



## AN ECONOMIC ANALYSIS OF IRRIGATION PROBLEMS IN INDIAN AGRICULTURE SECTOR

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### ABSTRACT

The present study analysis the India National River Linking Project has implemented in entirety will form a enormous water grid and water expansion. The National River Linking Project plan was a bone of contention among the civil society, academic, environmental community, policy makers and politicians for proponents is the savoir of the awaiting water problems in India. Hence, many of the discourses on National River Linking Project lacked enough analytical rigor in assessing cost and benefits. There was very little attention to determinants are ailing the existing surface irrigation systems leading to their poor performance, The social cost and benefits of the National Rural River Linking Project, many other important issues that need instant notice for meeting India's water needs have been pushed into the background. The issues indicated to contribute a bunch of short- to long-term strategies for a perspective plan for the Indian water sector. The objectives study is to analysis the irrigation problems of Indian agriculture sector and it based on secondary data.

**KEYWORDS:** Environmental issue, water crisis, Cost and benefits, NRLP.

### PRELUDE

Irrigation is one of vital part of the World Agriculture Sector. The National River Linking Project plan was a pillar of contention among the civil society, academic, environmental community, policy makers and politicians for opponents in economic profit will not be adequately more in respect of social and environmental price. Hence the National River Linking Project lacked sufficient analytical severity in assessing cost and benefits. There was very small attention to determinants are unwell the existing surface irrigation systems leading to their low performance. So the social cost and benefits of the National River Linking Project, another important problems that need instant notice for meeting India's water wants have pushed into the background. It has tried to double challenges, National River Linking Project and improved to the informs of public on the pros and cons of the National River Linking Project and learnt from the existing water supply systems. The issues highlighted to contribute a cluster of short- to long-term strategies for a viewpoint plan for the Indian water sector. This paper is to analysis of overview strategic issues in Indian agriculture sector.

There are the following strategic issues in Indian agriculture:

- International and local perspectives on strategic issues facing the water sector, especially the irrigation sector.
- Planning new surface irrigation schemes for increasing benefits under changing dynamics of the Indian agriculture.



- The state of the irrigation of Tamil Nadu, one state that will benefit from the proposed National River Linking Project water transfers.
- Lessons from past water resources growth projects that are useful for planning fresh projects.
- Prospects and constraints of demand management strategies in Indian irrigation.
- Potential and constraints of water productivity improvements in Indian agriculture.
- Supply augmentation through groundwater recharge and virtual water trade.

### ISSUES ACROSS THE GLOBAL

They have global issues influencing water-food dimensions at present that the many poor and hungry people live in regions where access to water is a constraint for increasing food production. Many river basins are already experiencing physical water scarcities while many others are facing economic water scarcities. Large numbers of river basins have low minimum river flows and consequently have high environmental stress. At present, more than one-third of the world's population live in river basins with high environmental water stress and the major demand drivers of water for food are also changing, resulting in rapidly increasing water needs. Consumption patterns are changing, mainly towards diets consisting of more non-cereals and animal products. Changing dietary patterns have significant implications on water demand. While a person needs about 2-5 liters/ day, and a household needs 200-500 liters/day, it takes 2,000-5,000 liters/kg of evapotranspiration for producing grain to 5,000-15,000 liters/kg of ET, mainly from feed products, for producing animal products, such as meat, milk, etc.. The water demand, especially for blue water, of industrial and domestic sectors is increasing, and the demand for biofuel production will increase manifold in the next 20 to 30 years. A major part of bio fuel water demand, especially in water-scarce regions, will have to be from irrigation (85% and 65% in India and China, respectively).

Climate change impacts on water availability are real, and they are already affecting some regions. Rainfall and runoff have decreased significantly in some regions, while the reduction in runoff is comparatively higher than that of rainfall. Implications of such reduction on already water-stressed basins, especially in developing countries, Many countries with low per capita storage require increasing storage to cope with droughts and impacts due to climate change. Reforming water governance is essential for demand management to be successful. While protecting the poor, water rights, valuation of water and pricing, water markets, policies and institutional reforms, equitable and gender sensitive management systems need to be in place for effective functioning of supply and demand management systems.

### ISSUES IN INDIA

It has highlighted strategic issues of irrigation in India and noted that water planning for supply augmentation for a national water security system requires integrating of five sources of water: rainwater, river water, groundwater, wastewater and seawater.

- ❖ Rainwater is the Nature gift and key supply augmentation in India today is rainwater harvesting. The (National Rural Employment Guarantee Programme) is a plays a key important in water harvesting and watershed improvement programmes and mean can be made more effective by empowering the Panchayat Raj institutions, which are accountable for implement National Rural employment guarantee programme, to use the unskilled labour of the poor people as productively as probable.
- ❖ River water, a part of the river linking project, is very important. There are many conflicts in water sharing between neighbouring nations and between states at present. India requires many non-judiciary conflict resolution organizations, and have win-win situations for all parties in the conflict without relying on long-delayed judicial processes.
- ❖ Groundwater is the most dominant water use at present. It contributes most to both receding and rising water tables in many regions. Managing this resource is the most important short- to long-term water management challenge.

- ❖ Wastewater recycling is gradually increasing in metropolitan areas. This is an important source not only for raising fodder and other crops but for breeding fish. Industries can be made to give back the water by proper methods of recycling.
- ❖ Seawater is useful for agro-aqua-farming, including agro forestry and aquaculture.

Linking of rivers could be one option for easing the water stress in some locations where the links are economically viable and environmentally sustainable. The peninsular links are feasible to the extent that the political control of designing, planning and implementing is within India.

### Benefits of Irrigation Water Transfers

The changing face of irrigation and the financial benefit-cost of proposed irrigation water transfers. Indian has face to irrigation in rapidly changing and it has spent over Rs 1,000 billion on surface irrigation since 1991. However, net territory under surface water system has declined by 24 percent. Since 1970, Tamil Nadu and Andhra Pradesh, two noteworthy water-beneficiary conditions of the National River Linking Project, have spent more than 5 billion dollar in channel water system, yet have lost near 500,000 ha of net flooded region under significant/medium plans. Since 1990, net area underground irrigation area has increased by 26 per cent. It was mainly due to private investments. Groundwater irrigation is widespread; both in and outside the canal command has areas, even though over exploitation is threatening irrigated agriculture in many regions.

There are numerous factors contribute to this changing face of irrigation.

- ❖ The pressure of decreasing landholding sizes and large number of smallholders,
- ❖ To improving demand for year-round on-demand water supply for growing income from small landholdings people.
- ❖ Unproductive institutions providing irrigation services and undependable water supply in canal irrigation,
- ❖ The distinction of existing and proposed conditions partisan surface irrigation, including the nature of both the state and agrarian society,

There is a significant difference in benefits between canal irrigation systems and surface water systems. Canal irrigation systems provide water for food production whereas surface water systems provide a large quantity of drinking water supply for urban areas, generate hydropower benefits, pump irrigation from rivers due to releases from reservoirs, recharge groundwater and benefit the environment. These benefits, along with food security at the household, regional and national level should be part of a domain for analyzing financial and economic cost benefit of surface water systems. It is Iso important to the cost to ecosystem services system for demarcating the boundaries of benefits-cost of surface water systems.

### Irrigation status of Tamil Nadu

Tamil Nadu, a major recipient state of the water transfers in the National River Linking Project, had significant changes in irrigation in the recent past. Irrigation is a major driver of agricultural growth, which is intrinsically related to the economic growth in Tamil Nadu. In spite of, major investments in the irrigation sector, net surface water irrigated area has declined over the last three decades. The total investment in major/medium irrigation has increased by \$730 million between 1970 and 2000, but the net canal irrigated area has declined by 85,000 ha or 9%. Total investment in tank irrigation in the same period was over \$430 million, but net minor irrigated area has declined by 450,000 ha or about 50%. However, with private investment, net groundwater irrigated area has increased by about 500,000 ha. Although the contribution of groundwater has increased substantially, many regions in the state are facing acute groundwater depletion.

### Water Demand: Management Strategies

The growing gap between the demand and supply in Indian irrigation is a serious concern for policy planners. While, supply-side arrangements dependent on new increase, for example, National River Linking Project, are basic in a few settings, they can't be the select reason for water system division techniques. Many demand management strategies will help reduce the gap. These procedures incorporate water evaluating, formal and casual water markets, water rights and privilege frameworks, vitality based water directions, for example, control duty and supply controls, water sparing advances, for example, dribble and sprinklers, trim decisions and ranch practices, and client and network based associations. The significant focal point of these investigations was to assess the present status of these alternatives in the water system administration procedure in India. It incorporates the degree of their application, their adequacy in impacting water utilize choices at the homestead level, nearness of approaches in advancing them at the national and state levels, instances of achievement and best practices popular administration. A compelling interest administration procedure can both extend water system and discharge water for other beneficial uses even at the ebb and flow level of water utilize. Therefore, it is divert to least part of the investments

### Water Demand: Water Productivity Improvements

The agriculture sector in India is in straight clash with other sectors of water economy. The common character of agriculture in few regions is extreme withdrawal of groundwater and extreme distraction of water from rivers, cause environmental water pressure. The range for augmenting the utilizable water capital in these places is tremendously imperfect. While there are a ton of spots in India where water assets are ample, these spots offer restricted potential for rising farming creation because of the impediments forced via arrive and natural limitations. In addition, profitability of water utilize is low in India for significant yields regarding the measure of biomass created per unit of water exhausted in harvest generation. In this way, create water efficiency in agribusiness, wherever conceivable, holds the way to not just continuing rural generation and country jobs. Enhancing water profitability in horticulture can realize numerous positive results. It would result in expanded yield generation with no expansion in destructive utilization of water, while in some others it would result in lessened utilization of surface water or groundwater draft. The two results would ensure the earth.

### Opportunities for improving the water Productivity of Crops in India

- ❖ Change the long-duration food crops with higher water use efficiency by short-duration ones with low efficiency; and growing crops in regions
- ❖ Practicing deficit irrigation in areas where yield is large and consumptive water use is very high,
- ❖ Developing the quality and reliability of irrigation water,
- ❖ Manage irrigation for certain crops by controlling
- ❖ High-yielding varieties without increasing the crop consumptive use,
- ❖ Providing optimal dosage of nutrients such as artificial irrigation and fertilizing; and improving farming systems with changes in crop and livestock compositions.

### Constraints for Increasing Water productivity

- ❖ Constraints induced by land availability,
- ❖ Food security concerns and regional economic growth. Oats, for example, rice and wheat are vital for sustenance security of India yet have low water effectiveness, contrasted with trade edits out which have high water utilize productivity,
- ❖ Existing institutional and policy frameworks in improving water productivity for irrigated crops.
- ❖ Absence of learning and fortitude to embrace advancements and practices to enhance water profitability in farming.
- ❖ Lack of credit required to invest in water harvesting systems for supplementary irrigation for rain-fed crops and economic viability issues.

### The following policy suggestions to improve the status of irrigation facility

- ❖ To improve the quality of irrigation water supplies from various canal systems.
- ❖ To build up the nature of intensity supply in horticulture in districts that have escalated groundwater water system and enhancing power framework in immature country zones.
- ❖ Giving focused on sponsorships to smaller scale water system frameworks in areas where their utilization results in significant social advantages,
- ❖ Invest in water reaping for advantageous water system in rain-sustained locale, and
- ❖ Rainwater reaping and water system foundation for supplemental or full water system would altogether upgrade trim yields.

### CONCLUSION

The study concludes that the rising reliance of groundwater and declining area under surface irrigation are the important recent trends in Indian irrigation. Huge problems in groundwater and surface irrigation need instant notice and Recharging groundwater is an necessary requirement for sustaining the present groundwater economy and for distributing irrigation benefits to the more population. Water productivity improvements could considerably reduce the requirement for additional water development. Increasing crop yield by providing supplemental irrigation in major rain-fed districts with low consumption of water use reducing the yield gap in a lot of irrigated areas without increasing the total consumptive water use shortage of irrigation to provide deficit consumptive water use in irrigation districts with large consumptive water use and increasing multiple water uses in water-abundant rain-fed areas are some strategies towards increasing water productivity in agriculture. Demand management strategies can decrease the widening gap between supply and needs. The government making suitable policy measure to interact with water pricing, formal and informal water markets, water rights and especially energy based water act, water economy technologies.

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