International Journal of Engineering Science Invention (IJESI)
ISSN (Online): 2319 – 6734, ISSN (Print): 2319 – 6726
www.ijesi.org || PP. 42-44

Water Management

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Abstract: *Water management is the control and movement of water resources to minimize damage to life and property, and to maximize efficient beneficial use. Good water management reduces the risk of harm due to flooding and involves organizing water so that everyone has enough, and controlling water supplies and water treatment centers (and other equipment and logistics relating to water), and that they work in the best possible way. It thus often involves some knowledge of the chemical properties of water. Water management affects many aspects of our lives. Water is so common that we often do not think about where it comes from or where it is managed. But, bad water management can really hit us hard. One of the biggest concerns for our water-based resources in the future is the sustainability of the current and even future water resource allocation. As water becomes scarcer, the importance of how it is managed grows vastly. Finding a balance between what is needed by humans and what is needed in the environment is an important step in the sustainability of water resources. With the growing uncertainties of global climate change and the long term impacts of management actions, it is likely that ongoing climate change will lead to situations that have not been encountered. As a result, alternative management strategies are sought for in order to avoid setbacks in the allocation of water resources. Good water management should be an absolute priority for every generation, and for every government throughout the world. More should be done to ensure that absolutely everyone in the world has daily access to safe, clean water that they can use for drinking, washing and growing crops. This paper highlights the meaning of water management, importance and methods of water management.*

Keywords: *water management, irrigation, flooding, sustainability, climate change, knowledge, strategies, decision making, environment, etc*

I. Introduction

Water management is the activity of planning, developing, distributing and optimum use of water resources under defined water polices and regulations. It includes: management of water treatment of drinking water, industrial water, sewage or wastewater, management of water resources, management of flood protection, management of irrigation, and management of the water table. Water is an essential resource for all life on the planet. Of the water resources on Earth only three percent of it is fresh and two-thirds of the fresh water is locked up in ice caps and glaciers. Of the remaining one percent, a fifth is in remote, inaccessible areas and much seasonal rainfall in monsoonal deluges and floods cannot easily be used. As time advances, water is becoming scarcer and having access to clean, safe, drinking water is limited among countries. At present only about 0.08 percent of all the world's fresh water is exploited by mankind in ever increasing demand for sanitation, drinking, manufacturing, leisure and agriculture. Due to the small percentage of water remaining, optimizing the fresh water we have left from natural resources has been a continuous difficulty in several locations worldwide.

II. The Importance of Water Management

Water management affects many aspects of our lives. Water is so common that we often do not think about where it comes from or where it is managed. But, bad water management can really hit us hard. Below are some key ways in which water management is important.

1. Drinking water: Humans need to drink around 8 glasses of water a day in order to get sufficient hydration. So clean drinking water is necessary for all of us. Without water, we can only survive for a few days at most. But, if we have water and no food, we can survive for several weeks. This shows just how crucial it is that we have daily access to clean water that is suitable for drinking. If we have pets, they will need daily access to water too.

2. Washing and cleaning: We also use water to keep ourselves, our clothes and our homes clean and hygienic. A clean water supply is important for this too. From washing our hands before a meal to deep cleaning a hospital floor, we need clean water for almost all aspects of good hygiene.

3. Agriculture: Water is used throughout the world to grow crops such as grains and fruits. A good water supply is needed to prevent hunger and famine.

4. Leisure and fun: Swimming, boating and many other leisure activities involve water. Swimming pools and other facilities need to be well maintained so that they remain safe and enjoyable places to be. Swimming pool water needs to be managed by treating it with chlorine and regularly testing its levels of bacteria and other substances, for instance, to ensure that it is safe for people to swim in.

5. Biodiversity: Managing water well ensures that we do not deplete or contaminate rivers, lakes and other important water sources which are habitats for a wide range of birds, mammals, fish, reptiles and amphibians as well as water dwelling plants.

III. Methods of water management

There are several water management methods available in the world, and these are being honed all the time as scientists and engineers find new ways to look after our water supplies. Below are 5 key water management strategies that are widely used today.

1. Waste water systems – recycling and treating: Sewage systems help to dispose of waste water in a clean and safe way. They also very often involve recycling water and treating it so that it is safe to be piped back into people's homes and used for drinking, washing and so on. These systems are absolutely essential for ensuring that our waste water does not cause us to fall ill.

2. Irrigation systems: Good quality irrigation systems can be deployed to nourish crops in drought hit areas. These systems can be managed so that water is not wasted – and they can use recycled water or rain water to avoid unnecessarily depleting water supplies.

3. Conserving water: Both big companies and private individuals can conserve many gallons of water every day, simply by not running taps or using water-guzzling appliances unnecessarily. Water can also be conserved by generally consuming less. Not many people realize how much water goes in to the production of a car or an item of clothing, for example. Cutting down on the amount of things that we buy can really reduce the amount of water that is needed to support our lifestyle.

4. Caring for the natural water supplies: Natural water sources such as lakes, rivers and seas are so important. Both fresh water ecosystems and marine ecosystems are home to a wide variety of different organisms and without the support of these ecosystems, these organisms would most likely become extinct. Good water management thus also involves ensuring that we do not pollute natural water sources.

5. Effective implementation of plans – ensuring that everyone has enough water: There is no denying that easy access to fresh, clean, safe water is a right that all humans should enjoy. However, in many parts of the world, people have to walk many miles in order to access clean water. So, good water management systems are only truly praiseworthy if they are implemented throughout the world so that everyone can benefit from them. Good water management means not just a convenient and safe water supply for some people – but water for everyone to use.

IV. Water management in agriculture

Agriculture is the largest user of the world's freshwater resources, consuming 70 percent. As the world population rises it consumes more food (currently exceeding 6%, it is expected to reach 9% by 2050), the industries and urban developments expand, and the emerging biofuel crops trade also demands a share of freshwater resources, water scarcity is becoming an important issue. An assessment of water resource management in agriculture was conducted in 2007 by the International Water Management Institute in Sri Lanka to see if the world had sufficient water to provide food for its growing population or not . It assessed the current availability of water for agriculture on a global scale and mapped out locations suffering from water scarcity. It found that a fifth of the world's people, more than 1.2 billion, live in areas of physical water scarcity, where there is not enough water to meet all their demands. A further 1.6 billion people live in areas experiencing economic water scarcity, where the lack of investment in water or insufficient human capacity makes it impossible for authorities to satisfy the demand for water.

The report found that it would be possible to produce the food required in future, but that continuation of today's food production and environmental trends would lead to crises in many parts of the world. Regarding

food production, the World Bank targets agricultural food production and water resource management as an increasingly global issue that is fostering an important and growing debate. There is a six-point plan for solving the world's water problems. These are: 1) Improve data related to water; 2) Treasure the environment; 3) Reform water governance; 4) Revitalize agricultural water use; 5) Manage urban and industrial demand; and 6) Empower the poor and women in water resource management. To avoid a global water crisis, farmers will have to strive to increase productivity to meet growing demands for food, while industry and cities find ways to use water more efficiently.

V. Conclusion

One of the biggest concerns for our water-based resources in the future is the sustainability of the current and even future water resource allocation. As water becomes more scarce, the importance of how it is managed grows vastly. Finding a balance between what is needed by humans and what is needed in the environment is an important step in the sustainability of water resources. Attempts to create sustainable freshwater systems have been seen on a national level in countries such as Australia, and such commitment to the environment could set a model for the rest of the world.

The field of water resources management will have to continue to adapt to the current and future issues facing the allocation of water. With the growing uncertainties of global climate change and the long term impacts of management actions, the decision-making will be even more difficult. It is likely that ongoing climate change will lead to situations that have not been encountered. As a result, alternative management strategies are sought for in order to avoid setbacks in the allocation of water resources.

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