INTRODUCTION

INTRODUCTION

Irrigation in India has a history extending over millennia. Not only in India, but in most eastern countries, irrigation works, for artificial application of water to the land for purposes of agriculture as a means of supplementing the natural rainfall, which are unknown in Northern Europe,[1] have existed from time immemorial.

In India, this is a natural result of conditions of climate. It contains large rainless tracts in the North and West where there can be no cultivation without irrigation. In the Deccan plateau cultivation is exceedingly precarious owing to the great irregularity of the rainfall and the long intervals during which crops may be exposed to the fierce heat of the sun and to dry and scorching winds. In such regions, there may be an almost complete failure of crops in a year of short or badly distributed rainfall and a succession of two or more unfavourable seasons might result in severe drought conditions bordering on famines. In other more favoured tracts such as the Himalayan sub montane districts a serious failure is seldom or never known, yet here also irrigation works which are usually of a simple kind, such as can be constructed by the people themselves, are of the greatest value in improving out turn of crops. Lastly there are districts which ordinarily receive so copious a rainfall that rice is almost the only crop grown; but for this, water is required at certain critical periods when there may be a break in the rains, and a full harvest can only be secured by irrigation.[2]

Not only in India, but in Asia itself, water was and still is the basic key to technical development in agriculture.[3] In the main agricultural regions of West, South and East Asia, the extent of development depends mainly on the methods employed in controlling and using water and at the same time, these methods have great economic and social influence over the entire agricultural system. In Asia, 'Water supply is the thread of life of agriculture'. This differs greatly from that of West European pattern of agricultural development based on natural precipitation, livestock and dry field farming. In this pattern of development, fertility reproduction of land, getting rid of weeds, combined with livestock raising were the key issues. Technical innovation in cropping and land utilization methods developed out of the fight against weeds and the fight to conserve soil fertility. In Asia on the other hand confronted with either terribly dry or wet natural surroundings the fundamental prerequisite for farming was and is the artificial control and use of water.[4]

The existing indigenous systems of irrigation in India which have evolved with reference to topography and climate, have thousands of years of tradition behind them.[5]

The first point that needs to emphasized is this, that irrigation had seen centuries of development both in technique as well as extent long before 'Modern, Scientific, Western' irrigation systems were introduced in India during British Colonial administration. It is estimated that development of irrigation systems in India received a great impetus after the discovery of iron and extensive use of it from around 3000 years before the present.[6] Use of

iron had helped reclamation of land on a grand scale. Irrigation practices had spread simultaneously, flowering into varieties of techniques suitable for diverse natural conditions.[7] Thus in India we see a variety of indigenous irrigation systems in different regions which are perfectly suited to the topography of the respective regions. It was only under colonial rule that a completely different 'modern' system of irrigation was imposed in India by a country which has never practised irrigation in its own agriculture.

Under British administration, the country saw a centralized approach to irrigation. The assessment of water resources was centralized; the data on agriculture - both irrigated and dry land- was consolidated. Management systems were centralized. Policy administration was centralized. New irrigation systems, which lent themselves to centralized control and management were introduced. The priority was to increase irrigation facilities, building up of more and more irrigation potential, undertaking huge engineering works. The definition and classification of irrigation works themselves in the context of planning and administration underwent a change - they lost their original indigenous appellations - *kohls, ahars, pynes, bandharas, eris* - each representative of a region, its culture and tradition in agriculture, and became 'Major, Medium and Minor' works, depending on the amount spent on them, or the departments of Government which undertook their care.

In the pre-Independence period, the Royal Commission on Agriculture,a series of Famine Commissions, the First Irrigation Commission, the Grow More Food Campaign and after Independence, the whole planning machinery have all given high priority to increase in irrigation facilities, and not to the qualitative improvement in the already existing irrigation facilities.[8]

The efforts towards quantitative development in irrigation produced certain results - the cumulative irrigation potential created under major, medium and minor irrigation has risen from 22.6 million hectares (Mha) at the commencement of the First Plan to 67.90 million hectares (actual utilization being 60.4 mha) at end to the Sixth Plan[9] (37.40 Mha under minor irrigation and 30.50 mha under major irrigation). The total outlay on irrigation from the First to the Sixth Plan Period has been Rs. 19,331 crores[10] (Rs. 15,026 crores on major and medium irrigation and Rs. 4305 crores on minor irrigation excluding institutional credit). The net sown area has increased from 107.6 million hectares during the First Plan[11] to 143 mha at the commencement of the Seventh Plan.[12] The percentage of irrigated area to net sown area has increased from 18 percent during the First Plan period[13] to 42 percent at the commencement of the Seventh Plan. The total food grain production has increased from 50.8 million tonnes during the First Plan to 180 million tonnes in 1989-90.

However, when placed in the real context, these figures are less reassuring. On the contrary, it becomes apparent that the cost of this imported system of agricultural development in human as well as environmental terms has been very heavy and brings into question the rationale underlying the planning process since Independence in the field of agriculture and irrigation, which

failed to provide assured irrigation for production. This concern is reflected in the Seventh Five Year Plan document which pointed out that there was no decline in the amplitude of annual fluctuations in the output of foodgrains in the country. This was because a large proportion of foodgrains continued to be produced under conditions of uncertain rainfall. The vagaries of monsoons affected a good part of minor irrigation,including the so-called controlled irrigation through wells. It was acknowledged that a succession of good harvests and consequent accumulation of stocks could not be a basis of complacency and slackening of development efforts because of the persisting fluctuations in agricultural output..

The Plan document recognised the need for *a regional dispersal of output growth, noting that*

> 'In a large country like India, with significant spatial variations in agro-climatic conditions, a regional dispersal in the growth of food grain output is likely to even out annual fluctuations in aggregate output and reduce the costs of distribution on account of carrying stocks from year to year and transportation across the regions.'[14]

That development of agriculture had been concentrated in a few pockets across the country was conceded:

> 'the bulk of increase in output particularly food grains has been concentrated in a few regions which are well endowed with infrastructure like surface irrigation, rural electrification, roads and markets and where farmers are resourceful in terms of their capacity to invest and bear risks. It has been estimated that the growth of agricultural output in the recent past has not been commensurate with the increase in inputs, indicating a decline in productivity of input.'[15]

Thus after six plan periods we barely manage to produce 180 million tonnes of food grains from 143 million hectares of agricultural lands, while China, in 1980, produced significantly more than 300 million tonnes from a mere 112 million hectares.[16] In 1989-90 there are an estimated 211 million people below the poverty line[17] The solution to this situation is not a simple one of correcting the direction of government investment and programme towards hitherto less developed areas and thereby ensuring a wider dispersal of growth in the future. The negative impact of the development efforts in agriculture and irrigation so far are of such magnitude, and so horrendous in nature, that the corrective measures required are going to subject the government to severe strain, even before further development plans are undertaken. The results of the land and water management policies hitherto followed are unfolded before us in terms of its impact on the environment, and this merits a closer look.

Irrigation vis-a-vis the Environment

Irrigation as one of the important functions of water, demands immediate notice, not only in the context of its role in the growing of food but as a determinant of the environmental stability in the country.

A review and reorientation in irrigation policy is an urgent matter today The results of past policies and practices in this field have forced upon our consciousness the disastrous consequence of delinking irrigation from environmental concerns. The visual evidence of this approach lies all around us. Denuded hillsides, ravines, water logged and saline lands, drought stricken or flood ravaged villages, silted tanks, drying wells, increase in landlessness, large scale migration of agricultural populations and more than a third of the population below the poverty line - these are not healthy signs of a healthy agricultural community, but symptoms of degradation of land and destitution of its people.

Land is an important link in the hydrological cycle. The character of land determines the endowment of water resources in a region in the form of subsoil water and surface water.[18] There is thus an inextricably close relationship between land and water management. Water, which is a renewable resource, can in fact be put to good use only if the land on which it falls, and the land on which it is applied are properly cared for. Land, which is for all purposes a non-renewable and inelastic resource must be managed in such a manner as to be benefited rather than damaged as a result of its contact with water.[19]

An irrigation policy, therefore, which is divorced from land management is bound to fail in its primary objective of making the land productive. Unfortunately, this is precisely what has occurred. This can be deduced by certain indicators of the condition of land in India which proves that land has increasingly suffered damage from modern water use practices. According to estimates made by the Ministry of Agriculture in March 1980, as much as 175 million hectares (mha) out of the country's total land area of 305 mha for which records exists, are subject to environment problems. The break up is as given below:-[20]

TABLE 1 : Land Areas with Environmental Problems

Sl. No.	Problem	Area (Million Hectares)
1.	Serious water and wind erosion	150.00
2.	Shifting cultivation	3.00
3.	Water logging	6.00
4.	Saline soils	4.50
5.	Alkali Soils	2.50
6.	Diara Lands	2.40
7.	Other culturable waste lands fit for reclamation	6.60
	Total	175.00

Source : Sixth Five Year Plan, at page 343.
(Govt. of India).

In addition to the above, according to the National Commission on Floods, in 1980, the total area subject to periodic floods was 40 million hectares at the rate of an increase of 100 percent in a decade. The average losses from floods was Rs. 1000 crores per year.[21]

In addition, according to a study made in 1972, it was estimated that on an average, India was losing about 6000 million tonnes of top soil per annum through land erosion and that these represented, in terms of major nutrients NPK alone an annual loss of Rs. 700 crores. The corresponding loss today must be of a much higher order, considering the increase which has since taken place not only in prices of fertilizers but also in the extent and intensity of erosion.[22]

The damage caused to agricultural lands in canal irrigated areas by waterlogging and consequent salination because of lack of adequate drainage is considerable. Lands in canal areas are often flat and poorly drained and the application of irrigation water to them results in water logging and salinity over a period of time. The application of canal water to crops is often in excess of their needs because of the absence of field channels and installations necessary to regulate the flow of water to individual fields. Secondly wherever canals and distributaries are not lined, as is often the case, they contribute heavily to water logging through seepage.

Water logging and salinity in canal irrigated areas is a global phenomenon, and has reached such serious proportions that; according to a study commissioned by UNDP and UNEP, as much irrigated land is going out of production in the world on this account as is being brought under new irrigation.[23] It is also known that about half the world's irrigated land has already been damaged to some degree by water logging and salinity and much of the additional land expected to be irrigated in the future is highly vulnerable to similar damage. In Pakistan out of a total of 15 million hectares of irrigated land, as much as 11 million hectares were, by 1980, already suffering from water logging and salinity. Egypt, Syria and Iraq also have similar stories to tell. In India, not only have we lost at least 6 million hectares to production already but large additional areas are being affected by rising water tables and salinity year after year even in the commands of comparatively new projects.[23] Even if low priority were given to the reclamation of water logged and saline lands which have already gone out of production, just to save 10 million odd hectares of newly irrigated lands from going out of production would require, according to estimates made in 1980, as much as *Rs. 10,000 per hectare on an average.*[25] Considering the fact that the investment *per hectare* for creating additional irrigation potential through major and medium schemes rose from *Rs.1,520* during the First Plan, to *Rs.18,105* per hectare in 1983-84 (see Annexure I), the necessity that has now arisen to invest a further Rs.10,000 per hectare for works to prevent water logging - such as land levelling, construction of field channels, lining of channels, leaching of soil etc., - makes the whole scheme itself illogical besides being a colossal and criminal waste of scarce resources which has proved to benefit only certain regions at the expense of others in the country.

In summary, out of a total of 305 million hectares in the country, as much as 238 million hectares are subject to severe degradation (175 mha due to wind and water erosion, water logging, salinity and culturable waste; 40 mha due to floods; 23 mha lying fallow) and incomplete use.

This situation is a pointer to a total loss of control over land and water use. Land and water use policies and the management systems that have been operating have proved to be not only inadequate, or ineffective, but positively harmful.

An appraisal of the irrigation management systems operating in the country reveal the following:

(1) The modern large scale irrigation systems require a high level of management in terms of both scope and sophistication as well as considerable control over land tenurial practices for optimum utilization. Such a scale of management has not been available and has resulted in shortfall in utilization on the one hand, and even more important, in a serious extent of land degradation on the other.

(2) The indigenous systems of irrigation, like the Tank system or Eri Systems in South India are superior in three important ways:
   (a) They are more 'eco friendly', that is, a proper management of the system would itself ensure a protection and preservation of the environment.
   (b) Being innumerable, and very much smaller in scale, they lend themselves to decentralized control and management, which could better ensure their care.
   (c) Being widely dispersed, if revived to their full and original capacity, they would ensure widely dispersed agricultural development, which is what is being sought in current planning.

Today, there is a revival of interest in Panchayati Raj. Four decades of centralized planning and development administration in the country has proved the necessity and inevitability of according Panchayati Raj institutions their rightful place in governance.

The role of Panchayati Raj institutions in irrigation and environment protection assumes prime importance, if they are to be the initiators and sustainers of economic growth and social development, which are the functions traditionally envisaged for them even if they have not so far been adequately empowered to discharge them.

As is widely known, the Tank Irrigation system in South India - particularly in the states of Andhra Pradesh, Tamilnadu and Kerala - is a centuries old system. Irrigated paddy cultivation was in evidence in Tamil country as far back as in the first millenium BC.[26] Records exist in the form of inscriptions testifying to tank irrigation or river diversionary irrigation systems from the 2nd to the 16th Century A.D.

A study of this evidence reveals the fact that local bodies at the village level or township level have had a significant, wide ranging role in the matter of irrigation, and that this was one of the determining factors in their proper

use, maintenance and development. However, the period of colonial rule saw an erosion of the autonomous functioning of village management systems, which were supportive of irrigation systems in South India. New irrigation systems, new management principles, and a new legal order in support of a colonial land administration severed the close, mutually supportive link that existed between the agricultural population, water resources and the environment.

The 'modern scientific' development in agriculture in the 19th - 20th century have only accentuated the break. The development of 'Local Self Government' as envisaged by British Colonial administrators, and its continuance on the same lines after Independence have not served to restore the link which is proved today, by ecological compulsions, to be still valid.

In order to accord Panchayati Raj institutions the role of initiators of development and growth in agriculture and rural life in general, their legitimate legal rights over land and water resources must be restored to them. In addition, another crucial aspect - the concept of water rights of people belonging to the agricultural community - must be examined afresh in order to secure the ends of social justice and in order to forestall the Panchayati Raj institutions going the way of State or Central Governments once real powers are restored to them - that is, assuming the function of protecting and furthering the interests of the rural rich.

This issue of equitable sharing of water resources among the local population has been brought into focus in a particular popular water movement in Maharashtra - the Pani Panchayat Movement initiated by V.B.Salunke in Purandhar taluk.[27]

Begun as a soil and water conservation programme to fight drought by means of percolation ponds, the movement developed into a radical approach to the issue of equitable sharing of water resources among the local population. A series of community minor lift irrigation schemes were established on the following five principles :

(1) Sharing of water is not proportional to land holding of the beneficiary, but on a per capita basis, as a half acre share of irrigation per person, so that a family of five members would get 2 1/2 acre-share of irrigation.

(2) Cultivation of high water-consumption, perennial crops like sugarcane is totally banned.

(3) Water rights are de-linked from the ownership of land, so that if any person sells his land, water rights are not transferable. The purpose of this rule is to avoid speculation; water is made available to the cultivator and not to the silent land owner, thus promoting the principle of 'water for the tiller.'

(4) Landless people in the village also can become members of the group and get water rights. This is expected to set in a process of land redistribution bringing about a change in the socio- economic situation in the village.

(5) People have to contribute 20% of the cost of the project in cash before commencing the scheme.

With great effort, a movement has been built in this area resulting in fifty irrigation group schemes with an investment of Rs.70 lakhs, based on these principles; the Pani Panchayat scheme is creating a lot of interest among the farmers in the region, who are attracted by the revolutionary ideas in water use which has demonstrated over the last 10 years that sustained and increased production has been made possible for larger numbers of farmers. It has also been demonstrated that not only has migration of rural poor decreased in the region, but has even been reversed. The system has also solved drinking water problems in certain areas. The Pani Panchayat scheme had so far brought under irrigation based on the above principle, an extent of about twelve hundred hectares of land of about fifteen hundred beneficiaries in twenty villages, with a population coverage of ten thousand people.

The implementation of the principle and methods adopted in this movement need to be examined from a legal point of view in order to derive an agenda for the functioning of Panchayati Raj institutions in the context of current 'Modern' practices in agriculture and the social and economic conditions of the village population.

In order to provide a historical backdrop of the functioning of Panchayati Raj institutions in the control, use and management of water resources for irrigation, as well as to highlight their current status in law, the following chapters discuss :

(a) Indicators from South Indian History of the potential of local bodies to manage Water and Land resources for irrigation.
(b) Land and Water Policy under British Colonial Administration in Madras Presidency and Mysore State.
(c) Post-Constitutional Developments in Irrigation and Panchayat Raj.
(d) The situation on the ground, giving field study reports from Tamilnadu and Karnataka.

Notes

1. *Imperial Gazetteer of India*, Vol.III, 316 (Clarendon Press, *1908)*.
2. *Ibid.*
3. Akira Tamaki, *The Development Theory of Irrigation Agriculture* (Institute of Developing Economics, Tokyo, 1977).
4. *Ibid.*
5. Nirmal Sengupta, "Irrigation: Traditional Vs Modern", XX *EPW*, 1919 (1985).
6. *Ibid.*
7. *Ibid.*
8. P.N. Chary, "Development and Management of the Water Resources of India", 22 *IJPA*, 762 (1976).
9. *Seventh Five Year Plan*, Vol. II, 73.
10. *Ibid.*
11. *First Five Year Plan*, 339.

12. *Seventh Five Year Plan*, Vol. I, 10.
13. *Supra* note 11.
14. Seventh Five Year Plan Vol. I & II, 1-2.
15. *Ibid.*
16. B.B. Vohra, *"A Policy for Land and Water"*,Patel Memorial Lectures, (New Delhi, 1980).
17. *Seventh Five Year Plan*,Vol. I, 343.
18. Chery, *supra* note 8.
19. *Sixth Five Year Plan*, 343.
20. *Ibid.*
21. *Id.* at 344.
22. *Ibid.*
23. Vohra, *supra* note 15 at 4.
24. *Id.* at 7.
25. *Id.* at 8.
26. *Tamilnadu Economy:Performance and Issues*, 17 (Madras Institute of Development Studies, 1988).
27. For an account of the movement, see Furqan Ahmed, "People's Movement in Water Resources Management and the Law", in Water Law in India. Indian Law Institute Publication.1992.