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THE NEED OF WATER CONSERVATION IN INDIA-AN ANALYTICAL STUDY

Dr. Vinod Sharma[1], Naresh Kumar[2], Ashok Kumar[3], Rajesh Kumar[4]

[1]Associate Prof. in Geography G.C. Dharamshala (Kangra)HP
[2]Associate Prof. in Sociology, G. C. Baroh (Kangra)HP
[3]Assistant Professor in Geography, Govt College Naura (Kangra) HP
[4]Associate Prof. GC Nagrota Bagwan (Kangra) HP

ABSTRACT----------
"Pawan Guru Pani Pita" as the Punjabi quote depicts the necessity of water and its status that is equal to that of father. Our barest survival depends on the availability of air and water on mother earth yet our reckless behavior in using them has put availability of potable water on the verge of extinction. Not only the humanity but whole biosphere faces threat due to pollution of this precious resource. The present day concepts like sustainable development focus in developments with compromising the future of forth coming generations. The present study focuses on the multiple strategies which can be adopted for water conservation coupled with sustainable development.

KEYWORDS:- ***Pani Pita, Conservation, Biosphere, Sustainable Development.----------***

INTRODUCTION

Water is one of the most precious natural resources and a key element in the socio economic development of a country. A person can live without food for a month, but only for a week without water. Nothing will quench thirst the way water can . Water is an essential part of the modern day life. It is used for drinking, bathing, washing, irrigation, industries and a host of other purposes.

About 71 percent of the earth's surface is covered by water and that is why our earth is called the 'watery planet'. In fact earth is the only planet in the entire solar system which contains water and sustains life. No other planet in the solar system has, so far, shown any trace of water and all the planets, except the earth, are lifeless. But water on the earth surface is distributed in such a way that only a small fraction of total water available on the earth is useful for human consumption .

Objectives of the study

The present study pertains to multiple emerging issues not only in India but worldwide. The water being one of the most important ingredients of life in the whole universe. Surviving without water has not been possible and the whole humanity can come to the brink of extinction if proper due care is not taken at the present moment. The present study aims at

1. To see the present scenario of water resources in India and the origin and potential life of these resources .
2. To analyze why do we need to conserve our water resources.

Methodolgy

Methodology is lke a lighthouse in the sea which guides sailors towards their destinations. Methodoloy guides a researcher towards the objectives of a particular study. In the present study secondary data is being used as the study is of scientific nature.

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INDIA'S WATER RESOURCES

Rainfall is the main source of fresh water in India. From precipitation alone, India receives 4000 km^3 water . of this, monsoon rainfall from June to September alone accounts for about 3000 km^3. A good part of it is lost through the process of evaporation and plant transpiration. Large part of water percolates in to the ground and is available to us in the form of ground water.

Different authorities have given different estimates about India's water resources. Accordingly to the ford foundation team 1959 India has one of the largest supplies of water in the world. A broad assessment of water resources places the total average annual surface run off as varying from 1663 BCM to 1881 BCM (Billion Cubic Meter). According to K.L. Rao (1975) the total quantity of water in our river system is 1644.5BCM . The estimates made by the Ministry of Water Resources of the country at 1869 km. Due to various constraints of topography and uneven distribution of water resource over space and time, the total utilisable water resource is assessed as 1122 km^3 out of which 690 km^3 is surface water is available in two different form,

1. Surface water and
2. Ground water.

Surface water

Surface water is available on the surface of the earth in the form of rivers, lakes, ponds, canals, etc.

Rivers comprise the most important source of surface water. India is blessed with a large number of major, medium and small size rivers. As many as 13 of them are classified as major rivers whose total catchment area is 252.8 million hectares. This is about 83 percent of the total area of all drainage basins. Of the major rivers, the Ganga-Brahmputra Meghna system is the biggest with catchment area of about 110 million hectare which is more than 43 percent of the catchment area of all major rivers in the country. The other major rivers with catchment area more than 10 m. ha are those of the Indus 32.1 Godavary 31.3 Krishna 25.9 and Mahanadi 14.2 . The catchment area of medium rivers is about 25 m. ha. It is worth mentioning that about 40 percent of utilisable surface water resources are in the Ganga –Bhramputra –Meghna system.

Ground Water

A part of rain water in the rocks and soils and is available to us as ground water. The assessment of water resources in India dates back to 1949. Dr. A.N. Khosla (1949) estimated the total average annual run-off all river system in India as 167.4 m. ha. M (million hectare metre) based on empirical formula which included both surface and ground waters. Since then several attempts have been made to assess the ground water resources in the country. The National Commission on agriculture (1976), assessed the total ground water of the country as 67m. ha. M , excluding soil mixture. The usable ground water resources was assessed as 35m. ha. M. of which 26 m. ha m was considered as available for irrigation. The first attempt to estimate the ground water resources on scientific basis was made in 1979 when a High Level Committee was constituted by Agriculture Refinance and Development corporation (ARDC).

Hydrological Situation

India is a vast country having diversified geological, climatological and topographic set up, giving rise to divergent ground water situations in different parts of the country . the prevalent rock formations, ranging in age from the Archaean to the Recent, which control occurrence and movement of ground water, are widely varied in composition and structure. Variation of land forms varying from the rugged mountainous terrain of the Himalayas to the flat and featureless alluvial plains of the northern river valleys and coastal tracts, and Aeolian deserts of Rajsthan are no less important. The topography and rainfall virtually control runoff and ground water recharge.

The high relief areas of the northern and northeastern region, the Aravali range of Rajsthan, and peninsular regions with steep topography slope and characteristic geological set-up offer high run-off and little scope for rain water infiltration. The ground water potential in these terrains are limited to intermontane valleys.

The large alluvial tract in the Indus-Ganga –Bhramputra plains, extending from Punjab in the west to Assam in the east, constitutes one of the largest and the most potential ground water reservoir in the world. The acquifer systems ate extensive, thick, hydraulically interconnected and moderate to high yielding. To the north of thus tract,

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all along the Himalayan foot hills, occur the linear belt of Bhabar piedmont deposits, and the Tarai belt down the slope with characteristic auto flowing conditions. According to Dr. R.L. Singh (1971) as divided in to Eight ground water provinces

1. **Pre-Cambrian Crystalline Province.** It extends over half of the country's geographical area covering Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, Maharastra, Dandakaranya, Bundelkhand and Aravali range. This province is deficient in ground water resources.
2. **Pre**- combrain Sedimentary Province. It extend over Cuddapah and Vindhyan basins where the rocks belongs to Cuddapah and Vindhayan systems. This province is also not much suitable for ground water development and contains inadequate amount of ground water.
3. **Gondwana Sedimentary Province.** The Gondwana sedimentary rocks of the Barakar and Godavari river basins contain good aquifer of ground water.
4. **Deccan Trap Province.** These are 1200 metre thick covering of impermeable basalt over the surface which obstructs percolation of water. As such the whole provinces. The only aquifers preserved are in the fractures where secondary porosity develops in the weathered moorums at times, in the intertrappean beds sandwiched between two in the impermeable strata as also in the vesicles and amygdales.
5. **Cenozoic Sedimentary Province:** This province includes the Andhra Pradesh , TamilNadu, Kerla and Gujrat coasts. These areas have tertiary sandstomes ams the province as a whole has good acwuifers.
6. **Cenozoic Fault Basin:** The rift zone of the Narmada, the Purna and the Tapi provides good resources of ground water in its 80-160 metre thick alluvial cover of sand, silt and clay.
7. **Ganga**-Bharamputra Alluvial Province: This is the richest ground water province of the country. The bhabar, tarai and the axial belts are well defined. The steams disappearing in the unassorted materials of the bhabar zone seep out in the tarai belt. Moreover, the ground water table is also high.
8. **Himalayas Province:** This complex structure and geographic unit is not very significant with respect to ground water resources. Local springs are common but wells are a rare feature.

Water Scarcity

While water is a renewable resource, it is at the same time a finite resource. The total quantity of water available on the globe is the same as it was thousands of years ago. It is important to appreciate the fact the only 3 percent of the world's water is fresh and roughly one-third of it is inaccessible. The rest is very unevenly distributed and the available supplies are increasingly contaminated with wastes and pollution from industry , agriculture and households.

Over the years, increasing population, growing industrialization, expanding agriculture and rising standards of living have pushed up the demand for water. Efforts have been made to collect water by building dams and reservoirs and creating ground water structures such as wells. Recycling and desalination of water are other options but cost involved is very high. However , there is a growing realization that there are limits to finding more water and in the long run we need to know the amount of water we can reasonably expect to tap and also learn to use it more efficiently.

It is the human nature that we value things only when they are scarce or are in short supply. As such we appreciate the value of water once the rivers, resources have now entered an era of scarcity. It is estimated that thirty years from now, approximately once-third of our population will suffer from chronic water shortages. The increasing demands on fresh water resources by our burgeoning population and diminishing quality of existing water resources because of population and the additional requirements growth have led to a situation where the consumption of water is rapidly increasing and the supply of fresh water remain more or less constant . It may be maintained that the water available to us is the same as it was before but the population and the consequent demand for water has increased manifold. The consequences of scarcity will be more drastic in arid and semi arid regions. Water shortage will also be left In rapidly growing coastal regions and in big cities. Several cities ate already, will be unable to cope with the demand of providing safe water and with the demand of providing safe water and sanitation facilities to their inhabitants.

Indicators of water stress and scarcity are generally used to reflect the overall water availability in a country or a region . When the annual per capita of renewable fresh water in a country or a Teflon falls below 1700 cubic meters it is geld to be situation of water scarcity. And when the per capita availability falls below 500 cubic meters, it is said to be a situation of absolute scarcity . (Engelman and Roy ,1993).

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Conservation of Water Resources

Water is an important natural resource and is the very basis of our life. We use water for drinking, irrigation, industry, transport and for the production of hydro-electricity. Water is a cyclic resource which can be used again and again after cleaning. The best way to conserve water is its judicious use. A large quantity of water is used for irrigation and there is an urgent need for proper water management in irrigation sector. Over-irrigation through canals has led to water logging in western Utter Pradesh, Punjab, Haryana, and Hirakund command area.

Wasteful use of water should be checked. Sprinkler irrigation and drip irrigation can play a crucial role in conserving scarce water resources in dry areas. Drip irrigation and sprinkles can save anywhere between 30to 60 percent of water. Only 0.5 percent nearly half of this in Maharashtra – is under drip irrigation and 0.7 percent under sprinkle.

Rain Water Harvesting

Rain water harvesting is one of the most effective methods of water management and water conservation. It is the term used to indicate the collection and storage of rain water used for human, animals and plant needs. It involves collection and storage of rain water at surface or in sub-surface aquifer, before it is lost as surface run off. The augmented resource can be harvested in the time of need. Artificial recharge to ground water is a process by which the ground water reservoir is augmented at a rate exceeding that under natural conditions of replenishment. The collected water is stored and pumped in a separate pipe distribution. This a very useful method for a developing country like India in reducing the cost and the demand of treated water and also economising and distribution costs.

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