NANGARHAR UNIVERSITY
INTERNATIONAL JOURNAL OF BIOSCIENCES
ORIGINAL ARTICLE
NUIJB
e-ISSN: 2957-9988
Special Issue, 2024

Received: 26 Dec 2023 Accepted after revision: 22 Jan 2024 Published Online: 10 Feb 2024

Effect of Kamal Khan Dam on Afghanistan's Economy and Environment

Waisulhadi Oriakhil[1*], Abdul Wakil Barakzai[2], and Shah Mahmood Afghan[3]
[1]Department of Banking and Finance, Faculty of Economics, Laghman University, Laghman, Afghanistan
[2]Department of Plant Protection, Faculty of Agriculture, Laghman University, Laghman, Afghanistan.
[3]Department of Commerce, Faculty of Economics, Nangarhar University, Nangarhar, Afghanistan
*Corresponding Email: waisulhadi.oria@gmail.com

ABSTRACT
Afghanistan is a mountainous country and has about 75 billion cubic meters of fresh water, however, only 67% of its total population has access to drinking water, so the major objective behind constructing Dams is to fulfill the need of people for drinking water and irrigation of crops, which affect the economy of the country and also has effect on the environment directly. Kamal Khan Dam has been built on Helmand river in Chahar Borjak district of Nimroz Province under the consideration of Ab-Gardan (To turn the water flow) and the main objective of this study is to explore the effect of Kamal Khan Dam on the economic, agricultural and environmental aspects of the country. This is a qualitative research, and secondary data has been gathered from various credible and reliable sources to investigate the effect of Kamal Khan Dam on Afghanistan's Economy and Environment. The results of the study signify that Kamal Khan Dam can generate (9000KW) of electricity per hour, control the water to a maximum level, has the capacity to irrigate 175,000 hectares of land and store 52 million cubic meters of fresh water. The dam is one of the most important projects of the country, which has a great impact on the economic, agricultural and environmental aspects of the country.

Keywords: Afghanistan's rivers, Water management, Soil irrigation, Electricity generation

INTRODUCTION
Afghanistan has five rivers basin namely Amu, Harirud-Murghab, Helmand, Kabul (Indus) and Northern (Rout, 2008), beside this, it also has seasonal small rivers which have 3 – 4 months of water when there is rain, therefore people are using the underground water which will cause the storage of water (Kohistani, 2013). As in total Afghanistan has the capacity to store 75 billion cubic meter fresh water of which 55 billion cubic meter is surface water and 20 billion cubic meter is groundwater, but people are using the groundwater (Qureshi, 2002). The usage of underground water is speedy as compared to its recharging which causes the draught in the area, therefore a survey done by DACAAR shows that decreasing level of underground water is damaging water pipes (Aawar et al., 2015; Electrical et al., 2015).

Afghan – Iran water dispute: International experience has shown that international rivers always cause disputes between countries, whether these disputes are based on implicit agreements or in light of international laws. Official agreements or understandings have been reached, although international laws are limited in this area, In the past 400 years, Iran also fought big wars with its neighbors over water, so hydro politics is an essential part of Iran's foreign policy and have good experiences in this field, but with Afghanistan: It has fought several wars over water in (1871 AD, 1902 AD, 1938 AD, 1951 AD and 1971 AD) as a result in 1973, Helmand water front line, whose members were political parties and technical experts, held a meeting, which became the basis of the agreement between them, based on the proposal of the Delta Commission, $22m^3$ of water was given to Iran (right to water) and another $4m^3$ with the intention of to be a good neighbor. The agreement was signed in 12 articles between the late Mr. Mohammad Musa Shafiq, the former Prime Minister of the Royal State of Afghanistan, and the late Mir Abbas Howeida, the Prime Minister of Iran. It was written that $26m^3$ meters of water will be given to Iran. This agreement was also approved by the parliaments of both countries, but the documents that were delayed due to the takeover of Mr. Sardar Mohammad Dawood Khan were handed over to each other in 1977 (Sadat and Sayed, 2020; Qureshi, 2002).

At the Inauguration ceremony of Kamal Khan Dam, the former president Mohammad Ashraf Ghani said that, the reconstruction of the Dam has been started slowly to preserve the green spaces of the fertile

Chakhansur lands. According to him, based on regular monitoring the process, the reconstruction of the Dam will be completed and implemented in the near future; he added after seven hundred years, the Dam will be given to Nimroz and Afghan people. Seven hundred years ago, the irrigation system of Nimroz was destroyed and a center of Islamic civilization turned into a desert which will be completed". In addition, the security challenges to construction of the Dam has progressed in three phases, the last and main part of which is the power project of (9000KW) electricity generation (Mail, 2021). According to ancient traditions, the Dam was destroyed by the army of Timur Gorgani in the 13th century, since then this vast green area has been dry and sandy. Water management researchers say that when the Dam is put into operation, the water flowing to Iran will be controlled under the Helmand Treaty and the dry lands of Nimroz will become green. Apart from this, the dam also plays an important role in flood control. Most importantly, this dam can fulfill the basic economic and agricultural developmental need of Nimroz. The Dam is located in Chahar Burjak district, of Nimroz (Sadat and Sayed, 2020).

To the best of the author's knowledge, no academic research has been conducted thus for on exploring the effect of Kamal Khan Dam on Afghanistan's economy and environment, hence this study will investigate the effects of Kamal Khan Dam on the economic, agricultural and environmental aspects of the country.

MATERIALS AND METHODS

Research Design and Data Collection Process:

This is an analytical study which has been conducted in a qualitative manner, wherein the researchers gathered secondary data from various resources in order to investigate the effect of Kamal Khan Dam on Afghanistan's economy and environment, and identified the necessary data under specific headings. In fact, as this is a library based article the author has done this based on secondary data and the data has been collected from various sources such as books, journals and internet.

Statistical Analysis

As this is a library based review the author has tried to conclude and present the data, and recommends some suggestions to be followed by the authorities for achieving the mentioned objective.

RESULTS

Data Analysis and evaluation

The secondary data collected from various sources was analyzed in a qualitative manner which shows that Kamal Khan Dam effects the economic, agricultural and environmental aspects of Afghanistan. Kamal Khan Dam has the capacity to generate around 9 MW of electricity. It will also help in irrigating around 175000 hectares of agricultural land, which will enable Afghanistan to become self-sufficient in most agricultural crops. Kamal Khan Dam will also protect the citizens of Nimroz and Farah from drought and will help in coping the adverse effects of climate change in the region.

DISCUSSION

Effect of Kamal Khan Dam on the Economy: According to the authorities, this dam has the capacity of 9 MW of electricity. If we consider the price of imported electricity, it is found that one KW of electricity imported from Tajikistan and Uzbekistan is purchased by ($0.04 - $0.07), so the average price will be $0.055 per KW, which can finance 100% national budget, if we multiply 9 MW (9000 KW) by $0.055, it will be $495 in one hour, $11,880 in 24 hours, in fact $356,400 in a month and finally $4,276,800 in one year, which will be added to the national budget and will be self-sufficient in this regard.

Effect of Kamal Khan Dam on Agriculture: Nimroz has hot and dry climate and summer, with little rain. Therefore, the construction of Dams and Canals creates suitable living conditions. The passage of Helmand river through the mud of the central mountains causes the formation of land and soil and the creation of destructive floods in different seasons of the year. At the same time, this river provides conditions for the construction of hydroelectric dams and the production of energy for the welfare of the country and is ready to irrigate the lands for the growth and development of agriculture along this river. In the past, Kajki Dam and now this Dam have been activated in the same route. In fact, this Dam can store 52 million cubic meters of fresh water and irrigates about 175,000 hectares of agricultural land, making Afghanistan self-sufficient in most agricultural crops.

Therefore, this dam plays a very important role in agricultural sector as well, so it can be said that this Dam has a special place in national economy regarding the agricultural development of the region.

Effect of Kamal Khan Dam on Environment: In 1961, the construction of the Nangarhar Wade Canal on the Duronta Dam not only made 30,000 hectares of scorched and dry land green in Jalalabad, but also changed the climate of Jalalabad, and now Jalalabad is known as Hamisha Bahar (Ever Green). It is also mentioned that Kamal Khan Dam, Taraku and Qale Afzal canals will irrigate up to 50 thousand hectares of land and thus will not only change the lives of Nimrozians and Farahians, but will also protect them from the effects of constant dust and drought and will change the climate of the region.

CONCLUSION

It can be concluded that by using full power capacity of the Dam, it can save $4,276,800 per year and will support the national economy. Moreover, the Dam will provide sufficient water for irrigating about 175000 Hectares of agricultural land, consequently it will improve the agricultural sector and as well as the environmental and climatic conditions of the region.

The government needs to increase the power capacity of the Dam in order to make Nimroz province self-sufficient in terms of electricity, to develop and support the industry sector of, the government can also use this dam for fish conservation projects to initiate the startup of exporting agricultural products and fishes from this dam to other provinces of Afghanistan and the government needs to complete the construction of the canals, and also it should start the distribution of land and monitor the use of land so that the land to be used for agriculture purpose, and it should focus on to prevent especially dust and mist from the climatic areas of the region.

ACKNOWLEDGMENT: No funds have been received from any organization.

CONFLICT OF INTEREST: All authors express no conflict of interest in any part of the study.

FUNDING: This research study has received no external funding

AUTHOR'S CONTRIBUTIONS: The Authors contribution is in the following manner: The first author has prepared the original manuscript. The second author has contributed in agricultural and environmental data collection. The third author has contributed in review and editing of the article.

REFERENCES

Aawar T, Khare D and Singh L. (2015). Water resource planning and management in Afghanistan: issues and challenges.

Electrical, V., For, S., Study, G., Sari, I. N., Qala, S., Districts, G., … Province, P. U. L. (2015). Edited by Leendert Vijselaar, (June 2007). https://doi.org/10.13140/RG.2.1.4465.7128

Ghoriani HA and Nawabi MT. (2021). Economic, agricultural, and environmental benefits of Kamal Khan Dam for Afghanistan.

Kohistani, M. H. S. and A. J. (2013). Water Resources Potential, Quality Problems, Challenges and Solutions in Afghanistan, 274.

Mail (2021). Inauguration of Kamal Khan Dam, A New Promise For Upgrading Agricultural Products.

Qureshi, A. S. (2002). Water resources management in Afghanistan: The issues and options. International Water Management Institute, (14), 30.

Rout, B. (2008). How the Water Flows: A Typology of Irrigation Systems in Afghanistan. *Afghanistan Research and Evaluation Unit*.

Sadat SH and Sayed N (2020). Afghanistan and Iran: From water treaty to water dispute.