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Environmental Science

Water is at the core of sustainable development and plays a vital role in socio-economic development, food production, and healthy ecosystem as well. Moreover, water plays a critical role in the climatic conditions of a region and is a crucial link between the environment and society (Gleick 89). Owing to an increase in the global population, there is an increasing need to find a balance between the drinking water resources along with the competing commercial demands of water resources. Many water-related challenges are faced by society. According to the report published by the World Health Organization, more than 2.2 billion people lack access to uncontaminated drinking water (*Water | United Nations*). Also, more than 4 billion people lack sanitation services due to the lack of water resources accessibility (*Water | United Nations*). Lack of sanitation can lead to an increase in the rates of mortality especially among children under the age of five. Although United Nations has a history of addressing the global water crisis caused by an insufficient supply of water to cater to the basic needs of humans. However, the issue of lack of safe water is still prevailing in our society. This paper will discuss the major water resource issues along with the sustainability efforts that can be implemented to conserve water resources.

 Water serves as an important ingredient in the development process of all countries. Based on exquisite research conducted on inadequate water resources, four major water problems that are faced by the world are identified. The problems identified are the provision of pollutant-free drinking water, water requirement for industrial, hydroelectric, and agricultural development, the sustainability of water development projects, and water resources development of water resources that are shared by two or more states. Despite the above-mentioned issues, water contamination is the major issue that is the source of multiple problems existing in our society.

After accounting for access to and availability of water resources, the poor quality of water can significantly reduce the amount of water consumption for sanitation, industrial and agricultural purposes. Acceptable water quality relies on its intended purpose. For instance, water that is considered unfit for human use can easily be utilized for industrial purposes and even for a few agricultural applications. Many parts of the world are experiencing deterioration of water quality, rendering water unfit for both industrial and agricultural uses (Biswas 2). Although scarcity of water is another issue yet having access to water resources does not guarantee water quality. This is because despite having an adequate amount of water resources, water can lack proper treatment and can become contaminated during home storage or transport from one place to another.

Several contaminants are there that can be considered unsafe. Contaminants can be biological and chemical contaminants such as viruses, bacteria, metals especially, iron and arsenic, parasites, and organic matter, etc. (Bommer & Eberhard Ritz 4) These contaminants can result in multiple water-borne diseases that include cholera, typhoid, dysentery, etc. Similarly, chemical pollutants such as arsenic are labeled as the most fecal water contaminants as per the report published by the WHO and UNICEF in collaboration. Further in the report, it was highlighted that more than 70% of illnesses in various developing countries are caused by the contaminated water that, in turn, increase the mortality rate, especially among children (*Water | United Nations*).

In addition to the above-mentioned contaminants, physical qualities of water such as color, smell, and taste can cause water to be perceived as low or poor quality and is, therefore, considered as un-usable by the intended users. The volume of contaminants can significantly overwhelm the infrastructure or resources that are required to treat or remove them (Saeijs & Van Berkel 25). Moreover, cultural norms, along with governance structure, also play a crucial role in the reduction of water quality. It has been observed that in most of the developing countries water contamination solutions are often hindered by the lack of limited enforcement of chemical controls, emission standards, policies, and market-based incentives for water treatment or pollution control (Saeijs & Van Berkel 25). Although water quality is the main requirement for human life, however, it is also important for several industrial purposes as well. For instance, power generation, mining, and petroleum manufacturing industries are a few examples of industries that require high quality of water.

 In the context of water resources, conservation, and improving water resources, it is necessary to first improve the accessibility of water. To address the water scarcity issue, government must collaborate with multiple industries to enable recycling and water reuse so that water cannot be wasted. Furthermore, the government must use and implement energy-efficient water-saving devices in industries so that water can be conserved. In terms of water contamination, several large scale options are available to remove contaminants from water (Biswas 3). For instance, distillation, which is the process of distillation that involves vaporization of substance to convert water into vapors and then condense it back to liquid form. This process facilitates in providing consistent purified water. While discussing small scale water resource sustainability options, boiling water or adding chlorine are the portions that can be used to remove contaminants from water (Biswas 6). On the domestic level, people can also use several methods to conserve water such as turning off the taps and boil the food that is necessary and using drip irrigation to water plants.

 It is undeniably true that surface water is unequally distributed in the whole world. Therefore, it is necessary to sustain water by making dams, reducing water consumption on both domestic and industrial levels, and also reusing to avoid water wastage.

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