

Effects of COVID-19 Pandemic on Natural Resource Use: a Case of Chongwe District of Lusaka, Zambia

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Abstract: *Covid 19 pandemic has had significant effects on natural resource use among local communities in Zambia in the recent past. This therefore demands for a comprehensive assessment of the effects of the pandemic on natural resource use by the local communities. This study therefore assessed the effects of Covid 19 on various aspects of natural resources using primary and secondary data sources. The study showed that the negative effects of Covid 19 included deforestation, over-harvesting of natural resources by the local communities such as illegal poaching and over fishing. The increased demand for curative medicines to ease the disease burden and the changes in economic activities influenced the way people related with natural resources. The study also reviewed that Covid-19 pandemic appeared to have some positive effects on natural resources such as reduction in outdoor environmental pollutants such as Carbon dioxide, carbon monoxide and sulphur dioxide. Other positive effects of Covid 19 pandemic according to the study comprise the reduction in noise pollution from vehicles, boats and planes which in turn have positive effects on biodiversity and ecosystem restoration. In order to reduce the negative effects of Covid 19 shown by the study, we propose the implementation of a multispectral involvements for adaptation and environmentally friendly technologies to improve and safeguard sustainable use and management of natural resources in the country.*

Keywords: *Biodiversity, COVID-19, natural resource use, pandemic, Zambia*

1. INTRODUCTION

The Coronavirus (Covid 19) is a global pandemic which has an enormous effect on human lives and global environment. Studies conducted over the past few months showed that the COVID-19 epidemic has had significant impacts on the environment and natural resources (Muche *et al.*, 2022; Pouralkhas 2021). A study conducted by Sempewo, *et al.*, (2021) on the effect of COVID-19 on household water use in Uganda, reviewed that on average, most Ugandan households had an increase in the quantity of water utilized after March 2020 than before. The increase according to the study was influenced by impulsive consumption created by an emergence such as COVID-19. The increase in water demand was found to be driven by factors such as the desire to mitigate the spread of the pandemic through hand washing at home, work and other public places; cooking, and cleaning dishes and clothes because of most people being being locked down at home. These results resonated with the findings reported by Cooley *et al.*, (2020) which reviewed that Covid 19 pandemic in early 2020 has imposed massive health and economic burdens on communities around the world, and affected every sector of society, including the water sector. Marian and Neal 2020 too agreed with Cooley (2020) that the pandemic has led to the increase in the utilization of important natural resources such as water and energy especially in developing countries where water and energy resources are scarce. Buchholz, 2020 and Napoli, 2020 also noted that household water consumption is higher than normal during the months that were dominated by the Covid 19 pandemic. This according to Buchholz (2020) was attributed to spending more time at home where activities such as hand washing, toilet flushing, running water for any other household requirements and any other activities that would require water.

Other studies (Kisane 2020; Olabi *et al.*, 2022) however argued that the lockdown measures of Covid 19 pandemic triggered a temporal and steady decline in the use of fuels and this has led to the drop in the world prices for fossil fuels (low utilization). Olabi *et al.*, (2022) also noted that Covid-19

pandemic has hit severely all aspects of human life with the energy sector at the heart of the impacted sectors. This according to him is due to the severe lockdown measures, all energy consumptions related to aviation, transportation, commercial activities, and industry have seen a dramatic drop, while those related to residential activities have seen a significant increase. The total lockdown, quarantine measures and restrictions according to Olabi *et al.*, (2022) led to large economies across the globe to come to a standstill in 2020. This led to the drop in demand for energy during this period. This study therefore investigated the influence of covid-19 on natural resources utilization in Zambia.

2. MATERIALS AND METHODS

2.1. Description of the Study Area

The study area was Chongwe, a rural district in Lusaka province of Zambia (Figure 1). The district is situated to the east of Lusaka, spanning the Great North Road. Local relief in the district varies between 300 and 1300 meters above sea level (Smart Zambia Institute, SZI 2019). The geographical coordinates for Chongwe are 15° 21' 0" South and 28° 42' 0" East (Milupi *et al*, 2020). The Soli people are the original inhabitants of Chongwe district under the chieftainship of Nkomeshya Mukamambo II (Moonga and Moonga, 2018)



Figure1. Map of Zambia showing the Location of Chongwe district

The physiography of Chongwe district is divided into three parts. The first region consists of a series of east-west hill ranges at 1,200 – 1,500 m above sea level to the north. The second region is a plateau area in the middle at an altitude of 910 - 1,200 m above sea level. The third region is a hilly escarpment to the south that merges into the Zambezi Valleys or trough (CDC, 2006). Chongwe district has three main types of vegetation. These include dry miombo (*Brachystegia*) woodland, mopane (*Colophospermu mmopane*) woodland, and munga (*Acacia*) woodlands. The vegetation, however, has been tempered with due to settlement, charcoal production and agriculture. In Zambia, most of the rural people derive their livelihoods from charcoal production and gardening. Both charcoal production and agriculture are very common in Chongwe district because of its proximity to Lusaka where the products find a ready market. Agriculture is the mainstay of the economy of the district. Agricultural activities include crop production, horticultural production and livestock production (Milupi *et.al.* 2019; 2020). Two forest reserves in the district, No.75 (Soli) and No. 199 (Kanakantapa) were converted to an agriculture settlement scheme in 1992 to resettle unemployed urban youths and other general members of the public (SZI, 2019). In 2010, Chongwe district had a population of 182,174 people (CSO, 2010). Of these, 92,909 (51%) are female while 89,265 (49%) are male (CSO, 2010). The district's annual population growth rate is 2.5% while the population density is 22.2 persons per square kilometre (SZI, 2019).

2.2. Data Collection

The study was based on secondary and primary data collected between May and June 2022. Secondary data were derived from published materials whereas primary data was collected through two methods, namely household surveys and key informant interviews with relevant officials as outlined below. Secondary data analysis provided a better understanding of the effect of covid 19 pandemic on various natural resources such as wildlife, water and energy sources such as firewood. In the present study, journal papers, the Forest Act, the Fisheries Act and government records such as the national environmental policy were examined. These documents provided background information for the research and allowed for assessment of the suitability of the project before conducting interviews (Owen, 2014). The households were interviewed as regards the following aspects of natural resource use and Covid 19 pandemic:

1. Water usage before and during Covid 19 pandemic
2. Energy usage before and during Covid 19 pandemic.
3. Other natural resource utilization before and during Covid 19 pandemic

2.3. Key-Informant interviews

Key informants, including forest, fisheries and department of National Parks and wildlife (DNPW) officials were asked on the influence of covid-19 on natural resources utilization such as water and energy sources and measures put in place to ensure sustainable utilization of natural resources.

2.4. Data Analysis

Quantitative data were coded and processed using Statistical Package for Social Sciences (SPSS) software to generate the frequencies of responses. Below, we report the results of the study, highlighting the influence of covid-19 on natural resources utilization in Chongwe district of Zambia.

3. RESULTS

3.1. Gender Distribution of the Respondents

In the course of this study, most of the respondents were males at 111 representing a percentage of 44.5%. Females stood at 89 representing about 56% of the sample total sample. The data is presented in Figure 2.

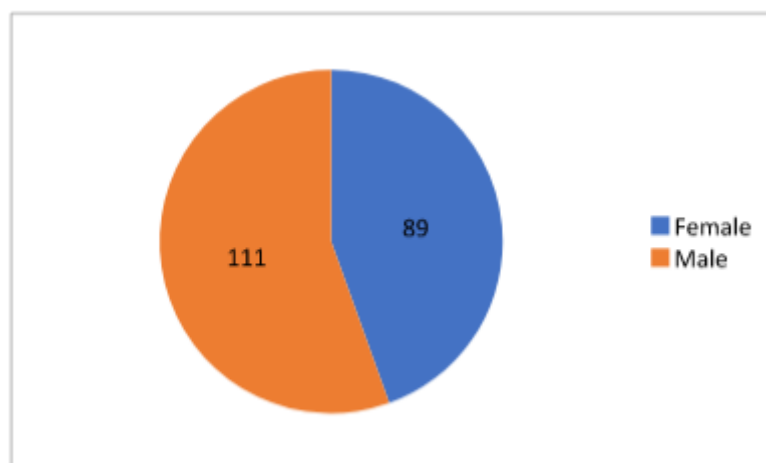


Figure2. Showing gender distribution of respondents

Source: Field data, 2022

3.2. Level of Education

Figure 2 presents the findings on level of education in the selected sample. It was found that 52 (26.0 %) of the respondent had no form of education. Whiles 43 (21.5%) of the total respondent had attained primary level of education and 51 (25.5%) had some secondary form of education. Furthermore, 54 (27.0%) of the respondent had some tertiary level of education (Figure 2).

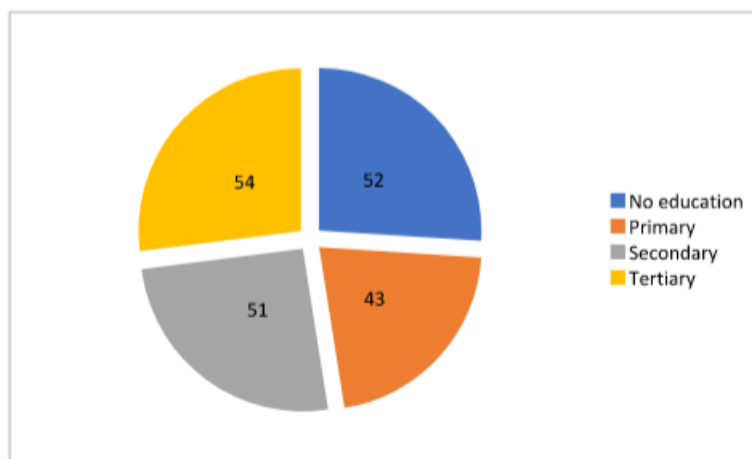


Figure2. Showing education level of respondents

Source: Field data, 2022

3.3. Water Usage before and During Covid 19 Pandemic

From the data collected, 75 (37.5%) responded that their there was a decrease on the water usage during covid-19 compared to before covid-19. 65 which represents 32.5% added that there was an increase on water usage and about 60 (30%) respondents disclosed that the usage remained the same during pandemic. (Figure 3).

Effects on water usage before and during covid-19

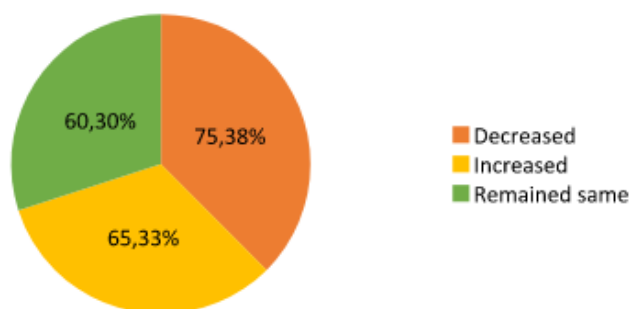


Figure3. Showing responses on effects on water usage before and during covid 19

Source: Field Data, 2022

3.4. Effect on Energy For Cooking Before and During Covid-19

The data collected shows 71 (35.5%) of the respondents said that energy usage decreased. While 64 (32%) of respondents said that the energy usage increased. About 65 (32.5%) of the respondents said that the energy usage remained the same. Figure 4 below is the presentation of the findings.

Effect on energy for cooking before and during covid-19

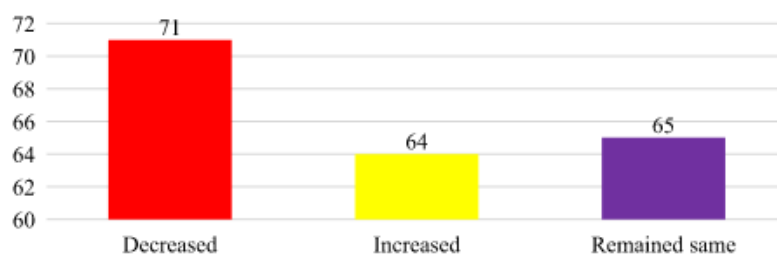


Figure4. Showing the effect on energy for cooking before and during covid-19

Source: Field Data, 2022

3.5. Natural Resource Utilization before and during Covid 19

Key respondents from the ministry of forestry, DNPW and fisheries reviewed that utilization of natural resources such as firewood was on the increase during covid period. This according to them was attributed to the lockdown measures by the ministry of Health and use of traditional medicines in covid 19 cure which necessitated the need for more food and firewood. They further indicated that the lockdowns and travel restrictions that were a product of the pandemic, were seen to have certain beneficial effects on the environment such as decrease in Air and water pollution which agrees with Fayzullaev, (2021) who noted the reduction in noise pollution and air pollution as a positive effect of Covid 19 pandemic.

3.6. Policy Provisions on Natural Resource Use

Information from policy documents that were examined such as the National Policy on Environment (MTENR, 2007), stipulates explicitly that natural resources such as water and forest should be managed and utilised in a sustainable way but does not offer insights on how natural resources such as water and forest should be utilised in a sustainable way especially when there is pandemic such Covid 19 that has posed threat to natural resource use.

4. DISCUSSIONS

4.1. Water Usage before and during Covid-19

The findings reviewed that 75 (37.5%) responded that their there was a decrease on the water usage during covid-19 compared to before covid-19. 65 which represents 32.5% added that there was an increase on water usage and about 60 (30%) respondents disclosed that the usage remained the same during pandemic. This can be attributed to the fact that most of the industries were closed during covid-19 pandemic and many people were not moving anyhow so as to reduce the water usage in various organisations such as shopping malls and other crowded areas which consume a lot of water. Not only that, most people lost employment due to the pandemic, hence their source of income have been affected which has resulted into failing to pay water bills. This has made many people to reduce on their water usage during the pandemic.

4.2. Energy Usage before and during Covid-19

Among the participant who took part in this study it was established that 71 representing 35.5% of the respondents said there was a decrease in energy usage during covid-19. This reduction was as a result of shut down of various industries, also other people failing to pay for electricity bills due to some lockdown in the area. Not only that, it can also be added that most people had less monthly income during the pandemic due to loss of jobs as well as their changes from their working premises, as a result most people were failing to subscribe for the electricity in their homes and also other sources of energy such as such fuel and charcoal for cooking were scarce due to some restrictions which were made in various provinces which were attached to covid-19. Lastly, it can be deduced that the Zambia Electricity Supply Cooperation Limited (ZESCO) units was too high during the pandemic as compared to before because most people were failing to manage to purchase the units as -due to job loses

5. CONCLUSION

It can be concluded that Covid 19 had and still has an impact on the utilization of the natural resources of the environment. The use of water, the need for food, firewood and all this greatly impacts the natural resource. The increase of resource utilization is as the result of the measures indulged in trying to control the spread of the virus. The “stay home” decree, as one of the most important preventive measure against the virus resulted into people engaging in cutting down trees for heat energy, both warming up and cooking and also excessive use of electricity in urban areas. However, with this excessive increase in resource use,* more damage is being caused on the environment. But there are still ways which we can adopt of utilizing resources more efficiently while keeping ourselves safe. The study on the other hand showed that the lockdowns and travel restrictions that were a product of the pandemic were seen to have certain beneficial effects on the environment which included decrease in air and water pollution, reduced noise pollution levels from vehicles, boats and planes boats and planes which in turn have positive effects on biodiversity and ecosystem restoration. In order to

reduce the negative effects of Covid 19 shown by the study, we propose the implementation of a multispectral involvements for adaptation and environmentally friendly technologies to improve and safeguard sustainable use and management of natural resources in the country.

6. RECOMMENDATIONS

- Governments in countries experiencing a rise in deforestation, illegal mining and poaching urgently need to maintain enforcement efforts, even during the COVID-19 pandemic. After restrictions are lifted, governments and development financing institutions should prioritize stimulus efforts that have high economic multiplier effects and reduce carbon emissions.
- Although the positive impacts of COVID may be very visible now, the negative impacts must not be ignored. The policymakers should take note of improved air and water quality conditions due to the ceased anthropogenic activities and should plan the future urban dynamics accordingly.
- Although the positive impacts of the pandemic may be only temporary, this can be an eminent opportunity to implement policies to facilitate true change. A change that can better the Earth for future generations to enjoy.
- There is need for implementation of a multispectral involvements for adaptation and environmentally friendly technologies in order to improve and safeguard sustainable use and management of natural resources in Zambia.

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