

PROBLEMS AND PERSPECTIVES OF AGRICULTURE IN INDIA

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INTRODUCTION

Food security and agriculture issues are gaining importance in the wake of global food crisis steep rise in food grain prices. The global food crisis in 2007-08, mainly in south East Asia, and Africa is attributed to several reasons. The diversion of food and feed grains to biofuel production in the US to counter the spiraling fossil fuel prices. This coincided with the crop failures in some of the main grain producing countries like Australia and Ukraine. This led to an initial price hike that triggered the panicky button and speculators predicted continuation of the high prices for at least the next 10 years. Countries like India, China and Vietnam began to react by banning export of rice. Price control measures were used to keep prices low. Private traders who were not part of the incentives price controls of the government system resorted to hoarding creating shortage and prices raised five fold from the 2005 levels. There were riots and fall of government in many parts of Africa. The food and agriculture organization estimated that over 100 million more people were led to poverty. Even now grain prices are double the original price.

In any food crisis the immediate step should be to protect the poor either through safety net programmed or free supplies. In the African countries there is no safety net or distribution net work.

As a medium term measure, arrangements must be made to import food grains through bilateral or multilateral aid agencies and for their distribution, even in inland areas. In spite of these measures, it is possible that several areas would go uncovered and people have to starve. There should be long term plans for increased local production. Several African countries are doing this by importing and distributing fertilizers at subsidized prices.

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As India is a net importer of pulses, the recent steep increase in the price of pulses, especially toor dal, is the result of the global market conditions. Production loss in countries like Nigeria and Tanzania has played its part in increasing global prices with resultant impact on Indian markets. The only way for India to save itself from similar crisis in future is by increasing productivity through taskforces and technology missions, with pre-determined targets and making the programme implementing terms accountable. Farmers should be encouraged to take up pulses cultivated as a cash crop with supplementary irrigation facilities.

INDIA is a country with 28 states 7 union territories 247 islands and 18 languages. It is depended upon agriculture. Agriculture occupies a dominant role in the economy. 75 per cent of population is based on agriculture. India is estimated to produce a little over 5 dollars per person as compared to Thailand 11 dollars, 20 dollars in Mexico. India per capita income is 460 dollars, 833 dollars Srilanka, united states of America 30,000 dollars. India has a geographical are of 328.73 millions hectares of which reported area for land use is 306.04 million hectares. The net area cultivated is about 142.60 million hectares. i.e., about 46.60 per cent of the total reported area. Since nearly 50 million hectares of area is sown more than once, the cropping intensity works out to 135.1. Forest account for about 68.97 million hectares i.e. 22.5 per cent of total reported land area. Also nearly 13.97 million hectares are cultivable wastelands and 9.91 million hectares are fallow lands. Only about 30 per cent of total cropped area is irrigated and the remaining area is rain fed. The available statistics further shows that only about 66 per cent of gross cropped area is under food crops and nearly 34 per cent area under no food crops. Cereals and pulses account for nearly 52.93 per cent and 12.64 per cent of the total area respectively. Fruits and vegetables occupy nearly 4.2 of area. (HAQUE 2003).

The financial information explores many things about Indian poverty. Poverty is the basic hurdle for cultivation. Water is a scared commodity in India. Agriculture in India is an adventure activity. The millions of cultivators are disposed at the mercy of monsoons. Monsoons occupy a dominant role in the Indian economy. The water facilities for cultivation are less while comparing with the developed nations. Water disputes are very common between states of India. The farmers are attempting suicides all over the country especially in Andhra Pradesh, Maharastra, Rajasthan, and Uttar Pradesh. There has been a disturbing phenomenon of high rate of suicides among the farmers since the mid 1990s of the last century, particularly in southern India. Economic distress among the farmers appears to be the main cause for such suicides. Since 1990s, Andhra Pradesh and Karnataka had been witnessing a staggering rise in number of suicides among farmers. The Karnataka recorded

56,790 cases of suicides between 1996 - 2000 of which 10,959 related to farming and agricultural activity. Macro economic policies of the country are the main cause for the continuing human tragedy in farming sector. Karnataka government appointed an expert committee to explore the tragedy affairs in the farming sector. A major study undertaken by the national institute of rural development highlighted that fact that the macro economic policy change since early 1990s was a major continuing factor for this human tragedy in these two states. The Cauvery dispute is another continuing affair between Karnataka and tamilnadu. The dispute over the Cauvery has a long history and goes back to the 19th century. Babbly project is another dispute between Andhra Pradesh and Maharastra states. Water disputes in India are an internal element of all states.

The monsoons are playing a vital important in the Indian agriculture sector. India depends upon the monsoon for its water requirement for cultivation. The monsoons are making a visit for 2.5 months in a year. The visit of monsoon is not equal to entire India. They concentrate in northeast India with a high dose of 11,000 mm and a low provision for 200 mm in some locations of western India. The variability in visit of monsoons is severely faced by state of Rajasthan. Tar desert is a world famous for partiality of monsoon visiting to the particular location. Indian dreams should be fulfilled a cultivation in Tar desert makes more comfortable water resources. India faces many problems in water resources due to a high level of skewed hydrograph. The water resources during monsoon sessions will make comfortable, but when the session is over many rivers will dry up. The management of water resources in India is a highly difficult task before government. The rivers will overflow during rainy season and after that period; the area will become dry in summer. Hence, there is a strong need in human intervention of the water management. It is a highly difficult task to maintain water levels during summer period in India. Drought areas are increasing every year due to water shortage and people are migrating to urban areas by giving up of cultivation.

In this paper, I propose to discuss about most interesting and innovative factors about “INTERLINKING OF RIVERS, CONTRACT FARMING AND SPECIAL ECONOMIC ZONES” let us make an in-depth analysis about these three factors, if they are found suitable and beneficial to the farmers, they should be adopted to change the lives of crores of rural Indians. India means not only citizens of Mumbai, Chennai, Delhi, and kolkatta. We must remember about the benefits of remote area people’s problems.

A) INTERLINKING OF RIVERS:

A strong growth in rural economy will definitely be helpful for further development. The rural economy is based on the agriculture sector. The agriculture in India is an adventurous task. It depends upon the monsoon. However, this uncertainty may be avoided through interlinking of rivers. It is a large project, which requires Rs. 15,00,000 crores of investment. It will clear all hurdles of our agricultural sector. The negligence of the agricultural sector invites all other problems.

The government should develop the agriculture sector to boost up the purchasing capacity of the rural fellows. The new technology should be invented to utilize the natural resources from rural areas. There is a strong argument in favour of a faster opening up to foreign banks to meet the objectives such as financial deepening, improved efficiency, financial inclusion, promoting agriculture and development of small and medium enterprises.

Poverty can be attacked with a strong growth of the agriculture sector. The growth of the agriculture sector depends upon the water resources. All life forms and human economic activities are critically dependent on water, the movement of which is governed by the global hydrological cycle. The monsoons are playing a vital role in the Indian agriculture sector. India depends upon the monsoon for its water requirement for cultivation. The monsoons are present for 2.5 months in a year. The interlinking of rivers provides best food security to India. The development of agriculture will be highly exposed and India will become a super power on the earth. The combination of high growth of the agriculture sector, manufacturing and services sector will definitely stimulate the gross domestic production of the nation. The water resources will halt the death of millions of cultivators' lives.

The combination of digital economy and the agriculture sector will definitely stimulate the higher level of gross domestic product of India. It is a very easy task, if the political decision materialises with the help of a new mindset of leaders. The tremendous growth in the agriculture sector leads to develop further sectors of the economy. The yield per acre and an increase in productivity of the farmer should be monitored. The agriculture output is very less while comparing with other countries. The combination of land and labour only give solution to the agricultural productivity. India is lagging behind in performance of the agricultural and industrial sector. It is only successful in information technology. Outsourcing, knowledge process outsourcing and financial services. The technical expertise in India is very high to tackle the situation of water scarcity.

Swami* has cautioned that: "the inefficient and negligent use of water in agriculture is

one of the most serious barriers to sustainable expansion of agricultural production'. Public policy regarding the cost of water supplied by major irrigation projects and low cost or free distribution of power for pumping underground water aggravate the problem... water consumption can be reduced radically, by as much as five to ten fold, at the same time significantly increasing crop yields".

- ❖ Bandyopadhyay found that," the old paradigm is still strongly entrenched in the official water administration".
- ❖ Caruthers and Morrison argued that, "we do not anticipate or call for an increased rate of capital intensive investment in irrigation infrastructure but we do need to see that more is achieved with what is presently developed".
- ❖ Deursen found that, "human intervention in river flows leads to construction of large dams as instruments for river basin development".
- ❖ Dyson stated, "India is facing a regime of stress, as per capita availability of water declined from around 5,177 cu m in 1951 to 1,869 cu m in 2001."
- ❖ Falkenmark stated" water resources were necessary to meet the demand of economies of the society".
- ❖ Gazmuri mentioned that, "renting of water between neighbouring farmers with different water requirements in Chile's water market"
- ❖ Gleick stated that, "20th century water resources planning generally relied on linear projections of future populations, per capita demand, agricultural production and levels of economic productivity".
- ❖ Glico found that "the global withdrawal of fresh water has increased sevenfold between 1900 and 2000".
- ❖ Goyal mentioned that, "20crores of Indians are underfed and 5crores are reportedly at starvation levels"
- ❖ Inter water resource society found that "linking of rivers proposal is a long term supply side solution to water shortages, for the drier western and southern parts of the country".
- ❖ Iyer mentioned that. "There has been no serious attempt to work out a series of area specific answers by way of local conservation and augmentation to the maximum extent possible".
- ❖ Mohile stated that, "interbrain transfer of water is useful for utilising surplus water".

- ❖ National commission on integrated water resources development plan (NCIWRDP) has pointed out that, “wheat yield in experimental farms in India is already over 6,000 kg per hectare. India’s food security is based on interlinking of rivers”.
- ❖ Postel estimated that “the world requires water stress from 470mn at present to 3 billion in 2025”
- ❖ Prabhu stated, “The interlinking of rivers project is about rationalisation of water that is lost to the sea”
- ❖ Singh mentioned that, “there really seems to be no convincing argument or vital national interest, which can justify this mammoth undertaking in its entirety”.
- ❖ Swami Nathan has pointed out, “china produces 13% more food grains per capita than does India”.
- ❖ Vaidyanathan argues that, “simply identifying a river basin on the volume of flood flows is a misleading basis for judging surpluses”.
- ❖ Varghese has pointed out that, “the inter linking of river project is not a single stand alone panacea for the country’s water problems but the apex of a progression of integrated micro to mega measures in an overall but unarticulated national water strategy”.
- ❖ Wittfogel conducted a research in this field in 1957. He stated, “Human intervention is necessary for solving natural endowment problems all over the world.”
- ❖ World commission on dams mentioned that, “for promoting domestic water security, local level water conservation is a suitable option compared with developing large storage and long distance diversion facilities, as these often carry high financial, social and ecological costs”.

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- ❖ World Bank argued that, “from the past heavy emphasis on physical expansion, effort now needs to turn to a much greater emphasis on productivity enhancement”.
- ❖ Postel has cautioned that, “It is not enough to meet a short term goal of feeding the global population. If we do so by consuming so much land and water that ecosystem cease to function, we will have, not a claim to victory, but a recipe for economic and social decline”.
- ❖ Ives and Messerl found that, “construction of dams on the Himalayan rivers as a component of the proposed interlinking of rivers cannot be undertaken by ignoring vital questions on the uncertainty associated with taking a mechanical and traditional view of development of the Himalayan rivers”.
- ❖ Bandyopadhyay and Gyawali argued that, “that approximations and assumptions inherent in the standardised mathematical models of hydraulic engineering, have so far slighted and undermined the basic dynamics of sediment generation, discharge and deposition characteristic of the Himalayan rivers, which carry among the highest sediment loads in the world”.
- ❖ Khattri cautioned that, “The construction of large dams at Himalayan Rivers will be subject to high levels of seismic hazards, since the potential for earth quakes at the plate boundary all along the Himalayan foothills is well known and widely accepted”.
- ❖ Dr. Abdul kalam also mentioned that, “the plan to integrate the rivers of India will be a key driver of the growth of the country and it would not only bring about economic prosperity but emotional integration as well”.
- ❖ Mitra explored that, “whilst we have failed in the course of more than half a century to resolve amicably the intra basin quarrels, it will be sheer lunacy if, on top of that, a more continuous issue, that of interbasin water equity, is added to the already confused picture”.
- ❖ Bandyopadhyay and prevent have argued that, “the proposed interlinking of rivers has the potential for generating four distinct types of conflicts. These are I) compensation for resettlement and rehabilitation of the displaced ii) compensation for environmental damages from the project iii) sharing the project benefits and costs among the states IV) cooperative management of the project in international river
- ❖ Agriculture is an adventures activity in India.

- ❖ It depends upon rainfall, which is based on environment.
- ❖ Protection of nature protects us from various factors i.e., natural calamities, floods, earthquake, drought, ecological imbalances, global warming, natural disasters, forest management, wild life animals, fishing.
- ❖ Crisis is an opportunity to rethink existing theories practices and policies.

CONTRACT FARMING:

Contract farming is frequently argued to benefit farmers. Guaranteed purchase ensures more stable prices, while access to technical knowledge and physical inputs is created. (Cadilhar,* 2006).

- ❖ Rather than being a panacea for Indian agriculture, corporate food provision will likely accelerate many key elements of India's agricultural crisis. It will produce a decline in land productivity, reduce food security. Adversely affect price stability and will tend to negatively impact employment and credit relations. (Shankar gopal Krishnan, srinivas 2009).
- ❖ Farmers will receive higher prices for their produce and will have a better understanding of demand. The involvement of large corporate, particularly in contact farming arrangements will enable farmers to access better technology and inputs. Investment in infrastructure by corporate will reduce wastage. (mukherjee and Patel 2005)
- ❖ A reliance on contract farming, studies from several countries indicate Vietnam (cadilhonet al 2006), china (huet al 2004), Argentina (gut man 2002, ghezan et al 2002), Chile (faiguenbaum et al 2002), Brazil (farina 2002), South Africa (Oxfam 2004), India (Chandrasekhar and ghosh 2003, daftari 2006) preference of corporates for contract farming. Such contracts typically involve guaranteed purchases quality standards, exclusive contracts that prevent sale to other entities and frequent use of verb and unrecorded contracts (Oxfam 2004).
- ❖ All farmers produce primarily for the market and have access to capital and infrastructure. The ICRIER study relies on a single sample study of 197 farmers in hoskote, near Bangalore, who are clearly well off cash crop cultivators with a high degree of infrastructure having an average land holding of more than four acres an average of 51% of land area under irrigation and cultivating cauliflowers.
- ❖ CONTRACT FARMING also has inbuilt structural features that have negative impacts for all producers and differential impacts depending on the producers class

position. The features are 1. Transfer of power over production decisions to the corporate purchaser. 2. Increase in capital and input intensity of agriculture. 3. Interlocking of agreements on credit, inputs and extension services. 4. Delays in payment to producers. 6. Transfer risk to the producer while transferring control to the corporate sector.

- ❖ Studies from Argentina found that contract farming worked well for potato producers in the 250 hectare to 400 hectare range (Ghezan et al 2002)
- ❖ Studies from Brazil found that from 1997-2002 the number of dairy producers supplying the top 12 companies fell by 35 percent, while size of the average supplier increased by 55 percent (Farina, 2002)
- ❖ For rich and middle peasants, those who are net hirers of labour and cultivate primarily for the market, contract forming can be more difficult. The required investment, higher labour intensity and greater infrastructure are difficult and sometimes impossible for such farmers (Shepard 2005; Farina 2002; Ghezan 2002; Gutman 2002; Cadilhon 2006)
- ❖ Marginal farmers, the majority in India, engage in a qualitatively different relationship with the market. Produce is generally consumed by the family, with only the surplus (if any) sold in order to meet debts, purchase needed commodities, access healthcare, and so on. The additional capital and the concentrated risks of contract farming would both be impossible for members of this class. Hence, as the corporate food system expands, the traditional procurement system shrinks, the market access of such producers itself is likely to reduce. This, in turn, would accelerate their reliance on hiring out their labour as the only means of a cash income. Moreover, declines in cultivation of food crop in areas with heavy contract farming can lead to volatility of food prices, harming these peasants further, as they tend to be net purchasers of food (Chandrasekhar and Ghosh 2003)
- ❖ The expansion in contract forming results more rapid differentiation can lead to producers being driven off the land entirely; in Karnataka large-scale leases in one district for contract rose cultivation resulted in takeover of land from scheduled castes and scheduled tribes who received a lease rate approximately one third of the market price (Singh 2005).
- ❖ The impact of contract forming is also harsh for the agricultural labour. The agriculture labour is ignored by most discussions of research community but available data indicate that it is not likely to gain from contract forming. Labour intensity may

increase as the cropping area devoted to crops such as fruits and vegetables raises. But this does not necessarily mean greater employment, as it may involve mechanization as well and further the increased entry of marginal producers in to labour market may cancel any positive effect. In terms of contract production itself, a detailed study Oxfam (2004) on working conditions in global agricultural supply chains describes severe in security of contracts, ever increasing demands on workers for overtime and repression of worker rights.

- ❖ A large number of special economic zones have come into existence in the last two three years. Many of them occupy hundreds of acres of land each and often the land is acquired by the government from unwilling farmers

SPECIAL ECONOMIC ZONE:

SEZs are extremely attractive to exporters, industrialists and entrepreneurs because of differential applications of laws and favorable tax concessions. They are established in the country as per the act of special economic zone 2005. The preamble to the sez act 2005 indicates that “(a) an act to provide for the establishment, development and management of the special economic zones for the promotion of exports and for matters connected therewith or incidental thereto”. The objectives of the act and its promise and rational are captured in the guidelines provided in section 5 of the act.

“ 5.(i) the central government while notifying any area as a special economic zone or an additional area to be included in the special economic zone and discharging its functions under this act, shall be guided the following namely”

(a) generation of additional economic activity (b) promotion of exports of goods and services (c) PROMOTION of investment from domestic and foreign sources (d) creation of employment opportunities (e) development of infrastructure facilities and (f) maintenance of sovereignty and integrity of India, the security of the state and friendly relations with foreign states.

Special economic zones are justified not in terms of exports expansion alone but as an engine of growth and employment generation.

The research in this area finds that 95% of investment, over 60% of employment and dramatic spurt in exports in sezs has taken place only after the February 2006. Partha mukhopodya shows that most of sezs, post 2005 are tiny and are connected with information technology and it enabled services. They dominate in numbers, but occupy a small share in the area under sezs, and yet provide bulk of employment in sezs. These sezs are generally close to already existing urban centres –the greatest concentration of sezs is along three to

four select corridors near Delhi, Mumbai, and Hyderabad etc. They have not helped spread industrial or services sector activities to the remote areas or rural hinterland

REFERENCES:-

- ❖ AAQUE T, “recent work in agriculture in India” in a report of the Asian regional work shop 18th to 21st august 2009, international labor office, Bangkok edited by DP naidu and A navamukundar.
- ❖ Abdul Kalam: interlinking of rivers to the driver of growth, business line Feb. 23, 2003.
- ❖ Bandyopadhyaya, J and D gyawali (1994) HIMALAYAN WATER RESOURCES ecological and political aspects of the management, mountain research development, 14 (1) 1-24.
- ❖ Bandyopadhyay, J and S perveen (2003) river inter linking in India questions on scientific, economic and environmental dimensions of the proposal in AK Ghosh , PK Sikdar and AK Dutta (eds) inter linking of Indian rivers, ACB publications, kolkatta
- ❖ Bandyopadhyay, j, b, mallik, m.mandal and s perveen (2002); dams and development report on a policy dialogue, economic and political weekly, 37 (4) 4108-12 October.
- ❖ Cadilhar, jean – Joseph, paule moustier, Nigel D Poole phan thi gaic tam and Andrew p feame, “traditional vs. modern food systems? Insights from vegetable supply chains to ho chi minh city Vietnam” development policy review, 24.1, 2006.
- ❖ Caruthers, I and J Morrison (1994) 2020 VISION - dramatic changes in the world agricultural and industrial production system, IIMA review, 8(1) 14 - 20.
- ❖ Chandrasekhar, CP and jayathighosh, “is corporate forming really the solution for Indian agriculture?” business line 16 -12-2003 Change.The Dutch national research programme on Consultancy, Rotterdam.
- ❖ Deursen WPA (2000) Humans, water and climate
- ❖ Dyson, T (2001) “the preliminary demography of the 2001 census of India population and development review
- ❖ Falkenmark, M et al (1980): “water and society conflicts in development part 2 paragon press, oxford.
- ❖ Farina, Elizabeth MMQ,”consolidation,multinationalisation and competition in brazil :impacts on horticulture and dairy products systems” development policy review volume 20:4,2002

- ❖ Gazmuri R (1992) 'Chilean water policy experience' paper submitted at the 9th annual irrigation and drainage seminar agriculture and water resources department the world bank Washington d.c.
- ❖ Ghezan, Graciela, Monica Mateos and Laura Viteri " impact of supermarkets and fast food chains on horticultural supply chains in Argentina ", development policy review , vol. 20:4, 2002.
- ❖ Gleick, P.H. (1996): basic water requirement for human activities meeting basic needs in water international 21; 83-92.
- ❖ Gleick, P.H. (2000): the world's water 2000-2001: the biennial report on freshwater resources, Island press, Washington D.C.
- Global air pollution and climate change, cart ago
- ❖ Goyal, (2002) food security in India, the Hindu online edition January 10.
- ❖ IRWS (1996): 'interbasin transfers of water for national development problems and perspectives; Indian water resources society.
- ❖ Ives J.D. and B.Messerli (1998) the Himalayan dilemma, rout ledge, London
- ❖ Iyer RR(2000) water charting a course for the future, centre for policy research, new-Delhi
- ❖ Khattri K N (1987) great earthquake seismicity gaps and potential for earthquake disaster along the Himalayan plate boundary, techno - physics 138 79 - 82.
- ❖ Mitra, a (2003) Knotty or just nutty? - A unified rivers system is likely to be a mirage, the telegraph, kolkatta may 30.
- ❖ Mohile, d (1998) India's water and its plausible balance in distant future, UN published paper as cited in nciwrpd, 1999 a 29.
- ❖ Mukharjee, arpit and nithish Patel, "FDI in retail sector: India", New Delhi, department of consumer affairs, ministry of consumer affairs, food and public distribution, and Indian council for research on international economic relations".
- ❖ NCIWRDP (1999a) integrated water resources development a plan for action, national commission on integrated water resources development plan, MOWR, new Delhi
- ❖ Oxfam, "trading away our rights women in global supply chains", oxford, Oxfam.2004.
- ❖ Oxfam: "trading away our rights: women in global supply chains-oxford" 2004
- ❖ Pestle, S (1999) "pillar of sand, can the irrigation miracle last?" ww Norton, New York.

- ❖ Postel S (1999) pillar of sand can the irrigation miracle last. www.norton, new York
- ❖ prabhu, Suresh P (2003) 'interview ' in Indian express, new-Delhi 2-3-07
- ❖ Shankar gopala Krishnan, priya sreenivas, "corporate retail: dangerous implications for India's economy", economic and political weekly, 8-8-2009, vol. XLIV no.32, p.no.48.
- ❖ Shepard Andrew W:"the implications of super market development for horticultural formers and traditional marketing systems in Asia" paper presented to FAO REGIONAL WORKSHOP,KUALALUMPUR
- ❖ Shiklomanove, I a (1993) world fresh water resources in ph gleick
- ❖ Singh, sp: "AGRICULTURE" in alternative survey group disequalising growth: alternative economic survey, India 2004-2005(new-Delhi Danish books).
- ❖ Swami Nathan, M.S. (1999) a century of hope harmony with nature and freedom from hunger, east west books, madras.
- ❖ TFLIR (2003) inter basin water transfer proposals, task force on interlinking of rivers, ministry of water resources, government of India , new-Delhi
- ❖ the world's water (2002-03) island press, Washington world bank 1999 India water resources management, the irrigation sector, Allied publishers, new-Delhi
- ❖ Vaidyanathan, a (2003) interlinking of rivers the Hindu, Chennai, March 26.
- ❖ Varghese, BG (2003) waiting for godaganga outlook magazine, June 30.
- ❖ Water in crisis oxford university press, New York pp13.
- ❖ Wiftogel K A (1957): "Oriental despotism: a comparative study of total power, Yale university press, Beijing.
- ❖ World commission on dams (2000) dams and development a new framework for decision making, earth scan publishing, London www.dams.org /docs/report/wcdreport.pdf.