
UNIT 26 WATER: ACCESS, CONTROL AND MANAGEMENT

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26.0 OBJECTIVES

After going through this unit you should be able to:

- describe the present state of access to water by the poor, particularly women;
- describe the water management and distribution systems in India;
- analysis the policies that have resulted in monopolisation of the water resources by a few powerful sections;
- understand the consequences of this situation on the weaker sections, particularly women; and
- explain possible solutions to this situation.

26.1 INTRODUCTION

In Unit 25, we were concerned with the problems relating to the resource of land and its access, control and management. Equally important is the resource of water which is an essential component of human survival. Unit 26 focuses on social problems arising out of differential access to, and monopolistic control and so-called 'scientific management' of water resources in India.

Access to water is a fundamental right, since it is required for the very survival of every human being. Beginning with a discussion of the nature of the its access to various groups of society, we go on to analyse the traditional water management and distribution systems, and compare them with the British and post-independence policies of water management. This leads us to such questions as to who has gained greater access to water, who has been deprived of it and who pays the price of the present day water development policies. If it is found that a few classes have monopolised this resource at the expense of many other, it is important for the National Water Policy to deal with this problem. This is the reason why at the end of this unit, we look at the National Water Policy to deal with this problem.

26.2 THE PRESENT SITUATION OF ACCESS TO WATER

There is a certain contradiction in the management of and access to water in India today. There is an abundance of water in the country. The number of dams have grown enormously during the last four decades. At the same time, the access of the majority to this resource has decreased and, thereby, created a number of social problems on several fronts. In this section, we shall first discuss the fact of abundant supply of water in India, and then examine the state of the reduced access to water by the users.

26.2.1 Abundance of Water

According to a water flow chart, prepared by **Nag and Kathpalia (1975)**, India's total average annual precipitation is estimated to be 394 million hectare metre (mham). Precipitation is a term, denoting deposits on the earth, of hail, mist, rain sleet or snow. This figure is rounded off to 400 mham after including the snowfall which is not yet properly and fully recorded. To this figure of 400 mham you may like to add 20 mham of water, which comes from rivers flowing in from the neighbouring countries situated in the Himalayan watershed. We shall now see what happens to this 400 (or 420) mham of water resource that India gets every year.

Out of the 400 mham, nearly 40 mham is lost to the atmosphere through evaporation from soil. This leaves 330 mham, of which 215 mham percolates into the ground as soil moisture and groundwater recharge. Of this, only about 45 mham regenerates as surface flows. Besides 45 mham of the regenerated surface flow, 115 mham is the portion of the precipitation on the land that ultimately reaches streams and other surface water bodies. Adding 20 mham brought in by rivers originating in Nepal and Tibet, we have total surface flows of 180 mham available in the country.

Of 180 mham of surface flow, 150 mham goes to either the sea or some adjoining countries. Only about 15 mham is stored in reservoirs and tanks.

But about 5 mham of this water is lost by evaporation, resulting in the availability of only 10mham. Of the river flow, about 15 mham is used through diversion works and direct pumping. So we have a pattern of utilisation of only 25 mham out of 180 mham of surface flows. It is estimated that even on full development of the use of water through diversion works, direct pumping and storage facilities, 105 mham would continue to go to the sea and other countries (CSE 1987).

About 165 mham of 215 mham percolating into the soil is estimated to be retained in the soil as moisture and only 50 mham percolates as groundwater. According to scientists like Chaturvedi and Rogers (1985: 29), the groundwater recharge has to be and can be substantially increased. It is estimated that, at present, out of the total 67 mham of groundwater, only 13 mham is utilised while 45 mham becomes river flows and the remaining 9 mham goes into raising of the water table and loss of water from the soil both by evaporation and the passing off in the form of vapour from such living bodies as plants.

While nothing much can be done about such process of the hydrological cycle as evaporation and percolation into the soil, the current availability of 180 mham of surface flows can be analysed in terms of its access, control and development.

Before undertaking this analysis, let us also say a few words about the factors of flood and drought in India. Every monsoon season we read reports about the catastrophic occurrences of droughts and floods in different parts of the country. They indicate the wide range of seasonal and spatial variations in water resources of India. Floods cause damage to crops, houses, property and loss of human and animal population. High floods destroy railways, roads, communication lines and public utilities. In this way, they destabilise economic activity and also socio-economic and political relations.

Similarly, droughts also adversely affect the population. Droughts mean extended periods of sub normal precipitation. Their impact depends very much on the people's adaptation of their environment. In India, nearly 16 per cent of the total area of the country is drought – prone and about 11 per cent of the country's population is directly affected by drought conditions (see Saint 1988: 129-137; Murishwar and Fernandes 1988; 162-178).

Last but the least is the issue of water pollution. Whenever water is taken away from its original place and put to domestic, agricultural and industrial use, and later when the used water is returned to a water deposit, we face the large-scale problem of water pollution. Due to massive utilisation of water for agriculture/industry and rise in population at the same time and developmental activities, we are likely to face the problem of water pollution along with the age-old problems of floods and droughts.

Let us to back to our main focus, and examine how the availability of 180 mham of surplus flow is utilised for sustaining life in general and the Indian agrarian economy in particular. In a nutshell, we need to find out if availability means access.

Activity 1

Try to identify, on a map of India, the rivers which flow into India from the neighbouring countries situated in the Himalayan watershed. Write a short note of about 250 words about the course of these rivers.

26.2.2 Reduced Access

According to the Sixth Five Year (1980-85) Plan Document (1981), only 10 per cent of the rural population had access to safe drinking water, and only about 30 per cent of the cultivated land could be irrigated. Out of 123 million hectares of net cropped area, about 70 per cent still remains rainfed. Even with more development in the sphere of irrigation, experts estimate that at any point of time 50 per cent of India's cropped area will remain under the rainfed farming system. Hence, the water management and policy would have to ensure access to water by the farmer surviving on the rainfed system. As a matter of fact, access to water resources by the majority has considerably decreased for the following reasons:

- i) The groundwater table has decreased and the small farmers can afford only open wells and shallow village tanks most of which have dried up as a result. Any lowering of the groundwater table thus deprives them of access to irrigation.
- ii) The common water resources of villages that were carefully maintained till a few decades ago are neglected today. This deprives the small farmers of the water they require to ensure at least one crop, and deprives the family of water for domestic use. In fact, nearly half of the villages in India do not have a source of safe drinking water. Moreover, it is estimated that 70 per cent of the river water in India, which is used for human consumption, is polluted. Several thousand springs dry up every year.
- iii) Environmental destruction has disturbed the country's water balance. Droughts and floods are recurring more frequently and with higher intensity. In other words, while the availability of water for irrigation may have increased for the big farmer, it has not made much of a difference as far as access to it by the majority is concerned. This resource, like most others, seems to be controlled by a few, and more and more of it is monopolised by the medium and big farmers. (CSE 1987).

In this unit, we are looking at the process that has resulted in this situation and its consequences for the majority. It is in this context that we shall study the National Water Policy, 1987 and see up to what extent it deals with this situation. In order to understand the two points, we shall first study the water management systems in pre-British India and then discuss the water policy in India during the colonial and contemporary period. Before going on to the water management systems, please complete the exercises.

Check Your Progress 1

- i) Mark True or False against each of the following statements:
 - a) The increase in the number of dams has ensure equal access to water for every citizen of India. (True/False)
 - b) Small farmers have less access to water than in the past because the ground-water level has gone down. (True/False)
 - c) The drinking water is easily available in all the villages. (True/False)
 - d) The village tanks are not maintained properly. (True/False)

ii) Why do floods and droughts occur so often in India? Use one line for your answer.

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26.3 WATER MANAGEMENT SYSTEMS IN PRE-BRITISH INDIA

In this section, we first discuss the various forms of water management systems in India. Then we explore the possibility of water being treated as a common property in ancient India. This discussion is followed by the finding of limited access to water by common people. Next, we examine the nature of people’s participation in the distribution and maintenance of the resource.

26.3.1 Various Water Management Systems

In India, the systems of water management themselves differed from place to place because the precipitation varied from the east to the west. Eastern India has very high rainfall with Chirapunji in the north-east having the highest rainfall in the whole world. The annual precipitation goes up to nearly 4,000 mm, in some parts of the north-east, diminishes gradually as it comes westwards till it reaches about 800 mm a year in Rajasthan. Most parts of India have an annual rainfall of 1,000 mm. or less, the average for the country being 1150 mm.

Secondly, most of the annual rainfall is within a few months of the monsoons. As a result, for as many as eight months most of India has to depend on water that is stored in tanks, bunds, wells and streams. Consequently, the maintenance of these sources and equitable distribution are crucial for the survival of the communities in the rural areas (Sen Gupta 1991: 35-37).

Most parts of India are different from countries closer to the equator, for example the Philippines, where rainfall is more or less equally distributed throughout the country and every month there is some rainfall. This enables small rivulets to remain operational throughout the year. So in the Philippines , cooperation is mainly around distribution of water and maintenance of the distribution system, mainly canals. In India, on the contrary, cooperation has to begin in ensuring the very storage of water in tanks, bunds and wells etc., which are the main source in dry months. Nature has provided a cushion against this uneven availability through the forest that hold back the monsoon water and release it slowly into rivers, streams and groundwater systems. People have designed storing mechanisms through wells, ponds and tanks. In India, therefore, traditions of water management revolved not merely around distribution but also around the maintenance of the storage facilities. This has led to a peculiar pattern of access to water by various sections of society in India. Let us look at its peculiarities. It is peculiar because access to water is, like other resources, monopolise by powerful groups of society. But, because water in an essential element for human survival, it has to be made available to everyday. This is why we come across various mechanisms which ensure some availability of the resources even to the poorer and weaker sections.

26.3.2 Water as a Common Property

Archaeological evidence and historical records show that there existed a number of waterworks in India for providing drinking water and irrigation. They were of varied sizes, from small wells and tanks to big canals. In India, the technology of building small reservoirs with the help of earthen dams is quite old, and both in the northern and southern parts of the country tank irrigation was quite widespread.

One may perhaps speculate that in ancient India, water was, by and large, considered to be a common property. In other words, it belonged to the community, and individual could use it according to their needs. But this should not lead us into believing that in ancient times, every user had an equitable share of this resource, and participatory management of water was the tradition before the coming of the British. We do not have any evidence of this ideal state of affairs. All the same, one can perhaps argue that the concept of common property and its community character was maintained through sacredness attached to water.

Such sacredness is not specific to any one religion and can be located in almost every faith. Jews and Muslims think of it's a symbol of new life and Christians use it in the ceremony of baptism as sign of freedom from sin. The Hindu tradition of *gangajal* is well-known. Most tribal communities speak of divine presence in water. All these facts show that through the mechanism of attaching sacredness of water, the principle of ensuring its access for the use of common people was enunciated. We may also argue that the very fact of the existence of such a mechanism indicates that water was not in reality accessible to everybody, and, as it is a vital component for one's survival, it has to be made available by other means. This was done by imposing religious sanctions and by turning the giving of water to the thirsty into a pious and merit-earning act.

The concept of water being a common property does not necessarily imply that it was an open access resource. Among most tribal communities, resources such as water and the forest produce have traditionally been regarded the common property of the group, and its members have an open access to them. But even among the tribals not all tribal communities around the world today observe this as a rule. Many tribal groups even in India are today divided into high and low sections and sub-section, and also access to resources is among them inequitable. But that was not their tradition (Fernandes, Menon and Viegas 1988: 224-228). Let us discuss in the next sub-section the case of the caste communities and examine the access to water among the different castes in India.

26.3.3 Limited Access

As different from the traditional tribal village, most caste villages ensured access to this resources only to the powerful, and excluded the weaker sections. The control and management of water resources was largely limited to the land-owning groups which were also the powerful castes in the villages. The low castes and other landless categories were excluded from its management. There certainly was equitable distribution among the land-owning families. But those who did not own land and other assets, did not have any power in the village and were excluded from decisions concerning water management and hence also from equitable access to the resource. Secondly, the same source

of water was normally used both for drinking and irrigation purposes. The housewives were responsible for ensuring regular supply of water for domestic consumption while men occupied themselves mainly with agriculture and, as such, thought of water mainly for irrigation. Social organisation, including those dealing with water management, were controlled by men. As such, greater participation was ensured in the management of water for irrigation and much less organisation was involved in water meant for domestic consumption (Sen Gupta 1991: 119-120)

In essence, one cannot really call it equitable distribution as can perhaps be the case with the forest produce in the tribal tradition. Caste villages in India are an alliance of many communities with unequal power. Assets are owned by the more powerful castes and most decision-making is in their hands. Consequently, they ensure that there is equitable distribution within their own caste but not to the others. Moreover, most social groups in India are male-dominated and women's point of view is not always taken into consideration. The limited access to water was symbolic of limited access to other assets and to power in the traditional upper caste male-dominated Indian villages. Thus we can say that it was a common property, but not of the whole village. It was the common property of the powerful castes.

At times a few powerful individuals, even from among these dominant castes, tried to gain exclusive control over this resource. Tanks and irrigation resources were built by feudal lords, and emperors for their exclusive use. But such efforts as monopoly by a few individuals were not specific to water alone. They also enclosed some forests and other common properties for their personal use.

26.3.4 Participation in Distribution

As mentioned earlier, in most cases the same source of water was used both for domestic purposes and for irrigation. Both needed social mechanisms for equitable distribution. Relatively little is known about the social mechanisms for equitable access to drinking water.

When it comes to irrigation, around 20 large dams built in the Mughal era are in use even today (CWS 1990). The best-known pre-British irrigation system is the weir on the Cauvery known as the Grand Anicut. It is in use even in our days and in its heyday it must have irrigated around 2,40,000 hectares of land. In Uttar Pradesh too there is a fairly good canal system coming down from the Mughal times. These dams and canals were subsidised by the State and a distribution system was established. But in most cases the exact nature of the organisation is now known.

What is known is that most irrigation was from tanks, bunds, ponds and wells and in some cases from stream. A list in the 1880s shows that there were at least 32,000 tanks in the ryotwari areas of the Madras Presidency alone, and many more in its zamindari areas. There were similar tanks also in other parts of India. These tanks and many canals were managed by the "village irrigation community", i.e. the users' organisation. This participatory management ensured access to the users' but may have perhaps excluded the less powerful. It is estimated that around 7 million hectares were irrigated by tanks and canals before the arrival of the British as against 40 million hectares today.

There is a difference in the type of tanks in different parts of the country. By and large, the tanks in Western India, particularly in Gujarat and other areas

away from the coast are relatively small and used by five or six families. There are definite rules recognised by the village panchayat for these families to share their water. Since most of these tanks are refilled by springs, local regulations ensure that after every family uses it, it is left free for water to refill in a course of several hours.

In other parts of India, the tanks are much bigger, often irrigating more than 100 hectares and in some cases two or three thousand hectares. Consequently, water from one tank may be shared by more than a hundred families, sometimes from several villages. Acceptance of the rules of distribution by all of them and mutual cooperation have been coming up recently, particularly when some villages want to grow more hybrid varieties of rice or commercial crops that need more water. There are cases where some bigger farmers appropriate for themselves a bigger share of the resource than is their due. There have also been inter-village conflicts, because many of these tanks are inter-linked, and if one village neglects their maintenance or uses more than its share of the resource, its impact is felt by the others.

The traditional method of ensuring equitable distribution of water differed from place to place. Most of Tamil Nadu had a functionary, called **neerpaichy** in some places or **madai kudumban** in others to supervise the allocation and distribution of water. The **neerpaichy** usually belonged to a low caste that did not own land. Consequently, he did not have any vested interest in getting a bigger share for himself. He was, in practice, an employee of the village to ensure that water flowed according to the plan worked out by the committee. Since he had to be paid by all the families, he had to ensure that all of them received water according to this plan. In parts of Andhra Pradesh the **neerpaichy** was called **neeru kattudar** and was supervised by a **tennadeda**. There was an employee of the village and was paid in kind by the farmers, while the **tennadeda** represented the farmers to ensure proper distribution (Sen Gupta 1991: 97-120).

Such control was essential in water shortage regions like Tamil Nadu and Andhra Pradesh. On the other hand, in areas like Gaya, in Northern Bihar, where there was an abundance of water, such close supervision was not needed. The farmers had to ensure only the maintenance of the irrigation system and not its distribution, which was not a problem.

Activity 2

Find out if a traditional water distribution and maintenance system exists in your region or somewhere known to you and visited by you. If you have not known about such a system, interview an elderly person who is above 60 years of age. She or he may be able to tell you about it. Basing on any of the above sources of information, write a note of about 250 words on traditional water distribution and maintenance system in pre-British India.

26.3.5 Participation in Maintenance

For distribution to be meaningful, the water resource had to be refilled through regular rains and maintenance of the tanks. The main part of maintenance was desilting the tank every year and in some cases rebuilding its bunds in order to ensure that it retained water. This was done in every region by creating in people a vested interest in the silt itself in such a way that they had to desilt the tank in order to meet many of their other needs.

To begin with, a festive day was declared once a year in most communities, for all the villagers to come together and catch the fish in the tank just before the desilting season. After this followed the desilting season. Every region of the country found a definite use for the silt thus collected. In most part of the South, silt was used as manure for the fields. In many parts of interior Karnataka, the only manure that a coconut palm gets annually is one cartload of silt from the village tank. And in these areas coconuts are the main source of income for the people. Consequently, all the villagers had a vested interest in desilting the village tank since their livelihood depended on it. In Bengal and most of the East the desilting season coincided with the house repair and house building season and preceded the marriage season. The silt was, therefore, use to repair the existing houses in the village and to build new ones for the couples that would need them after their marriage (CSE 1987).

One should add, however, that neither the share of the benefits nor of the work was equitable. Much desilting work was done by the landless agricultural labourers. But they did not get much benefit out it other than drinking water. Even this benefit was denied to those who were known as untouchables. They were not allowed to draw water from the main tank reserved for the upper castes. They had to go to pond that was rarely well maintained since the powerful sections in the village did not have a vested interest in it.

Briefly, though there was participation in the distribution and management of the water resource, access to it was limited to the powerful. Those who did not have the same power, such as women, even those belonging to the powerful castes, and the landless from the low castes, had only limited access to it. One can still argue that as long as water remained a community resource, in some form or the other, its distribution to everyone was ensured, though it was not necessarily equitable for all the communities. In order to study changes in this situation, we need to look at water policy in India during both the British rule and the contemporary period. This will be the focus of the next section, .i.e. 26.4.

Check Your Progress 2

- i) Mark whether the statements given below are True or False.
 - a) The irrigation systems began only with the coming of the British. (True/False)
 - b) The main source of irrigation before the arrival of the British was tanks. (True/False)
- ii) For each of the following statements select the correct answer out of the option given below.
 - a) Before the arrival of the British most irrigation system were managed by
 - 1) the State
 - 2) all the landowners
 - 3) committee of users.
 - b) The irrigation system evolved a management which paid attention to
 - 1) only irrigation waster distribution
 - 2) drinking water and irrigation
 - 3) only drinking water.

- c) The pre-British irrigation system ensured equal access to water by
 - 1) men and women like
 - 2) all the villagers
 - 3) the land-owning castes alone.
- iii) Describe, in about seven lines, the traditional water distribution and maintenance systems in India.

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26.4 WATER POLICY IN THE COLONIAL AND CONTEMPORARY INDIA

As far as access to water by the majority is concerned, the water policy in India appears to benefit the powerful and the rich. During the British rule, this was in favour of the imperial powers. Later, after Independence, the development planning evolved strategies for increasing productivity, which in turn, mean major benefits of development going to the rich and the affluent.

26.4.1 The British Policy

The water policy of the British was limited to the aspect of irrigation. One cannot state with any certainty that they had a policy concerning drinking water. The irrigation policy itself was closely linked to the British land settlement system which was mainly for revenue and not for production (see Unit 25). The Permanent Settlement of 1793 which was implemented in most of Eastern India, was to ensure permanent revenue to the British. Hence the land revenue was fixed once and for all. As a result, the Government had little interest in encouraging irrigation as such. It was left to the Zamindars. However, the zamindar was for all practical purposes only a tax collector who did not have an interest in developing the land under his jurisdiction. The tenants could not invest much on their land since they have no ownership right. Whatever the production, 50 to 65 per cent of the produce went to the land land-owner, leaving no surplus to invest in the land.

However, when North India was annexed, the British found many functioning irrigation systems. Besides, based on the lessons of the Permanent Settlement of Bengal, they did not fix the revenue once for all. Hence, it was possible to maintain the canals and in some cases to extend them. In the South and West, smaller areas were annexed gradually and then joined to the Madras or Bombay Presidency. The land settlement in these areas was different from that of the East and the North. Instead of Zamindari (which gave land to the highest bidder who sublet it to the tenants), the State entered into direct contract with individual cultivators (ryots), who had to pay the rent directly to the Government. This

was the ryotwari system (Sen 1979: 9-12). The State had to intervene to ensure the maintenance of common resources like tanks and canals, since they could not be handed over to individuals. Besides, the Grand Anicut and other irrigation systems, already existing, had to be maintained. In Madras Presidency alone, more than 50,000 kilometres (km) of embankments had to be maintained.

To ensure this, the British formed a Department of Irrigation, as they would not recognise the traditional irrigation communities. However, in order to maintain the Grand Anicut, the British engineers had to learn indigenous technology as their engineering model was not useful there. Moreover, in order to ensure maintenance at a low cost and to learn the indigenous technology, they had to involve the local people. Hence, there was the possibility of a model with people's participation evolving in the South.

However, between 1860 and 1921, irrigation was declared a central (not a state or provincial) subject. During these years, irrigation in the North was taken over by the British engineers who viewed maintenance only as a technical problem, and did not think of either local technologies or the involvement of the people. During these years this model was imposed on the whole country. With this, focus shifted to what was considered "scientific management" of water, and access to the majority decreased. Also the involvement of the people decreased and the maintenance of the tanks suffered, though some maintenance continued since the people needed the tanks. Only a few of the more than 30,000 tanks suffered every year. But the effect began to accumulate, and the access to their source of water by small farmers began to be reduced.

26.4.2 Water Policy after Independence

With independence began what is known as the era of planned development. The industrial, land, forest and water policies had to be changed accordingly. Higher productivity was one of the principles on which all these policies were based. The Five Year Plans kept repeating that productivity and distributive justice had to be combined in national development. Drinking Water, Drought-Prone Area Development, Small Farmers' Development, became part of this double approach to water management.

As in other resources, so also in water, the policy reflects the pressure coming from different sectors. And where there is pressure from contradictory forces, there is often an inclination to choose the strongest. This had happened in the forest policy (see Unit 27), in land management (see Unit 25) and was bound to happen also in water management. Higher productivity was essential. Only 9 per cent of the country's cultivated area was irrigated in 1950, and it was important to increase the area under irrigation. This had to be done fast, and the method found was to build large dams. Moreover, other forms of energy, mainly electricity, were needed, and water had to be exploited for this purpose too.

In this quest for fast development, it was assumed that the Western model was the only one available. The technology was, therefore, imported and major dams were built in order to make the natural resources as productive as possible. Little effort was made to study indigenous systems and to update them rather than replace them (see Gupta 1991: 140-145).

Slowly but surely, focus shifted towards the big farmers, since production had to be increased. This was done through the hybrid seeds, fertilisers, irrigation and mechanisation. Since dam water could not be made available to everyone, the farmers, were encouraged through subsidies to develop their own irrigation systems. Tube-wells became the norm for the farmers, who could afford them. India has a groundwater potential of 42.3 mham, and only 23.73 per cent of it is used. But what had happened in recent decades is overexploitation of deep tube-wells and neglect of shallow sources. The number of tube-wells bored has increased from around 5,000 per year in the 1950s to around 2,00,000 per year today. Because of this, the water table has declined in many parts of India and open wells have dried up. The Central Water Board had identified 645 blocks where this had reached serious proportions.

In Unit 27, you shall see that industrial clearfelling of forests had resulted in massive deforestation. Its consequences are soil erosion, droughts and floods. Many perennial streams like the Chos in the Shivalik Range in 'North-western India have become seasonal streams (CSE 1987).

26.4.3 Low Access to Water by the Majority

One finds that the overexploitation of water and of forests had combined to reduce the access to water by the poor and by women. Since many more tube-wells are bored, the water table has gone down considerably. Consequently, open wells and tanks are drying up. At the same time, also the village tanks previously maintained by the panchayat are now neglected. Most of the panchayat leaders are big farmers, who can afford their own tube-wells. As a result, they have lost the vested interest in the maintenance of the local drinking water and irrigation systems. As a result the poor do not have access not only to irrigation but also in many cases even to drinking water (Fernades 1988:92).

It was assumed by the policy-makers that productivity and justice could be combined. However, priority has been given to productivity and the policies have gone in favour of the big farmers. Around two-thirds of the India farmers are engaged in dry farming, and two-thirds of the agricultural development budget is devoted to irrigation and irrigation-based farming. This has resulted in a decline in overall agricultural productivity.

26.4.4 Displace: Who Pays the Price?

The big farmers and the better-off classes have gained access to water, and in the process, have deprived the small farmers, the poor and the housewives of access to the resource. The price of the big dams has been paid by the rural poor, particularly the tribals, the Scheduled Castes and other landless. They have paid the price in terms of their dislocation and consequent dispossession in the event of meager compensation by the state of their losses. The exact figures of the numbers of displaced are not available. But preliminary estimates indicate the around 140 lakh persons have been displaced by dams alone between 1951 and 1990.

The displaced are rarely the beneficiaries of the schemes. More than 40 per cent of those displaced by these schemes are the tribals, who form only 7.85 per cent of the total population of the country. Another 40 per cent are from the Scheduled Castes and other landless categories. None of them benefits from the dams and other development schemes that displace them (see Fernades and Thukral 1989 and Jain 1993).

It is not merely that they do not get the benefits of these schemes but also that their situation deteriorates. All the studies indicate that fewer than 30 per cent of the persons displaced by these schemes have been rehabilitated even 30 years after their displacement. Most of them are forced to rehabilitate themselves. Some of them do it by resorting to environmentally destructive practices, such as, cutting trees for sale as firewood. Many other migrate to the cities to fill the slums and are exploited further. A large number of them become bonded labourers. It is estimated that such bonded labourers form more than a quarter to the 5 million construction workers in the country (Fernades 1986: 269). Thus, those who pay the price of the development are deprived not merely of access to water, but also of their freedom and of their right to live as human beings.

Check Your Progress 3

i) “The British water policy alone is responsible for the low access to the resource by the majority.” Is this true? Use six lines for you answer.

ii) Link causes with effects

Cause	Effect
a) Sharecropping	1) Water management with peoples participation
b) Too many tube-wells	2) Groundwater level goes down.
c) Grand-Anicut to be maintained	3) Displacement, mainly of the landless
d) Competition between higher productivity and distribution justice	4) Need to lean native technology.
e) Major dams	5) Department of irrigation organised
f) Scientific management imposed on all	6) Policy favours big farmers who can produce more.
g) Tanks and canals to be maintained	7) Lack of incentive to invest on irrigation

26.5 THE NATIONAL WATER POLICY 1987: DOES IT INCREASE ACCESS?

In the introduction, we mentioned the National Water Policy, 1987. The point has come for us to examine it in relation to the monopolisation of the resource by the few. We first observe what the national policy has set out to achieve, then we find out what happens at the level of its implementation. In the end, we offer some alternatives which, we hope, do provide possible answers to the problem of reduced access to water by the majority.

26.5.1 Setting of Priorities

It is the context of the strengthening of those who were already strong and further marginalisation of the weak that one has to examine in National Water Policy, 1987. To begin with, the priorities it sets are as follows. It speaks of

- Drinking water
- Irrigation
- Hydropower
- Industrial use, in that order.

But the policy document states immediately that these priorities can be modified in particular regions, according to their needs. It also sets

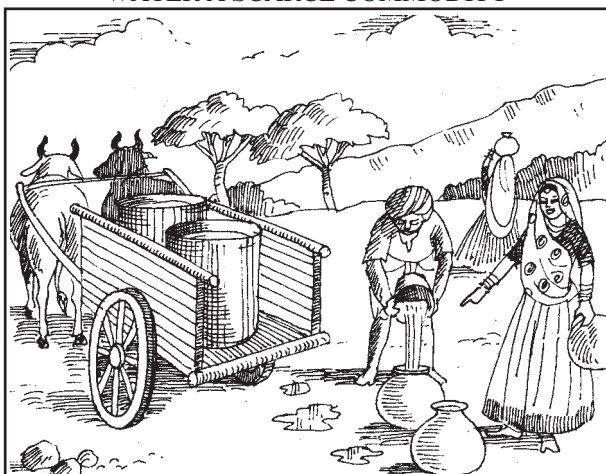
- a target of 1991 to provide adequate drinking water to the entire population
- that persons displaced by irrigation projects should be rehabilitated
- that in water management special attention should be paid to the needs of the Scheduled Castes and Tribes (see Fernandes 1988: 92-93).

26.5.2 Strategy for the Strong

When it comes to planning a strategy, it concentration seems to be primarily on irrigation and hydropower, i.e. on what the British called “scientific management” of water whose benefits have till now reached only to the powerful. The policy statement speaks of the need to exchange water between rivers, and to utilise the existing resources to the maximum. Not once are women mentioned in the statement though in the present division of labour in the country, they are responsible for ensuring the regular supply of water the family.

Similarly, focus is on irrigation dams, most of which will be in the forest areas, particularly in those inhabited by the tribals. While passing references are made to the need to give priority to the development of the tribals no concrete policy has been worked out either in this document or elsewhere for the rehabilitation of the displaced persons. Finally, the policy statement does not give any importance to dry and arid zones. Water utilisation, is, thus, only for those who can afford irrigated lands.

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26.5.3 Possible Alternatives

Alternatives to this situation of marginalisation are possible. Only the Western model of sophisticated technology and engineering models is so far taken as the norm in planning development strategies in India. Dams are thought of as the only possible source of water. Consequently, the tribals and other rural poor are displaced in order to supply irrigation water to the farmers in the coastal areas, to industry and for household consumption in cities. The following are some of the suggestions.

i) **Desalinisation of Water**

A suggestion is that as India has a 6,000 km. long coastal line, it should be possible to desalinate water for use in the coastal areas of even in its immediate hinterland. The present desalination technology is extremely expensive because it belongs to the 1950s. There is no reason why research should not be done on new low-priced technology for desalination which can solve the water problem of most of the coastal areas and several other regions in the hinterland.

ii) **Increase Use of Solar Energy**

Similarly, another suggestion is that most regions in India have 300 days of sunshine in a year. But the solar energy has only marginal importance in today's energy policy. The present solar technology is expensive. In fact, in 1988 the creation of the infrastructure for 1 megawatt (mw) of solar electric power cost Rs. 4 crores as against Rs. 3 crores for thermal plants and Rs. 2 crores for hydel power. But very little research is being done on solar technology meant for the new century. What we have belongs to the 1970s and 1980s. Instead of displacing more people and depriving the poor of access to water and to livelihood itself, it is important to invest on energy saving devices, such as, solar power.

iii) **Diversion of Polluted Water as Fertiliser**

The pollution of water, too, is preventable. The Industrial, as well as human waste is diverted to rivers and the sea, thus, polluting the water the human beings need for their survival. Instead, it can be treated and used as fertiliser, resulting in both savings of foreign exchange and unpolluted water. Quite a bit of the foreign currency wasted for importing fertilisers either in its finished form or as raw material can thus be saved while reducing water pollution.

iv) **Ban on Wastage of Water**

Much water that can be made available to the poor is wasted in the cities to water its gardens, to clean middle class houses, etc. Electric power is wasted for street lighting. Do not think that we are against watering garden, cleaning a house or lighting a street. All this is necessary and must be done. We suggest that it should be done in a more environment-conscious manner. One sees no reason why sewage treatment plants should not become the norm, why biogas thus produced should not light the city streets, the water cleaned from it used for watering gardens and for fields. Better implementation of anti-pollution laws can prevent industrial pollution. You would be interesting to inform you that the residential campus of IGNOU is having Swage Treatment Plant. Here all the used water is treated and thereafter used for the gardening and the horticulture purposes in a very big way.

v) **Watershed Management**

Afforestation schemes as part of the watershed management are crucial for increased access to water. Where this had been done, one has noticed a rise in the groundwater table. At G.R. Hally of Karnataka, for example, where 199 ha in a watershed of 314 ha were afforested, groundwater increased considerably and the irrigated area rose by more than 50 per cent. Water harvesting through a combination of soil conservation and collection of water in tanks built in areas with more than 500 mm of rain per year can, according to one estimate, harvest 90 mham of water. Experience in Sukhomajri near Chandigarh and other experiments in parts of Himachal Pradesh have shown that these tanks can be built at the cost of Rs. 5,000 per hectare irrigated. The comparative figures per hectares irrigated are Rs. 15,000 to 25,000 spent by major dams (Agarwal, D. Monte and Samarth 1987).

vi) **Construction of Small Dams**

There are also indications that a large number of major dams are utilised at only about 30 per cent of their capacity and their lifespan has been reduced by half, because of siltation of their reservoirs (Singh, Kothari and Amin 1992: 173-174). Instead of building more dams that displace people and destroy the environment, the capacity utilisation of these dams can be doubled by desilting their reservoirs and afforesting their catchment areas. Less destructive smaller dams are yet another alternative. It is possible to use indigenous technologies for these dams since local artisans have a tradition of building them. These measures can create many jobs in the locality instead of displacing millions and abandoning them without rehabilitation.

Activity 3

If the water policy does not provide an access to water by the manority, list, in an order of priority, possible alternatives to provide it. Select one of the alternatives which you consider to be appropriate to your region. Now imagine that you are a member of the committee responsible for implementation of water policy in India. Work out, in a note of about 300 words, how you would like to develop in your region the alternatives selected by you.

vii) **Water as a Community Resource**

Many other alternative can be thought of. What is important, is to fix one's priorities and get away from the policy of the further strengthening the already powerful. Water has to be thought of as a community resource and not as individual property. Restrictions have to be put on its overexploitation by a few powerful individuals at the cost of the majority. The vested interest of big farmers and building contractors seems to prevent these alternatives. Efforts to control overexploitation of water by a few individuals have failed in most cases. For example, in 1975 a bill introduced in the Gujarat Assembly declaring water a common resource whose use by individuals should be regulated for common good. This bill was not allowed to be passed into law, and no effort has been made since then to reintroduce it either in Gujarat or in any other state (Bhatia 1988: 156). It is important to take decisions concerning common resources, according to the criterion of Mahatma Gandhi: "Recall the face of the poorest and the most helpless man who you may have seen, and ask yourself, if the step you contemplate is going to be of any use to him."

Check Your Progress 4

- i) Why has the National Water Policy, 1987, not increased the actual access to the water resource by the majority? Use two lines for your answers.

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.....
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.....

- ii) Should the national water policy statement mention the role of the women in the division of labour in the context of supply of drinking water? Use three lines for your answer.

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.....

26.6 LET US SUM UP

In this unit, we discussed at first the present situation of water management in India, and noticed that access of the poor to this resource is much less than that of powerful. To understand this, we went back to the water management systems in pre-British India and studied British and post-independence water policies. We noticed that water was relatively speaking more of a common property before the British evolved their revenue-based policy. However, unlike other resource like the forests, even in pre-British times, access to water as a source of irrigation was limited to the powerful land-owning groups. Water distribution and maintenance were participatory, but only as far as the asset owning communities were concerned. The assetless and the weaker sections were excluded. Even this participation was later reduced by the revenue-based British irrigation policy.

The trend has been further strengthened by the post-independence era of planned development. Focus has been on maximizing the productivity of the natural resources. In order to increase power generation and the area under irrigation, concentration has been mainly on the big dams that have displaced people particularly from the weaker sections. The beneficiaries are the already powerful categories.

26.7 KEY WORDS

- Common Property Resource (CPR)** : An asset belonging to the whole community which it uses with definite rules of distribution in such a way that every user gets his/her share.
- Evapotranspiration** : Evaporation of water through transpiration by plants.
- Hectare Metre** : 10,000 cubic metres.

- Permanent Settlement** : The settlement of the land-ownership pattern carried out by the British in the Bengal Presidency in 1793. In this system, a whole area or several villages were auctioned to the highest bidder (zamindar). The zamindar was to pay a fixed amount of the revenue to the government every year. He collected this tax by subletting the land to the tenants.
- Precipitation** : Fall of rain, sleet, snow or other forms of water.
- Ryot** : The cultivator (ryot) who entered in direct contract with the government and paid taxes to the State instead of being a tenant of zamindar. This system was practiced, mainly, in the southern regions of India.
- Ryotwari** : The tenant of the area where the ryots entered into direct agreement with the government..
- Sharecropper** : The tenant to whom the zamindars in the Permanent Settlement area sublet their land not at a fixed rent but a share of the produce. The share ranged from 50 per cent to 75 per cent of the harvest.
- Transpiration** : The process of water passing off in the form of a vapour from such living bodies as plants.
- Watershed** : It is a natural geographical unit drained by a natural stream within a catchment area with the upper boundary marked by a ridge line and the bottom boundary extending along the valley up to a point beyond which the lands do not require immediate attention. The size of a mini-watershed varies from 100 to 500 hectares and may be inhabited by 100 to 300 families.
- Weir** : Wall or barrier across a river to control the flow of water. Fence of stake or broken branches in a stream as a trap for catching fish.
- Zamindar** : The highest bidder to who the whole area was given at the Permanent Settlement. He sublet the land to tenants and sharecroppers.

26.8 FURTHER READINGS

Agarwal, Anil, Darryl D'Monte and Ujwala Samarth (eds.) 1987. *The Fight for Survival: People's Action for Environment*. Centre for Science and Environment: New Delhi.

CSE, 1987. *The Wrath of Nature: The Impact of Environmental Destruction on Floods and Droughts*. Centre for Science and Environment: New Delhi.

Fernandes, Walter and Enakshi Ganguly Thukral (eds.), 1989. *Development, Displacement and Rehabilitation: Issues for a National Debate*. Indian Social Institute: New Delhi.

Sen Gupta, Nirmal, 1991. *Managing Common Property: Irrigation Systems in India and the Philippines*. Sage Publications: New Delhi.

26.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- i) False
- ii) True
- iii) False
- iv) True

Check Your Progress 2

- i) a) False
b) True
- ii) a) 2
b) 1
- iii) Traditionally, the same source of water was used both for domestic purposes and for irrigation. Both needed social mechanisms for equitable distribution. Little is known about equitable accounts for drinking water, while some historical monuments provide the evidence of wide-scale arrangements for irrigation. Large dams were built during the Mughal period and we find remains of many tanks, bunds, ponds and wells. Some are still in use. The village Panchayat decided rules for governing use of water from these sources. Equitable distribution was ensured by appointing official to supervise operations involved in distribution of water for irrigation fields.

Check Your Progress 3

- i) The British water policy is partly responsible for the lack of access to the resource by the majority. It is clear that in India the water policy during the period of post-Independence has also resulted in the lack of access to water by the majority. Even now, the powerful and the affluent have relatively more access to almost all resource including the water resources and the poorer and weaker sections of society are deprived of even the minimum access to as essential a resource as water.

ii) **Link causes with effects.**

a=7; b=2; c=4; d=6; e=3; f=1; g=5

Sharecropping	-	Lack of incentive to invest on irrigation
Too many tube-wells	-	Ground water table declines
Grand Anicut to be maintained	-	Need to learn native technology.
Competition between higher productivity and distributive justice.	-	Policy favours big farmers who can produce more
Major dams	-	Displacement, mainly of the landless.
Scientific management imposed on all	-	Water management with people's participation discouraged.
Tanks and canals to be maintained	-	Department of irrigation organised.

Check Your Progress 4

- i) The National Water Policy, 1987 has, **on paper**, accepted the need of access to water by the majority. At the level of implementation of the policy, even now most water management is in the fields of providing irrigation and hydropower. Both give benefits to the already powerful and rich.
- ii) Both in rural and urban areas, women are, by and large, responsible for housekeeping which requires an adequate supply of water for domestic use. Women are, therefore, directly linked to ways and means of acquiring water for domestic use. It is then natural to expect that the national water policy should recognise and mention the special role of women in the area of use of water. Further, it should also spell out how women can get better access to water, without being forced to carry it on their head from far off sources of water to their dwellings.