

Homework 1 Solar Power Africa Due August 28, 2023

There are several links on the webpage on the “state of the world”. This course attempts to present some possibilities of how your studies in Chemical Engineering could be used to create a great world state. In the world, the locations with the greatest potential of impact are in sub-Saharan Africa. Through this course we can explore some possible options and low hanging fruit where we could create a great state of the world. Below are links to nine videos. You can skim through these if you want, watch enough to answer the questions, hopefully have a discussion with your group about the state of the world.

Documentary Movie about mostly about East Africa Parts 1,2,3,4 (15 min each)

<https://www.eng.uc.edu/~beaucag/Classes/SolarPowerForAfrica/Linktovideo.html>

Recent “short” video about the situation in Ethiopia through which the students travel in part 1. This is a bit long, it is nice because the history lesson is accurate and it shows how complex even the last 50 years have been for all of the 54 African countries, each has a different story.

<https://www.youtube.com/watch?v=z0cYHw-joZI>

The students in the first movie do not travel to West Africa. Lagos is about 4,000 miles from Dar Es Salaam in East Africa.

Just skim through the first video. The point is the future of Africa from a business perspective.

<https://www.youtube.com/watch?v=HbsdLI8kaWc>

Second video shows how people get electricity in the middle of Lagos with an unreliable and expensive grid. This could be why they are eager to have solar power.

<https://www.youtube.com/watch?v=gBUWB8atYoY>

Cape Town Tourist Video. Cape Town is about 4,000 miles from Addis Ababa and 3,000 miles from Lagos.

<https://www.youtube.com/watch?v=FwKxfuJsG60>

Video showing townships in Cape Town

<https://www.britannica.com/video/179596/look-life-townships-film-Cape-Town-2009>

10% of the world live on less than \$1.90 per day (one cup of rice \$0.22; one cup of beans \$0.30)
(41% of Sub-Saharan Africa live on less than \$1.90/day)

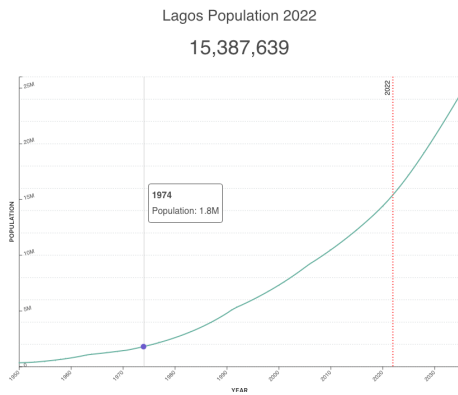
Chinese businesspeople have just completed an interstate highway and rail system in Ethiopia as well as a streetcar/subway system in Addis. 15 years ago, Addis was clogged with herds of cattle and goats that blocked traffic. There was only one stoplight, and it didn’t work because people stole the bulb.

- a) In the opinion of your group assess the “state of the world”. This is open ended. But one word probably isn’t sufficient. Shoot for about three sentences (but less than 5 pages.) (You might want to try ChatGPT if you are at a loss for words. If you use ChatGPT you probably need to give it a clue to where you want to go, like what is the state of the animal world, or what is the state of the world in terms of human survival, or survival of the oceans or the chemical industry, or my earning potential.)
- b) From the videos and from your experience, what is your impression of how you could interact with people in the developing world, particularly in Africa? What opportunity is

there for you to create a great state of the world (however you want to define it)? I suppose you should try to not be cynical (unless it is funny).

c) Comments about the videos. Did anything strike you?

Below are two interesting graphs comparing the growth in population of Lagos Nigeria and the reduction of New York City. The Lagos graph is an example of exponential growth, New York is showing a linear decline. Similar exponential growth is seen across Africa.



Graph of New York City's population since 2010 per the US Census Bureau. Why has the population been declining since 2016?

