

considered as a basic requirement for all, to be accorded highest priority.

The problem of flood control was taken in relation to the existing development on rivers in India and not as water use.

Power and fisheries (both inland and marine fisheries) in the field of water based resources were treated with a view only to enhance the productive potential, while water transport was provided with protection plan.

Second Five Year Plan

Second Plan reiterated most of the programmes and objectives of the First Plan. But soil conservation and flood control, problems were given little elaborate treatment. In soil conservation attention was focussed, as in previous plan, on river valleys, particularly in its upper reaches, essential for preventing siltation in dams and rivers. It was proposed to bring forth a suitable soil conservation legislation with objects - to give powers to concerned authorities for executing specified improvements, constitution of farmers co-operatives for this purpose, and to give powers for restricting uses and practices in certain areas which could be declared protective areas.

The flood control programme got a new deal in this Plan. This was expedited due to 1954 floods occurred in various parts of the Country. It was emphasised that

floods can neither be stopped nor is advisable to do so in view of the benefits derived out of these like bringing fine silts, adding to the fertility of the land of submergence. For prevention and control of floods three phased-short term, intermediate and longterm plans were drawn.

Third Five Year Plan

Compared to previous Plans, the Third Plan marked with the beginning of much concern for separate treatment of natural resources and policy making in that direction. This envisaged formulation of a plan for the most effective and balanced utilization of country's resources with speeding up various Organisations like Central Board of Irrigation etc. It was proposed that nations natural resources should be developed on scientific lines so that it may add to attainment of planning objectives. In other fields policies and programmes were almost same as in earlier plans.

Fourth Five Year Plan

More comprehensive policy and planning of water resources management is noticed in this Plan. But again much of those are covered under agricultural programmes. The integrated use and efficient management of water resources, both surface and ground, was the object for agricultural development. A new approach in integrated development of water and land resources began with the proposal for preparation of master-plan for

long term development of irrigation in each river basin including inter-state rivers. All these were done in the light of idea of optimum economical development of a river basin.

For the first time a panel was set up on water resources to advise, in the light of scientific and technological considerations, on a long term planning of water resources including their assessment, exploitation and conservation and to recommend the line of research and investigation necessary for integrated use of surface and ground water resources. The need for investigation and remedying of saline infestation of ground water particularly in coastal areas was highly emphasised on account of consequences of irreversible damage due to indiscriminate pumping in those areas. The method of artificial recharge of water was introduced in water scarce areas. Rest of the considerations remained as usual.

Fifth Five Year Plan

Nothing new in any of the spheres of water resource management (irrigation, flood control, soil conservation, water supply etc.) was incorporated in this Plan.

Sixth Five Year Plan

The problems in water and water based resources requiring increased attention in successive five year plans were given multi directional treatment in a wider

perspective. Broadly the strategies and objectives in this plan included:

- (i) optimization of benefits through better operation of existing system and conjunctive use of surface and ground water and adoption of Warabandi (a kind of bundmaking)
- (ii) efficient water management and introduction of Warabandi on rotational distribution system on the existing and new projects and formulation and mounting of irrigation programmes for different regions in a water year,
- (iii) integrating functioning of canal management authorities, CAD (command area development) authorities and irrigators.
- (iv) ensuring adequate maintenance of canals.
- (v) initiating National Plan for inter basin transfer of water from the water Surplus areas to the water shortages areas.
- (vi) restructuring the management to ensure full participation of farmers and public in command in scientific management of water and soil resources of an area.
- (vii) in ground water management strengthening of organisations and their way of functioning were to be given much attention
- (viii) it was also for the first time that ecological considerations were made in water resource management. As it was specifically mentioned in irrigation

management programmes that ecological balance is not be affected so that no adverse effect results in the long run such as water logging, salinity etc.

- (ix) For flood controls it was proposed to implement the recommendations of Rashtriya Barsh Ayog (setup in 1976 and submitted its report in 1980). In this connection it was pointed out that although under various laws there is authority to prevent encroachments of flood plains, there seems to be quite a lot of haphazard and unauthorised encroachment which have been on increase obviously on account of population pressure, leading also to some additional damage to other areas. For this in addition to valuable constructions, soil conservation and afforestation measures were made necessary in catchment areas of all rivers creating flood havoc.

Some other new areas of thrust in the Sixth Plan were:

- (a) de-salination of sea water. The focus was that since water is becoming scarce in most parts of the country, particularly in arid and semi-arid areas the question of utilizing sea-water de-salination assumes importance.
- (b) The national programme for safe water supply and sanitation as a basic minimum need was launched in 1954. The programme was given a new dimension with the inclusion of rural areas in the fifth plan.

In the beginning of 1980, 1.9 Lakhs problem villages were identified for this purpose which included:

- the villages which did not have an assured source of drinking water within a distance say 1.6 Kilometers,
- those where the source of water is endemic to water borne diseases like Cholera etc.
- those where available water suffers from excess of salinity, iron or fluorides or other toxic elements hazardous to health.

(c) for the first time the idea of environmental protection was mooted out seriously and it was declared that "environmental conservation is the basis of all developments." The relevant problems were divided into those arising from conditions of poverty and those arising as negative effects of the very process of development. The ideas also included that "Key to environmental quality lies in scientific land and water management above all else."

(d) for preservation of marine eco-systems programmes envisaged its protection with emphasis on water pollution and environmental impacts from developmental projects.

Seventh Five Year Plan

The Seventh Plan envisaged a new development perspective towards the year 2000 A.D. the aim is to make

India modern, technologically progressive economy with expansion in its capacity to provide the basic material and cultural requisites of well-being for all people which, among other things, will require the expansion and qualitative improvements in facilities for health and other basic amenities. In this way a long term development strategy for water resources is also conceived in this plan incorporating the following major areas:

- (i) Irrigation - The average rainfall in our country is 119.4 cm. with a total surface flow of 178 million hectare metres. However, it is reported, on account of limitation of physiography, topography, geology, dependability, quantity and present state of technology only a part of it could be developed for irrigation. Thus utilisation of surface and ground water is not to the desired extent. Keeping all these in view long term irrigation planning, with main objective of realising its full potential by the year 2010, included following Programmes:
 - (a) solving the problems arising from salinity of water and water-logging in irrigated areas by giving due priority to drainage schemes for completed irrigation projects and inclusion of drainage components in new projects,
 - (b) acceleration and exploration of ground water on a priority basis particularly in eastern and north-eastern regions,

- (c) ensuring farmers co-operation through co-operatives and other measures in day to day management and distribution of water,
 - (d) conjunctive use of surface and ground waters.
- (ii) Flood Control - target included protection of 2.5 million hectares of land with emphasis on the strategy of flood plan zoning and preparation of water plans. Taking up necessary action for early implementation of the recommendations of Rashtriya Barh Ayog especially in bringing out suitable legislation to prevent encroachment in flood prone areas.
- (iii) Water-Supply and Sanitation - plan has the objective of providing potable water to all citizens in general as a drive towards social justice and sanitation at least to 20% urban and 25% rural population. Such idea was conceived in V Plan and incorporated in revised 20 - Point Programme of the VI Plan. One of the major hindrance in way of this programme was pointed out to be considerable amount of pilferages and wastage of water, for which enlisting local involvement and co-operation was proposed. The need of Governments to pay more attention on organisational and administrative structure of water-supply was also emphasised.
- (iv) Ocean development, environment and ecology - has the main concern for unplanned use of natural resources for various resources like poverty,

underemployment, and negative effects of developmental programmes—either badly planned or implemented in the same way. For all these high priority to the various basic economic activities has been emphasised with the condition that the same can not be done without proper attention to land and water management. Ecological development by cleaning water bodies was also included in high priority areas.

- (v) Drought Prone Area Programme - has been one of the important aspects in this plan. In fact it is redesigning of the rural works programme launched in 1970-71 in areas chronically affected by drought with certain water works like medium and minor irrigation projects, soil conservation etc. Thus the reoriented integrated area development programme has the objective of developing, among other things, water resources of the area under command. The main thrust is on restoration of ecological balance by development of natural resources including efficient utilization of scarce water, conservation of scanty rainfall and arresting its run-off, in addition to other drives, in drought prone areas.