

The importance of the water budget

[Environment](#), [Water](#)



The aim of this research was to appreciate the biophysical environment and relate the importance of the water budget concept to their understanding of the hydrologic cycle, water resources and water resource management. To know and examine the current situation of Gaborone dam in terms of its operation and sustainability of services. We found out that water utilities corporation operates the Gaborone dam.

One of the aims of the research was to determine the factors that influence the productivity and management of these water resources and to know the problems encountered. Evaporation is a major concern of water loss at the Gaborone dam. Illegal fishing, poaching and pollution are some of the problems that encountered at the dam. To know the future strategies in improving and sustaining the usefulness and productivity of Gaborone dam in terms of growth, maintenance or degradation of resources with respect to increasing demand of society. The research was carried by oral interview and observation which were the methods used for collecting data.

Introduction

A research on water resources was carried out at the Gaborone dam to examine the current situation of Gaborone dam in terms of its operation and sustainability of services. The dam is operated by the Water Utilities Corporation (WUC), and it supplies water to the capacity of (Gaborone Department of Environmental Affairs. 2006. Water Accounts of Botswana 1992-2003).

The Gaborone Dam is located south of Gaborone along the Gaborone-Lobatse road, and provides water for both Gaborone and Lobatse. The dam is filled up by nearby rivers which are Tlwane, Notwane and Nnyane river. Notwane river being the main stream. The research was also carried out to know future strategies in improving and sustaining the usefulness and productivity of Gaborone dam in terms of growth or degradation of resources with respect to increasing demand of society.

Expanding the water treatment plants and catchments will help in sustaining and providing water if there is an increase in demand of society in the future. Determining the factors that influence the productivity and management of these water resources and to know the problems encountered. Illegal fishing is one of the problems encountered at the dam. The research was also carried out to appreciate the biophysical environment and relate the importance of the water budget concept to their understanding of the hydrologic cycle, water resources and water resource management.

Materials and Methods

We began our field trip by visiting the Gaborone dam first

Which is located at Gaborone the capital city of Botswana. We were told that the dam was built during 1965 and the core of the dam is made by clay that's why it is strong (Du Plessis, A. J. E., and K. M. Rowntree. 2003). It was described to be 141.1 Million Cubic Meter which is the holding capacity and it is 3.5 kilometres which is the length of the dam wall.

We were told that the dam is operated by the Water Utilities Corporation which was another site that we visited during the field trip. We visited the site to see the treatment plant there but the biggest water treatment plant is at Mmamashia. An oral interview was carried out as a way of collecting data about the Gaborone dam.

Results and Discussions

The Gaborone dam which is 141. 4 Million Cubic meters is filled up by the Notwane River which is the main stream of the dam. Even if the dam was built for a good purpose there was some consequences faced during the construction of the dam which affected the biophysical environment. One of the impact is the transformation upstream of the dam from a free-flowing river ecosystem to an artificial slack-water reservoir habitat.

Changes in temperature, chemical composition, dissolved oxygen levels and the physical properties of a reservoir are often not suitable to the aquatic plants and animals that evolved with a given river system. Indeed, reservoirs often host non-native and invasive species (e. g. snails, algae, and predatory fish) that further undermine the river's natural communities of plants and animals. The dam wall itself blocks fish migrations, which in some cases and with some species completely separate spawning habitats from rearing habitats.

The dam also traps sediments, which are critical for maintaining physical processes and habitats downstream of the dam. The dam is also facing some problems such as pollution which is mostly caused by human beings living near the areas of the dam. Water pollution is a serious issue as it can affect

the marine life and the water quality. Water evaporation is also one the impacts that affects the productivity of the dam as a lot of water is lost almost every day to the atmosphere. The Gaborone dam once got full at the water spilled to nearest homestead and it not advisable to live near the dam.

There is high rates of illegal fishing at the Gaborone dam as people living nearby catch fishes for food and income. But this issue is controlled as there are patrols taking place. Most animals are found dead on the dam which is also water pollution, to avoid this problem a fence is built to avoid animal's drinking water from the dam. So far the current problems taking place at the dam are evaporation, pollution, poaching and illegal fishing.

In the future the population of Gaborone residents will increase and this will lead to water shortage, the dam should be expanded to avoid this problem in the future. Lack of Rainfall is also one of the problems that we are facing in Botswana Main annual rainfall varies from maximum of 650 mm in Kasane to a minimum of less than 250 mm is the Kgalagadi (Tsabong) (Department of Meteorological Services. n. d. Botswana Climate).

Literature Cited

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