CHAPTER VI
FINDINGS AND SUGGESTIONS

Water undoubtedly is one of the basic necessities of human and animal lives on the earth. Agricultural development is also dependent upon the availability of water. Water relatively is a scarce resource in relation to the requirements and needs of the various nations. It is alarming to note that about 97 per cent of earth’s total water resources is found in the oceans and the rest 3 per cent is found on the ground. The surface water of dams, lakes, rivers and springs constitutes only a small fraction of earth’s water resources and this is available for drinking as well as irrigation purposes.

Sustainability and development of water resources has always been a critical problem as well as a challenging task for Government of India. Consequently, with the advent of economic planning, efficient management of water resources has attained great importance in India. Though economic planning has completed more than five decades yet supply of water in many rural as well as urban areas of the country is inadequate and erratic due to frequent power cuts and other management problems such as, absence of accountability, effective controls etc. There is also little freedom in decision making to agencies such as Jal Nigams, Jal Sansthas, Water Works Department, Irrigation
Department etc. which are involved in providing water for drinking as well as for irrigation purposes to all towns and villages of the country. Moreover, these institutions also suffer from many implementation barriers due to excessive interference of bureaucrats and politicians. All this calls for advance planning for sustainability and development of water resources in the country.

It is in this background, the present study entitled, “Sustainability and Development of Water Resources in U. P. with special reference to Bulandshahr District” has been carried out. The scope of study is confined to urban and rural areas of Bulandshahr District. To the best of my knowledge, this study is first of its kind in nature which provides factual information about the sustainability and development of water resources in Bulandshahr district.

The entire study has been divided into six chapters. The first chapter highlights the concept of sustainability and development of water resources in a general way. In order to understand the concept of water resources, some light has been thrown on natural resources also which include Land resources, water resources, fisheries, mineral resources, forest resources, marine resources, climate, rainfall and topography. Natural resources may be classified in two categories; namely renewable and non-renewable. Metal, ores, coal, clays, stones, oil and gas are some non-renewable resources, while ground water is an example of
renewable resources because a flow is available to replenish the stock of water. The countries which possess a sizable and diversified natural resource endowment are in a better position to achieve a rapid economic growth. The utilization of these resources depends upon technological advancement, which offers new alternatives for the use of the natural resources in satisfying human wants. New technological devices have enabled us to mine the metal or to explore the oil and gas or to use the ground and surface water for irrigation purpose at a faster rate. Availability of natural resources depends upon their rate of utilization over time and our capacity to find out new substitutes for non-renewable resources and our capacity to increase the flow of renewable resources.

Human sufferings on earth are caused by lack of several factors such as food, clothing, shelter, and water. Water is the most essential resource to sustain human life on earth. We can live for weeks without food but only a few days without water. Water is a scarce resource, it covers almost 75 per cent of the total earth surface in the world. About 97 per cent of the earth’s water is found in the oceans. It is salty and hence can not be used for drinking and irrigation purposes. Out of remaining three per cent of total water on the earth, two per cent is tied up as iceberg in the polar regions and remaining one percent, a considerably low quantity is trapped in reservoirs. The surface water of rivers, lakes and springs constitutes only a very insignificant fraction of the total water resources of the
earth. This is used by man for drinking purposes. The water is also vital for realizing full potential of the agriculture sector and the country’s economic development. Sustainability, development and efficient utilization of water resource, therefore, assumes greater significance.

It is therefore, important to manage water resources judiciously with a view to eliminate the cycle of shortage (droughts) and excess (floods). It will ensure a balance in the availability of water. Floods and droughts are regular features all over the globe, these call for a fresh look at the strategy adopted so far towards the flood control and drought management to ensure sustainable development of water resources.

The second chapter is a survey of literature and hence is related to various studies conducted so far in the field of water resources development. It has been concluded that most of the researches in the field of water resources are confined to general aspects related to water resources management and planning but so far no specific work has been done to evaluate the sustainability and development of water resources in Uttar Pradesh with special reference to Bulandshahr District. It is in this background the study undertaken by me on the theme of water resources will not be an addition to what has been attempted in the various studies but will also provide an opportunity for highlighting recent
happenings in this particular field. Third chapter has examined the sustainability and development of water resources in India, just as to prepare the background for the study of sustainability and development of water resources in Uttar Pradesh with special reference of Bulandshahr District. It has been observed that India is one of the wettest countries of the world. Water is available in plenty in our country. But less is available for drinking and irrigation purposes. According to a study of World Health Organization (WHO) less than 25 per cent of our population, out of about one billion people, has access to either treated or partially treated water. India has completed 54 years of independence yet a vast majority of Indian masses in many rural as well as urban areas still drink polluted water. Thousands of people die in India due to floods but even than most of the regions are running short of water. Water supplies are being drawn down by increased use from expanding industrial production, rising living standards and growing population. Water supplies in India are being siphoned away from farmlands to meet rising urban and industrial demands. Studies estimate that about 60 per cent of drinking water supplies in many cities is lost either by illegal taps into the systems or leakage through rusted pipes. It has been observed that throughout the developing world an estimated 20 percent of urban families buy water from vendors because they have no access to municipal systems of water supply.
To assess the extent of water resources in India, M.C. Chaturvedi in his research project has placed all the major, medium and minor river basins in 18 groups. The total flows of surface water are estimated at 66.60 million hectare meters (mhms). In addition, 26.10 mhms of ground water are expected to be utilizable, leading to a total of 92.70 mhms utilizable water. There is a vast inter basins variation in the availability of the water resource. The water per hectare of culturable land varies from 8.64 cms in the basin of Luni and other rivers of Saurashtra to 379 cms in the basin of the west flowing rivers below Tapi.

Another estimate of water resources in India was made by B.S. Nag and G.N. Kathplia for the year 1974 and also for the year 2025. According to their study, the total rainfall is estimated at 400 (mhms) and this is distributed in three important ways, 70 mhms evaporates immediately, 215 mhms percolates into the soil and helps soil moisture and recharges ground water, and finally 115 mhms runs off into surface water bodies like rivers. Water utilized in 1974 was just 38 mhms, which is expected to rise to 105 mhms by the end of the year 2025. It has been estimated that irrigation accounts for 92 per cent of the total water utilized and domestic and industrial uses account for the balance of 8 per cent. With the growth of population and increase in demand for products of agriculture and industries, the demand for water will also increase.
The provision of safe drinking water to the Indian masses has been of greater significance since the inception of economic planning. This is a basic requirement of human and animal lives and without this no improvement in the living standards of Indian society can take place. Despite concentrated efforts during the successive five year plans towards the provision of safe drinking water to every segment of Indian population, much is still required to be done. In this task, the active cooperation of the general public, Non-government organizations (NGOs), economists, social scientists, scientists, engineers and above all politicians is vitally needed. The state governments who are the implementing agencies for water supply and sanitation programmes should pay attention to the organizational and administrative structures at various levels, in order to utilize the plan funds more efficiently and productively. The organizational pattern for execution of water supply and sanitation schemes varies not only between different states but also within the state itself in the case of many states.

After examining the sustainability and development of water resources in India, it was of paramount importance to study the sustainability and development of water resources in Uttar Pradesh which is the main coverage of the present research project. The fourth Chapter therefore, deals with the sustainability and development of water resources in Uttar Pradesh. It has been observed that sustainable development of water resource in UP has been one of
the major objectives of economic planning of U.P. Government. In every five year plan massive investment has been made to develop the state’s water resources. Even than in most rural areas of the state, people depend on rivers, lakes, streams, wells and ponds for obtaining water for drinking and washing purposes. In many areas this water is highly contaminated and unsafe for human consumption, and some times available at great distance. It has been observed that in cities and towns where piped water supply has been introduced, death rate due to gastroenteritis, viral fevers, cholera and dysentery, etc. has gone down considerably. In fact, there are more diseases which are water borne. Therefore, pure drinking water facilities and proper arrangement of sewerage are considered to be essential for the existence of a civilized society in the entire world.

Despite that many places in urban areas and hundreds of villages of U.P. still have inadequate supply of drinking water on account of a rapid growth of population and faster pace of industrialisation. This requires need based planning for the supply of drinking water in rural as well as urban areas which ultimately requires massive investments for providing urban drinking water to achieve the pre-determined targets under the International Water Supply and Sanitation Programme.
The state government is committed to provide drinking water and sanitation facilities in the rural and urban areas and thus has laid the target of providing drinking water to the 100 per cent urban population. Although in urban areas the drinking water facility through pipelines is available in most of the towns, but the supply is not satisfactory. Still in many small towns the state water supply depends only on a single water tap and this requires large scale repairs and maintenance of the existing water supply system.

An indepth study of the sustainability and development of water resources in District Bulandshahr has been done in the fifth chapter of this research project.

At the very outset, it is important to note that availability of drinking water in urban areas of Bulandshahr is mainly through tube wells and hand pumps. Piped water supply through tube wells is available only in some areas such as Bulandshahr, Khurja, Sikandarabad, Anupshahr on regular basis but in most of the other areas piped water lines are found available but tapes are often dry. Many people have made their own arrangement in almost all urban areas of the district, since the Government arrangement is not suffice to cater the needs of is around six lakh persons living in the rural and urban areas of the district.
The position of rural areas in the development of water resources for drinking and irrigation purpose is also not uniform in all parts of the district. There are extreme variations in terms of provision of water facilities in the district. Consequently, in most cases, initiatives have been taken by the rural people also for the development of their own sources of water for drinking as well as for irrigation purposes which is evident from the fact that the number of private boring pumpsets and private tube wells has increased in almost all rural areas. At the same time, the areas which have political backing were benefited more as compared to other areas where the representative of public have taken virtually no interest in their constituencies.

Apart from this, while reviewing the schemes of Government of India and other bodies, it has been observed that the District Bulandshahr has been totally neglected. Not a single major project has so far been launched in the district for supply of drinking water, irrigation, drainage etc. Thus, it requires the attention of Central and State planners to take immediate steps to minimize the disparities in the provision of water for drinking and irrigation purposes as well.

To sum up, a number of steps should be taken up urgently in order to manage the water resources efficiently and effectively. Firstly, water resources have to be managed as a commodity in exactly the same way as any other resources. Secondly, the supply of water to consumers should normally be based on the principle of effective demand which should broadly correspond to the
standard of service, that the users are willing to maintain, operate and finance. Thirdly, to ensure that in urban areas, Municipalities / Local bodies are free to levy and raise appropriate user charges for drinking water and sanitation facilities in order to strengthen the financial position of the urban local bodies / Municipalities whereby at least the operation and maintenance costs, if not further development, become self-sustaining. Fourthly, in rural areas, water tariff may not be feasible in all places. However, wherever house service connection are given, it is suggested that appropriate water tariff is levied and realized whereby operation and maintenance becomes self-sustaining to the possible extent. Fifthly, the private Sector efforts for construction and maintenance of drinking water projects should be encouraged and mobilized to the maximum feasible extent. Sixthly, the local bodies, whether in rural or urban areas, should be made responsible for the operation and maintenance of the system installed with technical guidance from government agencies. Finally, appropriate links should be formed between water supply and environmental sanitation (solid and liquid waste management) in the planning of new programmes.

Moreover, the New Policy initiated in April, 1999 has asked the States to implement “Sector Reform” measures and a demand driven approach based on empowerment of village water and sanitation committee, 10% of capital cost
sharing and 100% sharing of O & M Cost by users etc. 20% of the Central Government funds would be reserved for States which adopt these measures.

The new strategy thus rightly relies heavily on the use of Central / States funding as a critical incentive to drive the sector reform process at both State and local government levels. As such, it is important that funding conditionality for disbursement of Central funds to State administrations, and from State administrations to Panchayat Raj Institutions and / or local administrations to Panchayat Raj Institutions and / or local administrations, be explicitly defined both in terms of conditions which must be met and activities for which funding can be applied. However, the impression gathered during Working Group discussions with the States (held between June and September 1999) was that the impact of the programme was yet to be seen. The Ministry has also not identified States which have introduced or have promised to introduce sector reforms. It is likely, therefore, that the 20% funds would again be distributed to the States on the basis of the fixed criterion with no emphasis on performance. It must be recognized that sector reforms such as improving capacity of the local people to manage water resources and to make them pay for the supply are politically or administratively not popular decisions. In the absence of requisite political and administrative will, it is likely that unpopular measures may not be implemented. The modalities of collecting water charges and the use of those collections should also be thought
out. So far in the rural areas, the Panchayats have relied too heavily on Central and State funding leading almost to spoon feeding and weak implementation capacity. For their capacity building they too should get into the mould of collecting user charges, which the panchayats so far avoided, because it has become clear that water can longer be considered a free resource. Water must be priced but needs to be priced differentially. The price of water has to be graded to ensure that this resource is available to all sections of society, not only on the basis of how much it costs and how much financial value it creates but also for the human and social impact it generates. Those, such as villagers or slum dwellers vulnerable to pathogens and illness, who need to use more of it should be encouraged to have greater excess than their purchasing power now allows. On the other hand, the price of water for industries and rich farmers must be much higher than it is today to discourage the awful and wasteful use they currently make of this precious resource. Another fact which is worth mentioning here is that the water scarcity in India is not only a problem of quantity, but more often of quality, Industry, Agriculture and other water intensive activities must now be designed in the light of their Impact on the hydrological cycle as much as on their economic and development implications. Unless new approaches to water management are developed that take into account the uncertainties, future of the water resources availability will be very poor. Besides the intensive research in this particular field, existing supplies should be used more efficiently and new
supplies must be developed. Long term management strategies may also include regulations and technologies for directly controlling land and water use and improvements in water management operations and institutions. Government at all level should re-evaluate legal, technical and economic approaches for sustainability and development of water resources in the light of possible climate changes.

Finally, what human need could be more basic than the need of water? Next to oxygen, it is surely one of the substances most critical for human survival. Water is also the basic requirement for agriculture, industry and many other economic activities – not to mention domestic ones such as cooking, washing and personal hygiene. Lack of clean water is, in one way or the other, the single most important cause of human discomfort, disease and early death. Hence, in the light of these ground realities, apart from aforementioned remedial measures, it is further reiterated that the concerted effort of Government, Non-Government Organizations (NGOs), Scientists, Social Scientists, Engineers, General Public and above all local politicians as a whole is the need of the hour for sustainability and development of water resources in U.P. State in general and Bulandshahr District in particular to cope with the future requirements of water for drinking as well as for irrigation purposes.