**KEHINDE OLUWATOBI**

**16/ENG03/035**

**CVE 505 WATER RESOURCES**

**DISADVANTAGES OF LARGE DAM PROJECTS**

1. The building of large dams can cause serious changes to the earth’s surface and lead to geological damage. It can trigger frequent earthquakes, however, modern planning and design of dams have reduced the possibility of occurrence of certain disasters.
2. **Water wastage**: Sometimes water used in excess of evapotranspiration requirements. This water appears in the system as surface or groundwater. But it degrades in quality, mainly due to fertilizers and pesticides, besides minerals drawn from soils. Such waste has to be minimized.
3. **Submergence Problem**: A large area gets submerged due to the rise in the water levels and turned into a reservoir. The owners of those lands have to be relocated, adequately compensated, and well settled somewhere else. It results in the decomposition of vegetation. Large forest areas are also submerged because of the building of dams. This threatens our biodiversity.
4. **Failure of Dams**: Dam failures may be caused either due to many reasons. Neglecting possible forces or unexpected forces is the main reason for the failure. The faulty design or occurrence of unanticipated floods can also be the cause of failure. Not maintaining proper guidelines during design and construction is also a reason for dam failures. Dams may sometimes fail due to excessive and unanticipated earthquakes. The failure of dams can bring enormous hazards to the life of people in that locality.
5. **Disrupts Ecosystems**: Dams create a flooding issue behind the structure as a way to form a reservoir. Not only does this disrupt human activities, but it also destroys the existing wildlife habitats that exist. This issue can disrupt entire ecosystems, which can have an adverse effect on a whole regional biome. Marine life that relies on an unobstructed flow of a river, such as migratory fish, can be adversely affected by the decision to dam the water.
6. **Sediment Accumulation**: Dams can have a profound impact on the overall aquatic ecosystem of a region. The transformation upstream creates a lack of settlement that moves down the waterway to support the entire marine habitat. It can also cause changes in temperature, chemical composition, and shoreline stability. Many reservoirs also host invasive species, such as algae or snails, that undermine the natural communities of the plants and animals that lived on the river before.

The riverbeds that are downstream from a dam can erode by several yards within the first decade of operations. This damage can extend for hundreds of miles downstream afterward.

**EFFECT OF WATER POLLUTION ON THE ENVIRONMENT**

1. **Industries**: Industries produce a lot of waste containing toxic chemicals and pollutants. A huge amount of the industrial waste is drained in the fresh water which then flows into canals, rivers and eventually in the sea. Another source of water pollution is the burning of fossil fuels, causing air pollution like acid rain which then flows to streams, lakes, and other stretches of water.
2. **Agriculture**: Agriculture has an impact on water pollution due to the use of chemicals such as fertilizers, pesticides, fungicides, herbicides or insecticides running off in the water, as well as livestock excrement, manure and methane (greenhouse effect). Regarding aquaculture, pollution is directly in the water, as excess food and fertilizers are causing dystrophication.
3. **Sewage and Wastewater**: Inadequate sewage collection and treatment are sources of water pollution. According to the United Nations, more than 80% of the worldwide wastewater goes back in the environment without being treated or reused.
4. **Urbanization and Deforestation**: Even though it does not have a direct impact on water quality, urbanization and deforestation have a lot of indirect effects. For instance, cutting down trees and concreting over large areas generates an acceleration of flows which does not give enough time for water to infiltrate and be purified by the ground.
5. **Heavy metal pollution**: Heavy metals top the list of inorganic pollutant with wide range of negative effects on aquatic organisms, plants, and human. They are released into the environment via different routes such as industries, mining activities, agricultural activities etc. Bioavailable metals present in the soil may be absorbed by plants resulting in serious plant metabolism dysfunctioning. High heavy metal ion concentrations are also known to damage the cell membrane, affect enzyme involved in chlorophyll production. Human and animals can be exposed to heavy metal toxicity through the food web, direct consumption of water containing metal or via inhalation.

**Suitable approach to decontaminate river water, such as the Ureje river in Ado-Ekiti, which gets polluted by domestic and agricultural effluent?**

The only apparent strategy is to reduce the amount of contaminants applied to it. The first step in this direction is to provide a catalog of chemicals that come in and the fate of these contaminants. More notably, there must be a difference in society's mentality towards environmental concern and river water restoration, involvement of citizens in management action plans, and a change in the mood of science. And a rise in the temperament of science by contact with science. Agricultural effluent should be processed first on agricultural grounds and then reused for useful purposes. If so, there will be no need for river disposal. This would decrease the contaminant load across the river. Additionally, Popular grey water waste from domestic and industrial facilities should be treated in the same manner and treated water should be reused for useful purposes. We will conserve the storage of fresh water in this way and address the dilemma of waste water disposal. The most important part is the Water treatment for common septic wastewater to be completely treated and a liquid and sludge control system to be developed. As far as the current situation is concerned, Ureje water is heavily contaminated, such that, once checked in the laboratory, various adsorbent/chemical doses will show the status of consistency parameters and domestic waste absorption loads.

**How a productive borehole can be sited in fracture basement complex regions?**

In certain parts of the planet, fractured basement complexes are strong sources of potable water. However, sitting in these rock units with highly active wells remains a difficult and costly job since geographic fracture production is both heterogeneous and anisotropic (Manda et al., 2006). In the weathered overburden basement or fractured basement of crystalline rocks of intrusive and/or metamorphic origin, which are mostly Precambrian age, aquifers may be formed (Wright, 1992). Therefore, sustainable well yields for bedrock can strongly rely on the amount of water stored in materials that can break down into bedrock and periodic recharge replenishment (Lyford, 2004). The discontinuous structure of the basement aquifer structures necessitates thorough understanding and application of geological, hydrogeological and geophysical investigations (Amudu et al, 2008). Since the damaged basement causes tremendous harm in the development of boreholes in complex regions, the following steps should be taken to achieve a functioning borehole in complex regions.

1. Boreholes need to be re-developed by means of a surging and airlifting process before the free existence of sand is reached. This can be performed regularly, taking into account the manner in which the boreholes were built.
2. Subsequence boreholes should be situated in a region devoted to good groundwater capacity and to water piped to the central reservoir for re-distribution to areas of need.

**References**

1. P., Adelani-Akande Tabitha A., Dada Adewumi O. and Oreofe ToyinA. (March 21st 2018). Water Pollution: Effects, Prevention, and Climatic Impact, Water Challenges of an Urbanizing World, Matjaž Glavan, IntechOpen, DOI: 10.5772/intechopen.72018.
2. M.O. Olorunfemi, J.S. Ojo, O.M Akintunde, Hydro geophysical evaluation of the groundwater potential of Akure metropolis, southwestern Nigeria. J. Min. Geol., 35(2), 1999, 207-228.
3. Rahaman, M.A. (1976). Review of the Basement Geology of Southwestern Nigeria. In Geology of Nigeria. Elizabeth publishing Company, Nigeria. pp. 23 -33