Agrarian Crisis & Its Management: Pre-Requisite for Sustainable and Inclusive Growth of India

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Abstract— **The concept of Equality and Sustainability lies in the core concept of Human Development. By sustainable development we ensure the better utilization of the resources as well as secure the future of coming generations whereas in inclusive growth we ensure that ample opportunities for all are available to lead a prosperous life. Inclusive growth is growth that not only creates new economic opportunities but also one that ensures equal access to the opportunities created for all segments of society including the disadvantaged and the marginalized. India has emerged as a major economic power in the world, with the growth rate of the gross domestic product reaching impressive levels. However, India is also the home to the large number of poor people with an estimated of about 29 percent population falling below the poverty line. India ranks 135 on the global Human Development Index rankings. The ranking is based on a collective index of life expectancy, education and income standards of population. India ranks lowest among the BRICS countries and even lower than few of its neighbors like Sri Lanka. About 70 per cent of the Indian population lives in rural India and approximately 56 per cent of the workforce is dependent upon agriculture for their livelihood, this sector contributes only 18.9 per cent of GDP and witnessed a growth of average 2 to 3 per cent. Studies show that agricultural growth has been the main source of poverty alleviation in particular and inclusive growth in general in India. For more than a decade, Indian agriculture has been marked by deceleration in growth and distress of farmers. This crisis is structural and institutional in nature, with farmers' suicides symptomatic of deep-seated maladies that have engulfed the agricultural sector.**

Index Terms: **HDI, BRICS, GDP, etc**

I. INTRODUCTION

An influential view in the development economics is that greater inequality is inherited in the growth process [1]. In twenty first century India has emerged as a major economic power in the world, with the growth rate of the gross domestic product reaching impressive levels. However, India is also the home to the world's large number of poor people with an estimated of 350 million out of 1.02 billion falling below the poverty line. Two thirds of Indian children under age five are malnourished. Being the fourth fastest growing economy of the world India steadily moves up on the Human Development Index—where with a HDI of 0.586, is currently placed 135th out of 187 countries in 2014-14. According to Arjun Sen Gupta Report 77 per cent of India lives at less than Rs 20 per person per day vis-à-vis the report of the Forbes magazine says India ranked fourth in the number of billionaires. Only less than 10 per cent of university eligible youth have real access to higher education. 93 per cent of the work force works in unorganized sector. The social unrest in rural areas is at peak. According to the one Report [2] the Naxalite movements have reached 155 districts and 11 states.

All these figures points out towards the exclusiveness not inclusiveness of growth of Indian Economy. Inclusive growth is growth that not only creates new economic opportunities but also one that ensures equal access to the opportunities created for all segments of society including the disadvantaged and the marginalized [3]. In case of sustainable development Indian agriculture crisis reflects depleting groundwater levels, depletion of micro & macro nutrients in soil and over exploitation of natural resources. Census 2011 data shows that India's working age population (15-64 years) is now 63.4% of the total population, as against just short of 60% in 2001. India is poised to become the world's youngest country by 2020, with an average age of 29 years, and workforce.

II. RESEARCH METHODOLOGY

The nature of present study is mainly qualitative and does not make use of any statistical technique for analysis. The present study has been done mainly on the basis of literature review and secondary information available from various journals, conference proceedings and reports of professional bodies.

III. OBJECTIVE OF THE STUDY

The prime objective of the study is to analyze and discuss the various aspects of sustainable and inclusive growth of India with a special emphasis on the Agrarian Crisis

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IV. DISCUSSION AND RESULTS

Declining Share of Agriculture in GDP with a large population tapped in Agriculture sector for their livelihood:

According to Economic Survey the share of agriculture in the gross domestic product has registered a steady decline from 46 per cent in 1970 to 18.9 per cent in 2014,. The labor-to-land ratio in India is quite high which leading to the problem, which economist termed as 'disguised' unemployment. (Table 1)

Table I: Share of different sectors in the GDP (% share)

Time Period	Agriculture	Industry	Services	Public Admt.
1970	46	22	28	4
1980	40	24	31	5
1990	32	27	35	6
2000	24	28	42	6
2009	17.1	-	-	-
2014	18.9	31.7	49.6	-

Source: [4]

The agriculture sector is showing the growth rate of meager 2 per cent and about half of the population workforce in dependent upon agriculture for their livelihood. This creates a huge inequality in India economy. On one hand we are talking about shining India on other side we have conflicting India.

The distribution of growth has been uneven not only across decades but also across the various sectors of the economy. The agricultural sector, by far the biggest in 1970, grew at a low average rate of 2.69 percent during the thirty years, while the industrial and services sector (excluding Public Administration) grew at much higher rates of 5.61 and 6.24 percent respectively, over the same period. (Table 2)

Table II: Long run growth rates of different sections of Indian economy (% growth)

Time Period	Agriculture	Industry	Services	Public Admt.	Aggregate GDP
1971-80	1.83	4.05	4.26	5.38	3.15
1981-90	3.54	7.10	6.76	6.49	5.63
1991-2000	2.69	5.68	7.69	6.64	5.60
1971-2000	2.69	5.61	6.24	6.15	4.80

Source: [5].

Suggestion based on analysis: There is need to change occupational structure of population in India.

Limited Further Growth Perspective in Agriculture Sector:

The question arises whether there is scope for further increase in agri-productivity. During 1980s yield improvements made largest contribution to crop income growth, while in the 1990s rising real prices turned out to be the principal source of growth. The contribution of real prices in the growth jumped from 7.7 percent in the 1980s to 35.2 percent during 1990s, and that of yield declined from 54 percent to 29.3 percent during the same periods (Table 3). Since area expansion is limited, the contribution of crop area as a source of growth is diminishing.

Declining contribution of yield to crop income growth is due to the slowing of yield growth rates of most of the crops during 1990s as compared to 1980s. It is a clear indication of the fatigue in the existing technologies. This may suggest the need for greater investment in agricultural research and extension.

Table III: Source wise share of different sources in Agricultural Growth

Source	1980 (Per cent share)	1990 (Per cent share)
Area	10.1	4
Interaction	1.6	0.8
Diversification	26.6	30.7
Price	7.7	35.2
Yield	54	29.3

Source: [6]

V. CONCERNS ABOUT FOOD SECURITY

There have always been speculations and forecasts about the world's capacity to feed itself. In the first edition of his Essay on the Principle of Population in 1798, Thomas Malthus formally framed the debate about whether food resources would be sufficient to feed an increasing world population. Since then, the same basic question has been raised, but from many different perspectives [7]. The table 5 shows that slowing down of output growth are much steeper than slowing down of population growth implying falling per head output.

Table IV: Decelerating Growth rates of Agricultural Output and of Population (% growth)

Period	Food grains	Non-Foodgrains	All Crops	Population
1980-81 to 1989-90	2.85	3.77	3.19	2.1
1990-91 to 2000-01	1.66	1.86	1.73	1.9

Source :[8].

The per capita household demand [net availability adjusted for seed, feed, and wastage (SFW)] of cereals has been growing at an average growth rate of 1.73% per annum during 2000–01 and 2006–07 (Table 6). The highest growth rate was witnessed in coarse cereals (4.4%), possibly due to the increase in demand for feed grains. This is followed by rice (2.2%), and wheat (1.3%).(Table 8)

Table V: Growth rates in net availability of cereals (adjusted for SFW) (% per annum)

Period	Rice	Wheat	Coarse Cereals	Total Cereals
2001over 2000	-5.97	-13.89	-2.28	-8.34
2002 over 2001	21.44	22.06	12.60	20.06

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2003 over 2002	-19.46	7.91	-23.77	-10.33
2004 over 2003	10.77	-6.45	48.87	8.79
2005 over 2004	-7.38	-3.26	-12.10	-6.77
2006 over 2005	13.64	1.36	3.23	6.96
Average	2.17	1.29	4.43	1.73

Source: [9]

By 2025 India's population is expected to reach 1.45 billion (United Nations, 2006). The cereal requirement of India by 2020 will be between 260 to 290 million tonnes, depending upon income growth. It is must the food grains production India must increase by 5 million tonnes annually for the next 25 years to ensure food and nutritional security to the burgeoning population. The table given below shows the projected demand of food grains in India

Table VI: Projected food grain demand in India

Scenario	Cereals		2020 (Per capita income growth)		
	Total	Per capita	Growth rate	Total	Per capita
1993	Mmt	Kg/day	2.0 %	Mmt	Kg/day
Actual	147.12	0.458	3.7 %	231.51	0.479
Poverty eradicated	153.68	0.478	6.0 %	246.01	0.509
Well fed India	140.92	0.438	Impact model	267.21	0.553

Source: [10]

Increasing Marginalisation and decline in standard of living of farmers

The increasing burden of labour force on a slowly contracting cultivable land area leads to increasing number of holdings with lower size. Over the period 1960-61 to 2003, the number of holdings doubled from 51 million to 101 million, while the area operated declined from 133 million hectares to 108 million hectares (Table 8). This has resulted in a sharp decline in average size of holding and growing marginalization. Added to this is the fact that despite land reforms, the landholding pattern continues to be skewed. Overall, there is not much diversification and the income of an average farmer household from cultivation would hardly suffice to meet some basic day-to-day requirements. The Situation Assessment Survey of Farmers conducted in 2003 indicates that the monthly per capita income to a farmer household is much lower than the monthly per capita consumption expenditure (Table 9)

Table VII: Certain Key Characteristics of Operational Holdings

Partculars	1960-61	1981-82	1991-92	2003
Oerational holdings (millions)	50.77	71.04	93.45	101.27
Percentage increase	-	24.5	31.5	8.4
Area operated (million hectares)	133.48	118.57	125.10	107.65
Average area operated (hectares)	2.63	1.67	1.34	1.06

Table VIII: Per capita income and consumption of farm households

Land Possessed	Income (Rs)	Consumption (Rs)
<0.01	1380	2297
0.01-0.40	1663	2390
0.41-1.00	1809	2672
1.01-2.00	2493	3148
2.01-4.00	3589	3685
4.01-10.00	5681	4626
>10.00	9667	6418
All Size	2115	2770

Source: [11]

Excessive dependence on monsoon: A popular peasant saying that "abundance of water destroys life; paucity of water destroys life" signifies agriculture's link with monsoon. The vagaries of nature have been associated with ups and downs in cultivation. Rainfed areas account for about 60 per cent of the total 142 million hectares of net sown area in the country. India is not in an enviable position in the matter of irrigation resources. With 16 per cent of the world's population, the country is endowed with only 4 per cent of the total available fresh water. Further, the regional distribution of available water resources, including rainfall, is highly uneven.

The ultimate irrigation potential of the country has been assessed at 140 million hectares as per Ninth Five Year Plan. This includes 59 million hectares from major and medium irrigation, and 81 million hectares from minor irrigation. The latter includes 17 million hectares from surface water minor irrigation schemes and 64 million hectare acres from groundwater resources. Assured irrigation is limited to few states and few crops only. (Table 10)

Table IX: Irrigated area in the country

Year	Net Irrigated Area	Gross Irrigated Area	Area Irrigated More Than Once
1950-51	20.85	22.56	1.71
1960-61	24.66	27.98	3.32
1970-71	31.10	38.20	7.09
1980-81	38.72	49.78	11.06
1990-91	48.02	63.20	15.18
2000-2001	54.84	75.82	20.99
2004-05	58.54	79.51	20.97

Source: [12]

Rice and wheat are the major irrigated crops, currently accounting for 32 per cent and 31 per cent of the total irrigated

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area respectively. Overall 54 per cent of the area sown to rice is now irrigated while 88 per cent of wheat crops are irrigated. In contrast only 13 per cent and 23 per cent of the area sown respectively to pulses and oilseeds is irrigated. Over 90 per cent of sugarcane area, 42 per cent of area under fruits and vegetables and third of the cotton area are irrigated [13].

Subsidized Agriculture leads to fatigued technology and environmental degradation.

Subsidies in agriculture whether its input subsidy or price support mechanism has resulted in higher use of inputs but not the efficient use of inputs. In long run the efficient use of inputs matters for the sustainable development. "We have to therefore look at self-sustaining, self-financing agriculture rather than subsidized agriculture in the Indian context". This is the reason that agriculture is showing declining trend even in the developed parts of the country. The 1990's have also seen a gradual deceleration in the growth rate of most crops specially rice and wheat (Table 11). This is happening even when the use of inputs such as fertilisers is on the increase, indicating increasing inefficiency in input use and decreasing profitability of crop production.

Table X: Trend growth rate during the past three decades

	Trend growth rate per annum		
	1980-81 to 1989-90	1990-91 to 1999-2000	2000-01 to 2007-08
Rice	3.55	2.00	1.86
Wheat	3.50	3.51	1.36
Food grain	2.70	2.07	1.99

Source: [14]

Due to water pollution in rivers, India draws 80% of its irrigation water from groundwater. As water scarcity becomes a bigger and bigger problem, rural and farming areas will most likely be hit the hardest. Thus far, food security has been one of the highest priorities for politicians, and the large farming lobby has grown accustomed to cheap electricity, which allows extremely fast pumping of groundwater, which is something they are unwilling to give up for the sake of water conservation. Thus, the over-exploitation of the ground water is reported in the agriculturally developed areas of the country.

According to the NASA the water level has declined by 109 cubic Km in the states of Punjab, Haryana and Rajasthan. The number of over exploited blocks due to irrigation is given in Table 12.

Table XI: Number of over-exploited blocks due to irrigation

State	Over-exploited blocks	Total blocks	Percentage of exploited block to the total
Punjab	62	118	53
Haryana	45	108	42
Rajasthan	45	236	19
Tamil-Naidu	54	384	14
Uttar-Pradesh	19	895	2
Gujarat	12	184	7

Source: [15]

Intensive agriculture, with high use of synthetic fertilizers and chemical pesticides, was introduced in India in the 1960s as part of the Green Revolution. As a result, synthetic fertilizers' consumption increased from a mere 0.07 million tonnes (Mt) in 1950-51 to a staggering 23.15 Mt in the year 2008-09. This contributed to the growth of food production in the country, but nearly five decades down the line, indiscriminate use of these synthetics has degraded the natural resource base, especially the soil. As a consequence, food production is no longer increasing and is now affected by diminishing returns and falling dividends in agriculture intensive areas. Synthetic fertilizers consumption in India is highly variable among regions, but in 78 districts fertilizer consumption is twice the national average.

The synthetic fertilizer usage in the country shows significant variation from region to region. However, in the most agriculture intensive districts (78 districts out of 528 major districts in India), synthetic N-P-K (nitrogen, phosphorus and potassium) fertilizer consumption is more than 200 kg/ha, a rate that is twice the country average. Six crops (rice, wheat, cotton, sugar cane, rapeseed and mustard) consume about two-thirds of the synthetic fertilizer applied (Table 13). The irrigated area, accounting for 40 per cent of the total agricultural area, receives 60 per cent of the total fertilizer applied. The huge Central Government fertilizer subsidy is one of the main reasons behind imbalance and overuse of synthetic nitrogen fertilizers in India Synthetic fertilizers are released into the agrarian system at highly subsidized rates.

Table XII: Magnitude of fertilizer use in India

Fertilizer use (kg/ha of GCA)	No. of districts	Percent distribution
Above 200 kg/ha	78	14.8
150-200	63	11.9
100-150	105	19.9
75-100	75	14.2
50-75	74	14.0
25-50	79	15.0
10-25	31	5.9
5-10	8	1.5
Up to 5	15	2.8
Total	528	100

Source: [16]

The excessive use of fertilizers also raises serious health issues. A report by the Delhi-based Centre for Science and Environment (CSE) in 2005 on four separate Punjabi villages revealed that villagers had levels of pesticide residues in their

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blood that were 15 - 605 times higher than those found in a 2003 study completed by the U.S. Center for Disease Control on American citizens. The continued degradation of Punjab's soils, and the health costs that have followed, are directly related to the "debt trap" that Punjabi farmers.

At the same time, pesticide use became ever more necessary, both as the result of weakened soils, and of the inherent vulnerability of HYV seeds to pests and disease. When input costs for farmers grow greater than the income they are able to generate from crop yields. The farmers are forced to get loans and the crisis of indebtedness starts here as we have seen, and soon to follow [17]. Overall impact of this agrarian crisis could be noticed in the indebtedness of farmers and suicides committed by them

VI. CONCLUSION

The challenges facing Indian agriculture can be grouped in four categories relating to (1) growth (2) sustainability (3) efficiency and (4) equity. In brief, there has been a decline in the trend growth rate of production as well as productivity for almost all crops from the mid-nineties. Also, there is an excessive dependence of a large section of the population on agriculture. The income to the farm household is very low with declining size-class of holding and an increasing preponderance of marginal holdings along with poor returns from cultivation. This paper contends that increased provision for agricultural infrastructure is an essential prerequisite not only for inclusive growth but also for sustained growth of the Indian economy.

To ensure food security in next decade we have to produce around 280 to 290 million tones of food grains which is 50 million tonnes more than the present production level of 230 million tonnes. An important avenue for achieving increased production goals is to enhance the productivity of vast areas under rain fed agriculture, which constitute nearly 60% of the net cultivated area of the country. These are areas where the green revolution technologies made limited or no impact. The projects like interlinking of the major rivers in India can make a difference in this regard. The Govt. of India has given a time frame of about 40 years for this project. In this mega project, of the 30 identified links, 14 are in the Himalayan region and 16 in peninsular region. The estimated cost of this project is Rs 5,60,000 crore at 2002-03 price level.

The interlinking of rivers has the potential to increase irrigation facility to 174 million ha from the existing 140 million ha and generating 34000 MW of additional power. In this way, the additional area to be brought under irrigation would be 34 million ha. The Improving water availability will facilitate diversification of cropping pattern other aspect is removing or controlling distorting subsidies would lead to reduction in environmental damage and increase in the government resource mobilization. Creation of off-farm employment through schemes like NREGS might help to ensure livelihood security during the times of extreme poverty and distress.

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