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TRACKING MY ENERGY CONSUMPTION (24 HOURS)

Introduction

Energy use is a fundamental aspect of our daily activities, influencing everything from the comfort of our homes to the efficiency of our workplaces. As societies increasingly rely on various forms of energy, be it electricity, gas, or renewable sources, the impact of our consumption patterns on the environment becomes ever more pronounced. The burning of fossil fuels for energy contributes significantly to greenhouse gas emissions, which are a primary driver of climate change. Additionally, inefficient energy use can lead to higher utility costs and increased resource depletion.

Given these concerns, understanding our individual energy consumption is crucial for fostering sustainable practices. By tracking energy use in everyday activities such as heating, lighting, and operating electronic devices, we can identify patterns that may contribute to unnecessary waste. This report aims to analyze my energy consumption over a 24-hour period, providing insights into how my habits align with broader environmental goals. Through this examination, I hope to uncover opportunities for reducing my carbon footprint and promoting a more sustainable lifestyle.

2.0 My Energy Usage

After tracking my energy use within 24 hours, I realised my consumption pattern through these activities:

Ironing, phone charging (two hours twice a day), laptop charging (3 hours), indoor lighting (in the evening from 6pm to 10pm), fan (8 hours throughout my sleeping time), playing game (on TV for 1 hour) and gas cylinder for cooking (approximately 2 hours both morning and the evening). I then named my energy as “cyclical energy consumption) because ever since I tracked my daily energy consumption, my relationship with energy was the same.

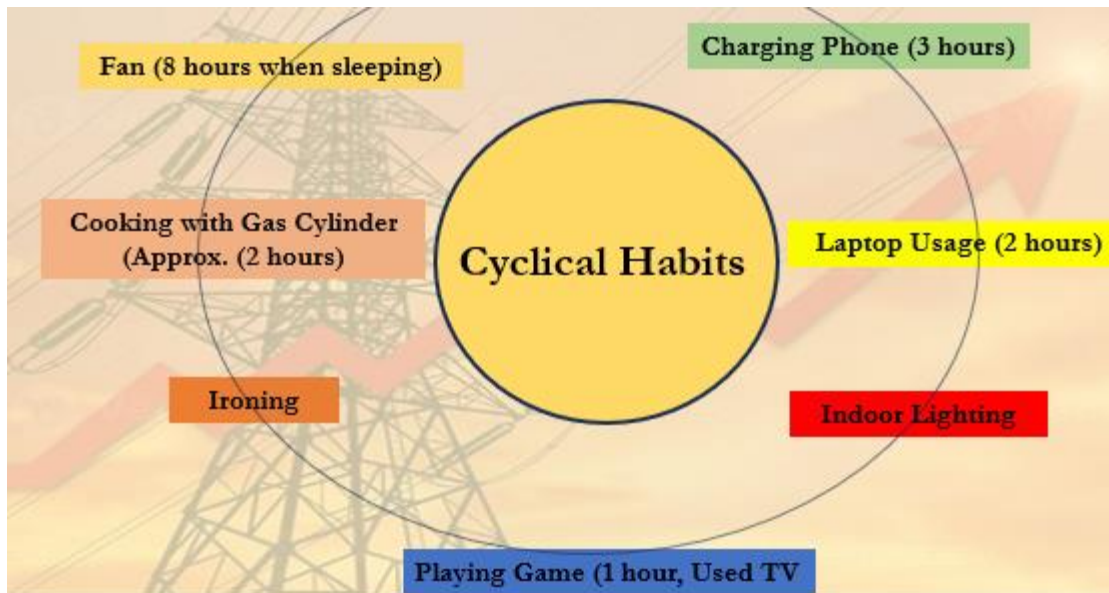


Figure 1.0 Diagram showing my energy consumption habit

Source: Personal construct

2.1 Sources of my Energy Consumption

After tracking my energy consumption, I classified it into two categories namely:

Energy for Lighting: these are the activities related to electrical and home appliances, like fan, phone and laptop charging, ironing, television, *whiles*

Energy for cooking: are the sources of energy used for cooking.

2.1.1 Energy For Lighting

After tracking the source of this energy, I discovered through my research that, my energy for lighting comes from Akosombo Dam (National Grid) a renewable source of energy that is hydroelectric power. The Akosombo Dam, also known as the Volta Dam, is a hydroelectric dam on the Volta River used to generate electricity for most of the 16 regions of Ghana and its neighbouring West African countries, including Togo and Benin (Benjamin Kobina Amoah Dadson, 2023).

History and Impact of the Akosombo Dam (Hydro Electric Power)

The Akosombo Dam, located on the Volta River in Ghana, created Lake Volta, the world's largest man-made lake by surface area. Initially, it was built to supply electricity for the aluminium industry, it now provides power to Ghana, Togo, and Benin. However, its construction displaced many people and negatively impacted the environment, leading to issues

like coastal erosion, altered rainfall patterns, and soil degradation. Eutrophication from agricultural runoff has exacerbated challenges like invasive weeds and increased disease vectors, complicating resettlement efforts and contributing to local poverty.

The Akosombo Dam in Ghana, conceived in 1915 and constructed in the 1960s with funding from the Volta Aluminum Company (Valco), is a high rock-fill embankment dam that created Lake Volta, the world's largest man-made lake. The dam features six Francis turbines generating 1,020 megawatts of power, primarily for an aluminum smelter at Tema. The project aimed to foster local aluminum production and included financial incentives for Valco from the Ghanaian government, with a total estimated cost of \$258 million.

The Dam in was constructed between 1961 and 1965 by the Italian consortium Impregilo, was funded by the Ghanaian government and international partners. The Volta River Authority (VRA) managed the project, which created Lake Volta, flooding parts of the Volta River Basin and displacing about 80,000 people from 700 villages. Despite challenges, including a significant flood in 1963, the dam was completed ahead of schedule. The project significantly impacted local communities, primarily subsistence farmers and fishers, necessitating extensive resettlement efforts.

Now, the Akosombo Dam in Ghana generates electricity for the country and neighboring Togo and Benin, initially providing 20% of its output to Ghanaians while 80% served the Valco plant. This arrangement has raised concerns of neocolonialism, as Ghana was contractually obligated to pay over 50% of the dam's construction costs despite receiving only a fraction of the power. Over time, Ghana's industrial growth increased electricity demand beyond Akosombo's capacity, leading to the construction of the Kpong Dam in 1981 and subsequent upgrades to Akosombo. However, challenges such as rolling blackouts and low water levels in Lake Volta have persisted. In 2007, concerns about electricity supply arose due to low reservoir levels, although heavy rains later alleviated these issues. In 2010, record water levels necessitated the opening of floodgates, causing downstream flooding (*Akosombo Dam - Wikipedia*, n.d.).

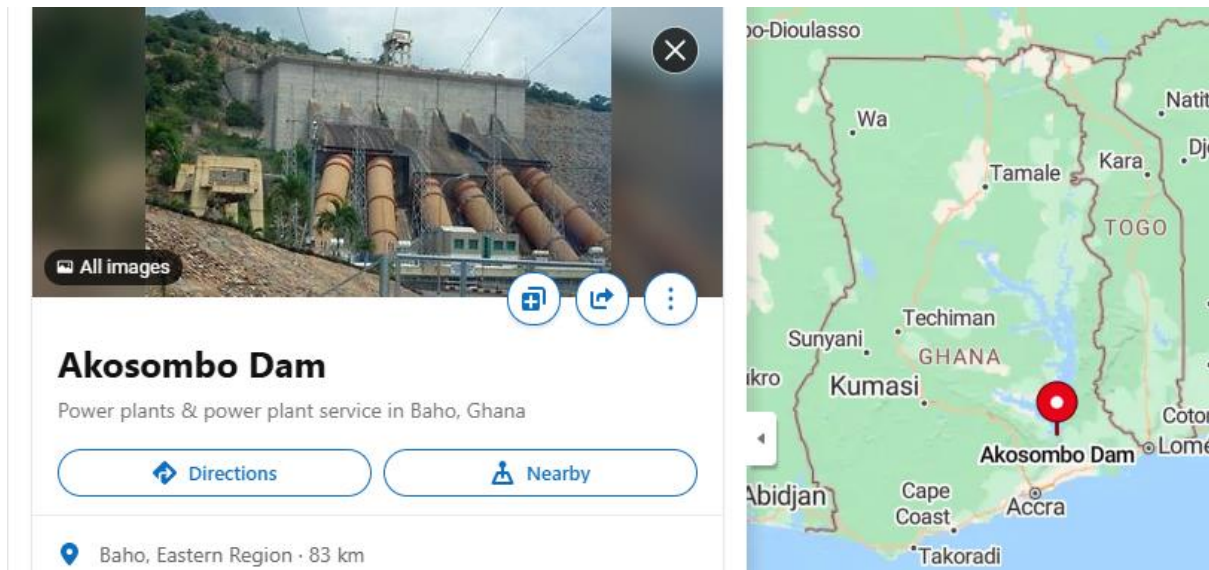


Figure 1.2 Image Showing The Akosombo Dam and Its Location in Ghana

Source: Personal Screenshot from ([Akosombo Dam - Bing Maps](#))

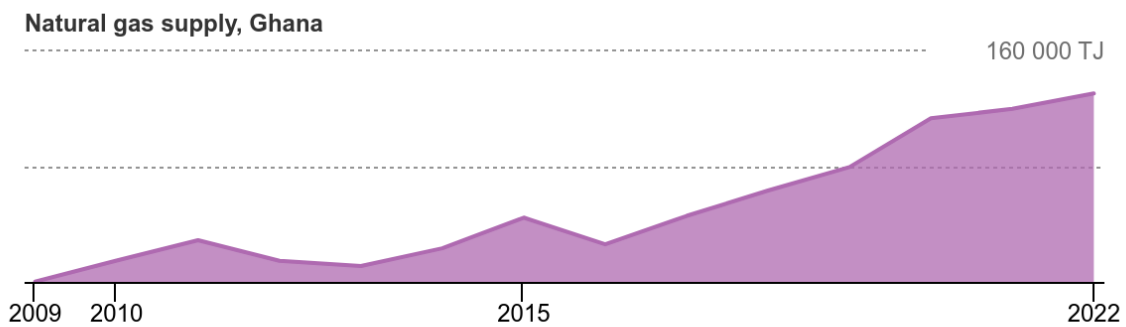
2.1.2 Energy for Cooking

This section explores the source and history of my energy used for cooking.

Ghana's natural gas supply primarily comes from the Jubilee and TEN (Tweneboa, Enyenra, and Ntomme) oil fields, located offshore in the Jubilee Basin. Discovered in 2007, the Jubilee field began production in 2010, significantly boosting Ghana's energy sector (*Natural Gas _ Ghana Energy Database*, n.d.). Initially, much of the gas was flared during oil extraction; however, the government recognized the need to harness this resource for power generation and industrial use.

In 2014, Ghana launched the Gas Infrastructure Project to develop a domestic gas supply system, enhancing its energy security and reducing reliance on imported fuels. The Atuabo Gas Processing Plant, operational since 2015, processes gas from the Jubilee field for use in electricity generation, contributing to a more stable power supply.

Statistics show that natural gas now plays a crucial role in Ghana's energy mix, accounting for over 50% of electricity generation. This shift has helped reduce emissions by transitioning from heavy fuel oil and biomass to cleaner natural gas. However, challenges remain, including infrastructure limitations and environmental concerns related to gas flaring and methane emissions (International Energy Agency (IEA), 2019).



Source: International Energy Agency. Licence: CC BY 4.0

Figure 1.2 Chart showing Ghana's natural gas contribution to CO₂ emission

Source: [Ghana - Countries & Regions - IEA](#)

Experience Reflection

Tracking my energy consumption and their sources has change my thinking differently, relationship with energy and to inpired others towards more sustainable energy habits because:

- Keeping track of my energy consumption made me more aware of how often I rely on electricity for daily tasks. I realized how many small actions contribute to my overall energy use
- It has prompted me to be more mindful about my energy consumption. I now consider alternatives, like using natural light during the day or opting for cold brews instead of using the coffee maker
- By sharing my experience and findings, I can encourage friends and family to track their own energy use. Hosting workshops or discussions about sustainable practices can also help raise awareness about our collective energy footprint

Conclusion

Tracking my energy consumption has revealed significant insights into my daily habits and their environmental implications. The journey highlighted specific areas where energy use can be reduced, suggesting that even minor adjustments can lead to substantial savings and a lower carbon footprint. This exercise not only emphasizes the importance of monitoring energy usage but also serves as a call to action for individuals to adopt more sustainable practices in their daily lives. By implementing the strategies identified in this report, we can contribute to a more sustainable future while also encouraging others to reflect on their own energy consumption.

Continued awareness and proactive changes are essential in our collective effort towards environmental stewardship.

LIST OF REFERENCES

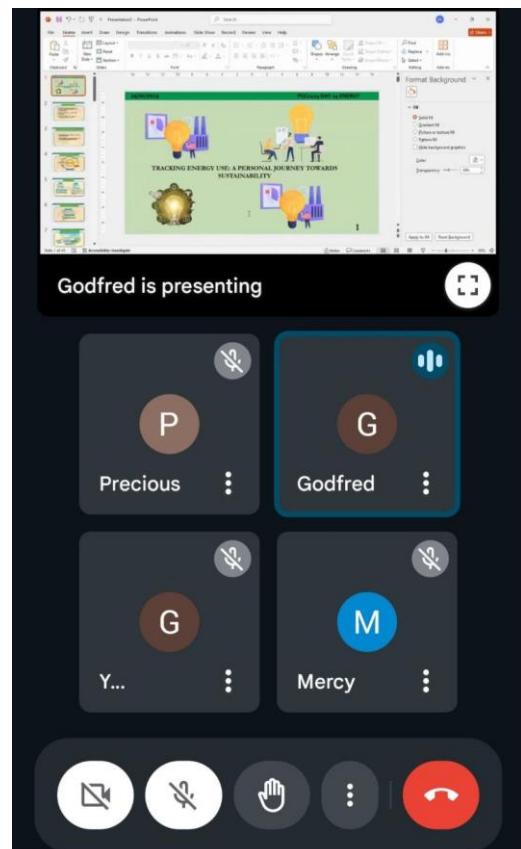
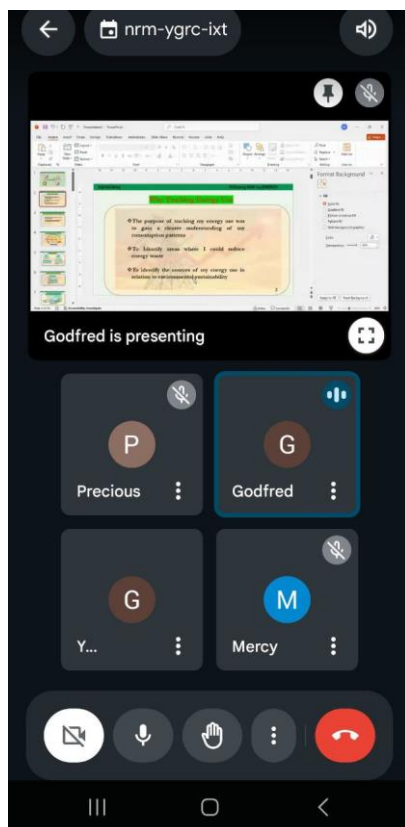
Akosombo Dam - Wikipedia. (n.d.). https://en.wikipedia.org/wiki/Akosombo_Dam#cite_note-Zakhary-3

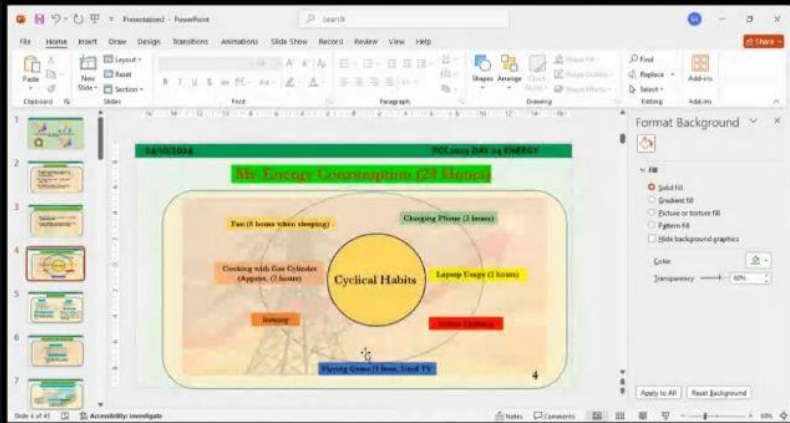
Benjamin Kobina Amoah Dadson. (2023). The Akosombo Dam Spillage | UNICEF Ghana. In *United Nations*. <https://www.unicef.org/ghana/blog/akosombo-dam-spillage>

International Energy Agency (IEA). (2019). Ghana - Countries & Regions - IEA. In *Iea Key Energy Statistics*. <https://www.iea.org/countries/ghana>

Natural Gas _ Ghana Energy Database. (n.d.).

SCREENSHOT OF VIRTUAL PRESENTATION





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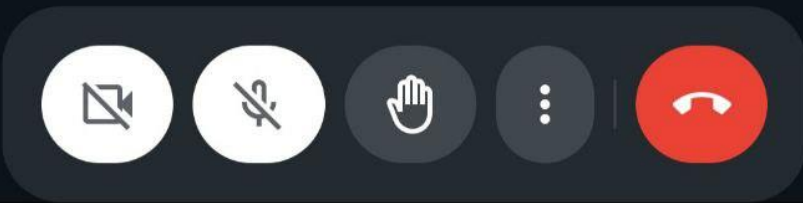


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VIRTUAL PRESENTATION SLIDE SHOW

24/10/2024

PGC2024 DAY 24 ENERGY



TRACKING ENERGY USE: A PERSONAL JOURNEY TOWARDS SUSTAINABILITY



1

24/10/2024

PGC2024 DAY 24 ENERGY

Why Tracking Energy Use

- ❖ The purpose of tracking my energy use was to gain a clearer understanding of my consumption patterns
- ❖ To Identify areas where I could reduce energy waste
- ❖ To identify the sources of my energy use in relation to environmental sustainability

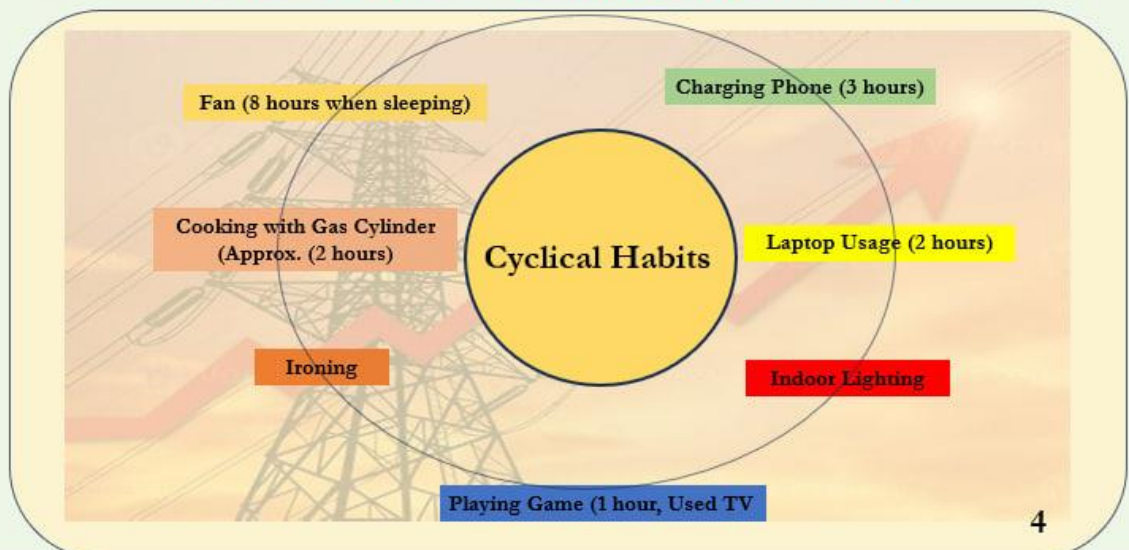
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Importance of Understanding Energy Consumption

- ❖ Understanding energy consumption is crucial for fostering sustainability
- ❖ It helps individuals recognize their impact on the environment and promotes responsible usage

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My Energy Consumption (24 Hours)



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ENERGY SOURCE

Lighting

- ❖ My primary source of energy is from the Akosombo Dam, which provides hydroelectric power

Benefits of Hydroelectric Power

- ❖ Hydroelectric power is renewable
- ❖ Reduces greenhouse gas emissions
- ❖ It's an eco-friendly alternative to fossil fuels.

VS

Cooking

- ❖ Energy source of cooking from natural gas

Effect of Natural Gas

- ❖ Greenhouse Gas Emissions: Methane leaks contribute to climate change
- ❖ Water Pollution: Hydraulic fracturing (fracking) contaminates water sources
- ❖ Respiratory Issues: Indoor air pollution from gas cooking

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REFLECTION ON ENERGY USE

Insights Gained

- ❖ Tracking my energy consumption made me realize how often I rely on electricity and the cumulative effect of seemingly minor activities

Changes in Perception

- ❖ I now view my energy use as a part of a larger environmental impact, prompting me to consider how I can make more sustainable choices

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Changing Relationships with Energy

Awareness Leading to Responsible Choices

❖ Being aware of my consumption has encouraged me to:

- ✓ turn off lights when not needed
- ✓ use energy-efficient appliances
- ✓ unplug devices not in use
- ✓ Use sustainable energy for cooking

Examples of Small Changes

- ❖ Using natural light during the day
- ❖ Minimizing screen time
- ❖ Opting for energy-efficient bulbs

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Inspiring Others

Strategies to Encourage Sustainable Energy Habits

- ❖ Sharing my experience through conversations and social media platforms can raise awareness
- ❖ Organizing community workshops focused on energy conservation can empower others to make changes
- ❖ Creating challenges, such as “Energy-Saving Week,” can engage friends and family in collective efforts

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Conclusion

- ❖ Being mindful of our energy use is essential for promoting sustainability and reducing our carbon footprint
- ❖ I encourage everyone to track their energy consumption for a week and identify at least three areas where they can reduce usage

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**THANK
YOU**

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SOCIAL MEDIA POST



godfred8681



24/10/2024

PGC2024 DAY 24 ENERGY



TRACKING ENERGY USE: A PERSONAL JOURNEY TOWARDS SUSTAINABILITY



godfred8681 Just wrapped up my journey of tracking energy use! It's amazing how small habits add up. Let's be more mindful and make sustainable choices together! 💡

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[#PGC2024](#)

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