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Project B- Pre work

CS-150 Community Action Computing

Pre-reading Reflection Responses

A. How fast is the global access to electricity growing?

Slowly.-- expected to grow from 91% to 92% from 2021 to 2030

B. Which regions saw the largest growth in access to electricity?

South Asia had a growth of about 60% to high 90%, and Sub-Saharan Africa grew from about 25% to around 50%.

C. How does living in the urban vs. rural areas correlate to access to electricity?

In 2021, 675 million people worldwide lacked access to electricity. Around 80 percent of those lived in rural areas.

This is most evident in Sub-Saharan Africa, where almost 60 percent of people live in rural communities. In this region, the proportion of residents with electricity was 30 percent in rural areas compared to 81 percent in urban areas in 2021.

D. Which data is used to gain insights on where people without access to electricity live?

Nighttime lights are captured through satellite images, which allows data collection for conflict areas who can not participate in other studies or surveys.

E. How does MTF assess the quality of access to electricity in a household?

It checks 5 main components: capacity, quality, affordability, reliability, and safety, to see which tier of access a region belongs to. The world bank defines the tiers as, "Tier 0 represents no access or minimal access. Tier 1 or 2 access (with a daily capacity of 4 hours) may provide a household with essential lighting and

power small appliances. However, it is not enough to operate a refrigerator. Tiers 3, 4, and 5 provide higher levels of access (for 8 hours, 16 hours, and 23 hours, respectively) with less interrupted service and the capacity to power high-load appliances. A Tier 5 daily capacity can power air conditioning, a heater, a microwave, a refrigerator, or a washing machine."

F. What is the environmental trade-off for higher tier access to electricity?

Higher-tier electricity access improves quality of life but increases carbon emissions, resource depletion, and habitat disruption, especially if reliant on fossil fuels. While renewable sources help mitigate emissions, they come with challenges like land use impact and resource-intensive battery production.

G. Which regions had the most environmentally sustainable efforts to increase access to electricity? Which regions had it the worst?

Best efforts: Latin America. They are evolving towards universal access to electricity, while simultaneously significantly lowering emissions per capita due to their use of hydropower.

Worst efforts: East Asia & Pacific and Middle East & North Africa. They are approaching full access to electricity, but are increasing their greenhouse gas emissions per capita as they do.

H. Which is the fastest-growing renewable source of electrical energy in low-income countries? What should be considered when planning for this method of power generation?

The fastest-growing renewable energy source for low-income countries is Hydro. The article warns against the potential impact of climate change on surface water flows.

I. Was this presentation an effective storytelling with data? Why, or why not?

Overall I would say yes, although it was a little cluttered at times. They were showcasing a lot of different information in different ways which I enjoyed but I can also understand why some people would not prefer this style of presentation.

J. Which data visualization from the presentation was most appealing to you? Insert a screenshot and explain why:

I enjoyed the interactivity of this data visualization above all else. The hover-over effect was helpful in understanding which colors were signifying which zones. The placement of the horizontal bars going from zone 0 to 5 in each different type of are (rural vs urban) really helped me understand the difference between the two, mainly how there is generally higher tiers in more urban areas.
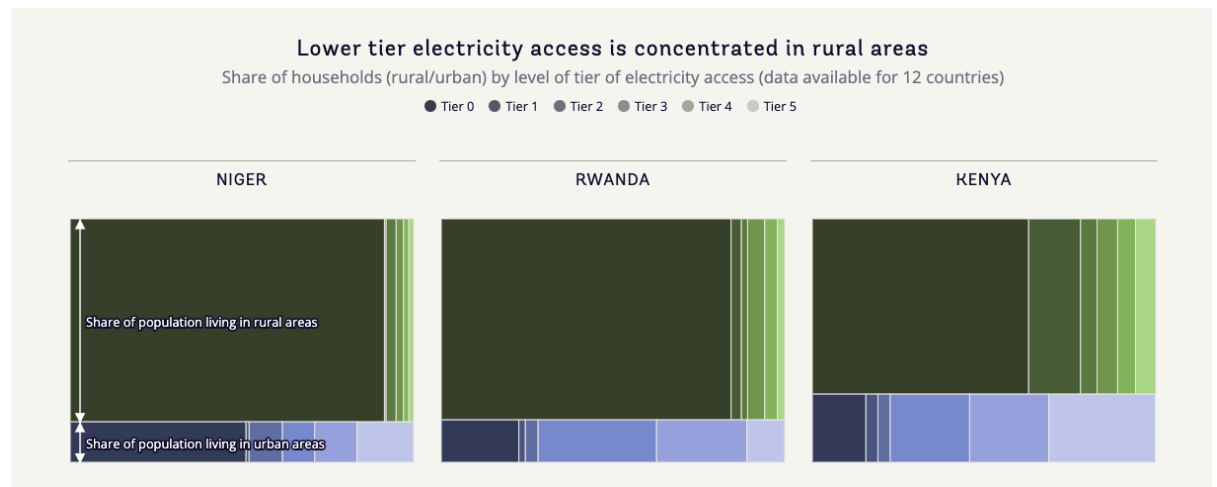
K. Which data visualization from the presentation was least appealing to you? Insert a screenshot and explain why.

The squiggly lines and inconsistent axis were hard to follow. The plot points varying in size also added to the confusion, and the explanation text being so far off the to side was difficult to track. At first glance it was nearly impossible to see what the graph was trying to prove/ show.

With improved electricity access, greenhouse gas emissions have increased

Greenhouse gas emissions per capita from electricity and heat sector vs. Proportion of population with access to electricity

↑ Greenhouse gas emissions per capita
10 tons

SUB-SAHARAN AFRICA

Proportion of population with access to electricity →