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A STUDY OF WATER MANAGEMENT IN SUSTAINABLE DEVELOPMENT

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ABSTRACT:

Water is a very important natural resource for human life. Water used for drinking and various industries has to be purified. Care has to be taken to prevent water pollution. The usefulness and quality of water depends on water management. Proper planning of river basins, afforestation of watersheds, and keeping watershed areas clean, etc. are included in the water system. Groundwater is used by properly processing it. It is necessary to store water during the rainy season and use it as needed when there is water shortage. Water should be used by reducing the salinity of sea or surface water. If water management is not proper, water disappears due to evaporation. From the water that falls after rain to the water reaching the ocean, that is, at every level of the water cycle, it is necessary to take care of water. A system is also required to generate energy from water. For this, dams are built at appropriate places and reservoirs are created. In this way, water management is done scientifically and sustainable development can be achieved.

Keyword:- Water Management, Sustainable Development, water resources, watershed.

INTRODUCTION

Water is the most valuable resources on the earth and an integral part of the environment. Its availability is indispensable to the efficient functioning of the biosphere. Settlement of most of the great ancient civilizations has been generally associated with a reliable and clean supply of water with convenient sources. Although water is very abundant on this earth yet it is very precious. Out of the total water reserves of the world about 97% is salty water (marine) and only 3% is fresh water. Even this small fraction of fresh water is not available to us as most it is locked up in polar ice caps and just 0.003% is readily available to us in the form of ground water and surface water.

There are some basic needs of human beings air, water, Food Shelter, health & education water is the most basic and fundamental need of every human being. So, water means life. There is 71 per cent of water on the earth surface. But there is only 2.5 per cent water is useful for human being which only came from the rain water.

Water resource is one of the precious resources and provides one opportunity to the live by the lives on the earth surface not only the human beings but also living things. The scarcity of the water is increasing day by day due to the amazing growth of population on one hand and vibrant economic activities on another hand. The lack of water management is also added cause to the scarcity.

Over use of ground water for drinking, irrigation and domestic purpose has resulted in rapid depletion of ground water in various regions leading to lowering of water table and

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drying of wells. Pollution of many of the groundwater aquifers has made many of these wells unfit for consumption. River and streams have long been used for discharging the wastes. Most of the civilization have grown and flourished on the banks of rivers but unfortunately growth in turn has been responsible for pollution of the rivers. Due to various misuse and abuses, even the existing water supplies are threatened and becoming less usable. Increasing use of fertilizers and pesticides in agriculture increasing discharge of toxic effluents from industry and sewage disposal into rivers has caused alarming increase in pollution of water. Sometimes the industrial waste water is used several times before it goes to the river and sea. In the light of the foregoing conceptualization of resource conservation, the conservation of water resource will mean its build-up, its rational use and its equitable distribution, in terms of public benefit.

RESEARCH OBJECTIVES:

1. To explain the concept of sustainable development
2. To study water management.
3. To provide information on irrigation, groundwater and watershed development programs for water management.

DATA BASE AND METHODOLOGY:

The data is collected from various sources, which includes both published and unpublished books, government publications and private publications. Data published by Government and non government agencies research organizations, research studies formed the source of secondary data. Collected data is processed and presented in the forms of tabular and interpretation.

Content Analysis:

Bhagavata Vikas: In 1983, the United Nations established the “World Commission on Environment and Development” (WCED) under the chairmanship of G.H. Brundtland (former Prime Minister of Norway) to protect the environment along with development. In 1987, the Brundtland Report was published by the United Nations and the WCED defined sustainable development under the heading 'Our Common Future'. “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

Water Management for Sustainable Development

In the water management, we face many challenges such as effective, efficient and sustainable watershed development programs, groundwater recharge, irrigation schemes for the recovery of limited groundwater for recharge and overall implementation of the groundwater law.

1. The carrying capacity of canals and distribution systems, water consumption in them and the time taken for flow, etc. should be studied scientifically.
2. To reduce the need for drinking and domestic and household water, agricultural water and industrial water by using water-saving technologies, processes and equipment.

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3. It is necessary to radically improve water control and regulation by automating and computerizing all types of water use and based on that, it is necessary to bring transparency, accountability and public participation in water management.
4. Unfortunately, benefit area maps that would be useful in modern water management in daily life are not available in most projects today. If maps with appropriate contour intervals and scales are prepared and made available to all on computers, accuracy will be achieved in water management.
5. Water storage should be done as close to the user area as possible; Piped water should be transported instead of open canals. Water distribution should be done in a fair manner and water use on the farm should be done in a modern manner.
6. Create a separate cadre for water management at the state level and have that cadre measure the area of water loss and carry out periodic maintenance and repair of all water schemes.
7. Amend the water act and implement legal awareness programs.
8. To raise the overall quality of discussion on water, people's representatives and opinion makers should be trained by organizations like Yashada and Valmi.
9. Government and private water industries should be started to prepare and maintain various types of gates and flow meters for water control and regulation.
10. It is important to complete projects, not just constructions.
11. Planning for drinking water. (Water purification system, water reuse, water tax policy etc.)
12. Undertake water conservation, water harvesting policy and watershed development program.
13. Consideration of water scarcity in the state (water basin-wise planning, planning of cities, industries and agriculture according to water availability, etc.)
14. Measures to increase irrigation capacity (repair of canals and dams, completion of stalled projects and planning of new projects, improvement in the management of the irrigation department etc.)
15. Changes in agriculture, agricultural water planning (changes in cropping pattern, new seeds, water distribution institutions, training of farmers etc.)
16. Groundwater management and implementation of ground water laws.
17. Continuous audit of surface water and groundwater.

Irrigation, Groundwater and Watershed Development for the Water Management:

1) Implementation of the recommendations made by the Second Water and Irrigation Commission:

1. Handing over management and maintenance, repair to the farmers.
2. Establishment of Maharashtra Water Resources Authority.
3. Since the irrigation program will bear fruit only if the farmers increase their income by using water economically, there is a need to consider the farmers as an integral part of the irrigation department and provide them with participation and training in the decision-making process.

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4. Reorganization of the Water Resources Department.
5. Division of important tasks at the ministerial and regional levels.
6. Since agriculture, cooperation, groundwater development are departments related to irrigation, necessary coordination with those departments and participation of the knowledge and services of those departments in the irrigation program.
7. Pilot experiments or action research programs to be undertaken before large-scale implementation after research.
8. Handing over the management of all under-construction and future projects to the Benefit Area Development Authorities.
9. Appointments of Agricultural Engineering graduates in irrigation management.
10. Research required to achieve optimum efficiency in irrigation, water requirements of crops, spacing between irrigation cycles, irrigation methods, effects of irrigation on groundwater, optimum density of wells in the catchment area, water in ponds, etc.

With the exception of some of the recommendations, these recommendations have not yet been implemented, which is necessary.

2) Changes in the initial irrigation program:

The initial irrigation program for annual and seasonal water supply, based on the experience of the past few years, i.e. keeping duty parameters and records, was used to prepare a completion report of irrigation according to the actual irrigation area and check what was planned and what was actually done, and then prepare a preliminary irrigation report for the next year / season. Now on the canals on which water distribution institutions have been established in the full catchment area. They have to distribute the water available at the mouth of the small distributors, in proportion to the benefit area of the institutions, fairly according to the rights of the water distribution institutions or later to the farmers. Therefore, the initial irrigation program can be done in a very simple way.

3) Revitalizing the water distribution institutions:

During the British rule, the previous system of handing over the management to the water users was discontinued and the same system continued after independence. There have been some changes in this in the last twenty years. It is necessary to first explain through the words and behavior of the senior officials that it is mandatory to hand over the management to the farmers.

4) Proper measurement of irrigation:

Although the law to use the metric system was passed in 1956, the water flow in the water management department is still measured in cubic feet per second till 2009. Irrigation efficiency is still measured in the traditional outdated method. Now, as per the law and water policy, the water available for agricultural irrigation has to be distributed equitably to the water distribution institutions at all levels according to their entitlement or as per the quota approved to them. Therefore, instead of the old criteria, -

1. Total production of irrigated crops in the beneficiary area plus water from canals plus water from wells in the beneficiary area plus rain water and income from project water used for irrigation per cubic meter.

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2. Value of all irrigated crops and price received by farmers.
3. In water supplied equitably to all water distribution institutions.
4. How many farmers out of the total beneficiaries were actually supplied with water.
5. Out of the water available for irrigation at the mouth of the canal and compared to the approved quota, how much water was supplied to the mouth of the small distributors of the water distribution.

5) Irrigation Management:

Irrigation officers are inclined towards construction of new projects and due to this, management work is being neglected. In many projects, management is completely entrusted to the field staff, therefore, while managing, the exact availability of water, evaporation from the pond and its reduction, the flow carrying capacity of the canals, seepage through them, water reduction in other ways, the time taken to fill the canal and then empty the canal after releasing water from the canal are not taken into account. Canals are not repaired from time to time. Therefore, management is not done strictly.

6) Increasing the efficiency of irrigation projects:

Partial canal works, irrigation water used on a large scale for crops like sugarcane, increasing industrialization and urbanization, water leakage and theft from the irrigation system, decreasing irrigation capacity due to siltation in dams, wastage of water flowing through canals at night, and increased diversion of irrigation water to other areas, etc. The irrigation created is not being used to the expected extent due to these reasons. In order to change this situation, updated information about the irrigation capacity created on the basis of each irrigation project and the irrigation capacity being used should be kept project-wise. In the future, the obligation to determine the cropping pattern based on the availability of water and the nature of the land will have to be imposed on the small and large farmers in the beneficiary area.

7) Participation of water user organizations in irrigation management:

There is a need to actively involve the water user organizations of the farmers in irrigation management. Water user organizations should not only be entrusted with the responsibility of maintenance and repair of the canal system, but should also be actively involved in planning the water system, preparing budgets and implementing the work.

8) Increasing the water storage of dams:

The state receives abundant rainfall during the four months of the monsoon season. However, due to the lack of adequate facilities to intercept the rainwater, most of the water flows away. Due to this, most of the rivers in the state are dry except for the four months of the monsoon season. Although Maharashtra has the highest number of dams in India, the amount of water storage in the dams is comparatively very less. If there is good rainfall in the state in a year, the remaining two to three years are water scarce. In a year of good rainfall, the water in the dams has to be released downstream, which creates a flood situation in the lower parts of the dam. To avoid this, a time-bound program needs to be undertaken to increase the water storage capacity of the dams in the state.

9) Diverting water from water-rich basins to water-deficit basins:

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` According to the Chitale Commission report, 13% of the cultivable area in the state is water-deficit, 32% is water-deficit, 34% is water-normal, 6% is water-abundant and 15% is water-abundant. There is a need to implement a plan to divert water from water-deficit basins to water-deficit basins.

10) Make full use of irrigation potential:

The Chitale Irrigation Commission has estimated that the irrigation potential of the states can increase to 126 lakh hectares of this stage, 85 lakh hectares can be irrigated on the basis of water stored on the surface and wells in the beneficiary area. Efforts must be made to bring all that land under irrigation.

CONCLUSION:

In this way after management is the best way for the use of Natural property of water. Water is gift of god as well as nature, water is a natural asset. So by human taking the vital role of water management water is a non-renewable thing and good life to all living creatures on the earth sustainable development is not success to without planning & help of water management. Thus water management is a basic need of this time.

1. All elements, from individual citizens to NGOs, industry and the government, will have to work together.
2. Creating a network of farm ponds and chain dams in villages,
3. Emphasis on the development of watershed areas.
4. Efficient use of water by measuring and measuring it with the adoption of modern technology.
5. Processing and reusing wastewater to the maximum.
6. Making the process of groundwater recharge an integral part of life.
7. It is necessary to grow crops that require less water and tolerate water stress in drought-prone areas and set up factories to process them.
8. Water efficiency will have to be increased by using modern technology in irrigation. We will have to adopt such a policy for water management.

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