Activity 2.1.3 Water: A Global Crisis

Introduction

Clean drinking water is essential for health and survival. Yet around the world, millions of people do not have access to safe drinking water. Data from world health organizations about the extent of the global drinking water crisis are striking.

- 785,000,000 people around the globe did not have access to clean, safe drinking water in 2010. This represents roughly 1 out of every 9 people (11.4%). On the positive side, this is an improvement from 2000 when 1,060,000,000 people (17.5% of the world’s population) did not have access to safe drinking water.¹
- 38% of the people living in sub-Saharan Africa lacked access to safe drinking water in 2010. This is an improvement from 2000 when 45% of the people in this region faced the same problem.¹
- 2,490,000,000 people did not have access to improved sanitation facilities. 1,050,000,000 of these people live in areas with open sewers and public defecation.¹ The lack of improved sanitation systems is one of the main causes of unsafe drinking water.
- 80% of illnesses and deaths within developing countries are linked to poor water and sanitation.²
- Every eight seconds a child is killed by water-related diseases.²
- 84% of the people who do not have access to improved water are self-sufficient farmers living in rural areas.

The extent of the clean drinking water problems faced by humanity is perhaps surprising to those of us who live in a developed country which can afford advanced technological solutions to ensure dependable water.

In this activity you will research and write a case study summarizing a drinking water problem faced by a specific city, country, or region of the world. According to Merriam Webster Dictionary, a case study is an intensive analysis of an individual unit (as a person or community) stressing developmental factors in relation to environment. Through this case study, you will explore the human consequences that result from a lack of clean drinking water, and you will investigate solutions for solving these problems.


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Environmental Sustainability Activity 2.1.3 Water: A Global Crisis – Page 1
Environmental Sustainability Activity 2.1.3 Water: A Global Crisis


Equipment
- Computer with Internet connection
- Presentation software

Procedure
Water Crisis Case Study

1. In teams of two or three, identify a specific country, region, or city anywhere in the world where people lack access to safe drinking water. You will research and write a water crisis case study for this country. The water crisis profiled in this case study can be any country where a drinking water problem currently occurs, where a natural disaster caused a short-term water crisis, or it can profile a place where a safe drinking water problem has been successfully solved.

Developing countries or regions are the most likely to face safe drinking water challenges. Sub-Saharan Africa and Oceania (a geographical region consisting of numerous countries and territories—mostly islands—in the Pacific Ocean) have some of the most significant drinking water related problems; however, nearly every developing country has some degree of safe drinking water problems. Areas affected by natural disasters, sudden environmental changes, or industrial accidents within both the developed and the developing world have also experienced drinking water problems.

2. Share your location with your instructor so as not to duplicate areas being covered by another team from your class.

Case Study Components

3. With your team complete the case study research and documentation. Think of a case study as a briefing paper that contains facts based upon documented sources of information and supporting narrative. The case study should provide the reader with a clear picture of the problem and potential solutions. Use the list of sections below in conjunction with the Case Study Rubric and the Documentation Protocol to help guide the structure of your case study.

- Profile of the country, region, community, city, or natural disaster area
  * Egypt is full of desert and hardly gets any rain, people in Egypt have problems with distribution of water and its usage. It relies heavily on rain water from other nations.
- Description of the safe drinking water problem
  * Water Pollution and dumping of toxic chemicals in the Nile River.
o Health problems and diseases
  Bilharzia or Schistosomiasis

o Number of people impacted
  Rural populations, who can’t get medical attention nor clean water.
  o Time frame/duration of the problem
    1993-2001
    ● Sources of drinking water
      Nile River (Main Source), Red Sea, and the Mediterranean Sea
    ● Causes of water contamination
      Toxic Chemicals are being poured into the Nile
    ● Factors influencing accessibility to clean water
      o Environmental
      Distance from the Nile or Other water sources. (Location)
      o Cultural
      o Economic
    Income, how much money they have to afford water
      o Political
    ● Solutions to the problem
      o Past and/or on-going solutions, if any, that have been implemented with an overview of the impact resulting from the solution.
    New amendments to the law protecting the Nile River and waterways

    o Description of possible solutions to the problem that your team would recommend.
    Use money to building distillation facilities to clean the Nile River.

    o Role of STEM-related careers in the design and implementation of the solutions.
    They can design methods to clean the water or find ways that will be efficient for Egypt. If their methods are economically and environmentally beneficial to Egypt.
      ● List of references using APA guidelines (use Documentation Protocol handout).

Starting Places for Research

4. Listed below are several organizations, research centers, and reports with information about safe drinking water problems around the world. These organizations will provide helpful starting points for your research.
  ● World Health Organization (WHO)
Present Case Study

5. Prepare a thorough 5-7 minute presentation to describe your case study to your classmates and instructor. The presentation should clearly and completely describe the water crisis in your selected area of the world. It should include pictures and/or a video. Follow the Tips for Producing Effective Presentations guidelines and the Case Study Grading Rubric to help guide your presentation development.

Conclusion

1. Identify what you think is the most disconcerting fact about the impact of unsafe drinking water on people. Explain why you believe this fact stands out.

   One disconcerting fact is that people are forced to drink dirty water that contains harmful chemicals and diseases. We believe this fact stands out because many people in poor villages around the world can’t afford clean water, so they are forced to drink from dirty water sources that are badly polluted.

2. Describe a culturally and economically appropriate engineered solution that can provide dependable, clean drinking to a rural village in a developing country. Explain your reasoning.

   Building a well because it is cheap and easier for the people to get clean water. Having a distillation facilities would make tons of clean water but the people would not be able to afford the clean water. Also maintaining a well would not require a lot of money either.

3. Summarize several of the consequences that result from the lack of clean water.

   Greater numbers of people will face the challenges of inadequate water accessibility, such as Food Shortages and human disease that brought by drink dirty water. It is difficult to have a thriving economy when fresh water is not easily accessible for industrial, farming, and individual use. Production of water-intensive goods like cars, food, and clothing could be limited by lack of freshwater resources. Lack of freshwater can also affect worker productivity by causing illnesses and higher water costs for individuals can reduce household disposable income.

4. What factors affect a region’s ability to access clean, safe drinking water?
Factors are their geography, economy, and weather. If they have deserts it will be hard for them to have water. If the area is poor getting clean water would be really hard since it might be expensive for them. The weather also is a factor because if the region doesn't get any rain at all then they need to find other sources for water.