.8 percent in 2007-08 (at 1999-2000price) and 58.2 percent in year 2009-10 was engaged in agriculture, but the decline of the share of agriculture in GDP is not accompanied by a declining labor force in agriculture and allied activities. While in 1951, 69.5 percent of working population was engaged in agriculture, about 53.51 percent in year 2007-08 was engaged in agriculture. Thus, there has been only a marginal decline. This is because of rapid growth rate in population. Thus, any decline in investment in this sector slow down the growth rate of this sector. Economic growth in capital formation of agriculture sector also depends on investment or capital formation. Data on capital formation in agriculture sector is presented in Table 3

Table-3

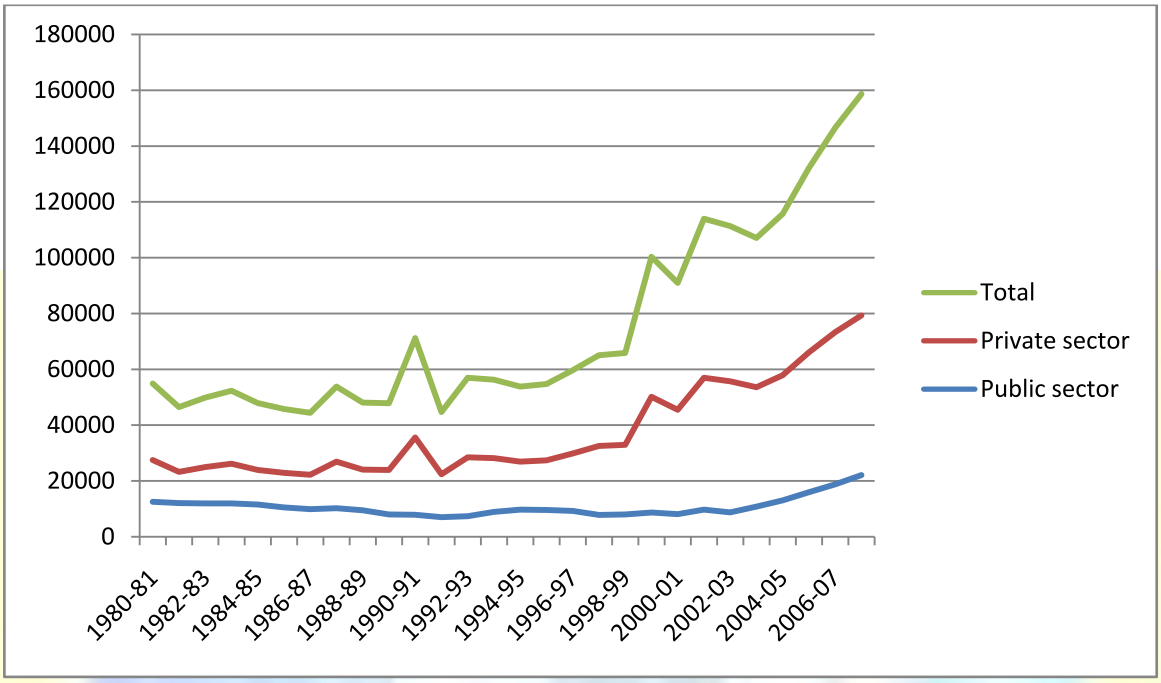
Gross Capital Formation in Agriculture Sector
(At 1999-2000 prices) (In crore)

Years	Public sector	Private sector	Total
1980-81	12521	14929	27450
1981-82	12078	11153	23231
1982-83	11928	12996	24924
1983-84	11944	14215	26159
1984-85	11562	12367	23929
1985-86	10509	12386	22855
1986-87	9848	12339	22187
1987-88	10193	16700	26893
1988-89	9488	14535	24023
1989-90	7968	15929	23897
1990-91	7882	27691	35573
1991-92	6998	15340	22338
1992-93	7333	21136	28469
1993-94	8907	19230	28137
1994-95	9706	17183	26890
1995-96	9560	17777	27336
1996-97	9225	20589	29814
1997-98	7812	24692	32504
1998-99	7949	24956	32905
1999-00	8668	41483	50151
2000-01	8085	37395	45480
2001-02	9712	47266	56978
2002-03	8734	46934	55668
2003-04	10805	42737	53542
2004-05	13019	44830	57849
2005-06	15947	50118	66065
2006-07	18755	54530	73285
2007-08	22107	57221	79328

Source: National Account Statistics 2007, Govt. of India and Central Statistical Organization.

Figure-5: Gross Capital Formation in Agriculture Sector(at 1999-2000 prices)

(In crore)



Source: Compiled from Table-3

Total investment in this sector is increased. It was 27,450 crores in 1980-81 and it increases up to 35,573 crores in 1990-91 and further it decreased to 28,137 crores in 1993-94 which rose again considerably to 79,328 crores in 2007-08. Gross capital formation in agriculture sector was 10.41 percent of total gross capital formation in 1993-94, but this fall drastically to only 7.15 in 1995-96. It increased up to 11.66 percent of total gross capital formation in 2001-02 which falls again to 6.72 percent in 2007-08. Public investment was 12,521 crores in 1980-81 which has been decreased to 7,882crores in 1990-91 and to 8,907crores in 1993-94 which again increased to 22,107 crores in 2007-08. The share of Gross capital formation in public sector in total gross capital formation in public sector shows similar trends. It was 7.3 percent in 1993-94; this was fallen to 5.76 percent in 2000-01. It increased up to 8.05 percent in 2006-07 which again fall a little bit and become 7.62 percent in 2007-08. Private investment was 14,929 crores in 1980-81 which increased to 27,661 crores in 1990-91 and to 19,230 crores in 1993-94 which increased to 57,221 crores in 2007-08. The share of private sector gross capital formation in agriculture and allied sector in total gross capital formation in public sector was 12.80 percent in 1993-94; this was fallen to 6.72 percent in 2007-08.

Aggregate Gross Capital Formation (GCF) appear to collapsedthroughout the nineties and publiccapital formation in the nineties is a continuation of a discernible trend going back at least to 1980-81. The level of capital formation in public sector in 2007-08, is less than the level in 1980-81. The behavior of private capital formation is more unstable and, unlike public capital formation, collapsing with the beginning of the ninety and remaining depressed during the first half of the nineties. However, unlike public capital formation it begins to rise from the mid-nineties, only to stagnate around the year 2000. However, the slowdown of the rate of growth of output at a time of accelerating private investment requires explanation. We put forth two tentative ones.

- First, the impact of capital formation is likely to spread into the future, as infrastructure projects in agriculture are of longer gestation period than elsewhere in the economy.
- Secondly, the impact of the depressed state of public capital formation may not have been fully offset by the rising capital formation in the private sector from the mid-nineties as private and public capital are very likely to contribute differently to the production process.

<u>Linkages between Public and Private Investment</u>

Public and Private Investment both are requirefor balanced and sustainable agricultural development. Although the share of private investment in total investment in agriculture sector is very high but it is not compensating the public investment because of following reasons –

- During post-reform regime, since the early 1990s the rate of increase in the contribution of private sector in total agricultural investment has been less than what it was during the pre-reform period, unlike the other areas, where private sector has raised its stake.
- Private investment cannot be the better substitute of public investment because public investment is mainly concerned with major irrigation project, rural road, rural electrification, and storage facilities. While private investment is mainly accounted for investment taking place for short-term asset building mainly in areas of mechanization, ground leveling, and private irrigation.

- On rainfed or dry farming areas underdeveloped infrastructure, it is necessary to undertake massive investment for development of watershed and other infrastructure. Private investment cannot be treated as compensating the need of public investment. Private investment only boosts up the agricultural development via investment in horticultural and forestry plantation, livestock production, minor irrigation, new technology for crop production.
- Public investments have its long-termfavorable impact on sustainable agricultural growth, and environment.
- There has to be a shift of emphasis from the current situation where the infrastructure investment is dominated by the public sector towards a system where public-private partnership functions.
- Institutional transformation through social capital formation has high potential for raising the efficiency of capital use (lowering the capital requirement for achieving a targeted output growth).
- Public investment alone cannot be expected to fulfil the investment gap in agriculture. Hence, the role played by private investment could be placed in the perspective of huge investment gap.

Public investment is more important in agricultural capital formation because it facilitate the irrigation facility, road, electrification and other infrastructure. So, an important step taken by government of India for improving capital formation in the public sector was creation of Rural Infrastructure Development Fund (RIDF). RIDF is expected to improve the rural infrastructure facilities in different states.

Conclusion:

The amount of agricultural production and its composition depend, to a great extent, on the amount of available capital in the agricultural sector. However, in underdeveloped countries, both demand and supply side operate in such a manner that the rate of capital formation remains low in agricultural sector. The rate of capital formation is the most important factor which determine the development and growth rate of every sector of the economy including agriculture of a country. Structural reforms in agricultural sector have positive effects on agricultural production and productivity. Rate of structural reforms depend mainly on public investment and Gross Capital Formation in agricultural sector and rural areas. Private investment only boosts by public investment also plays an important role in increase in productivity and agriculturalproduction. Thus,the public investment and Gross Capital Formation in agricultural sector plays an important role in achieving sustainable agricultural and rural development.

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