

2005 Collaborative Question



Energy Crisis in India



Welcome to the annual meeting of the International Association for Energy Economics meeting in New Delhi, India. India is suffering from a severe energy crisis. Three different companies say that, if allowed to build in India, they can help solve the energy crisis. The cost for each of the proposed projects is relatively the same. Your job is to decide which company will help the country the most and present your recommendation to the Indian Prime Minister Monmonhan and the Council of States.

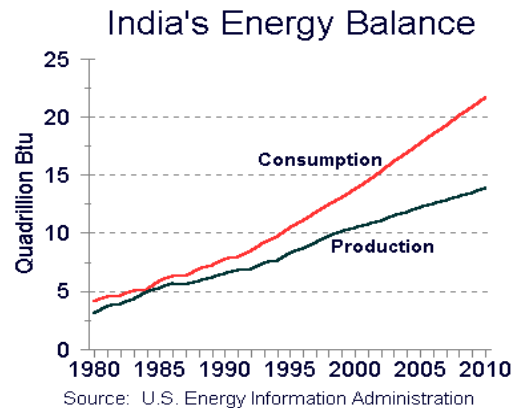
Steps to following in your decision making process:

1. Silently, read over all the information. As you read, mark the pros and cons that you think are most important for each company.
2. As a group, discuss the companies and complete the "Thinking Organizer."
3. Decide on which categories in the "Thinking Organizer" are most important to your group (for example, is sustainable energy more important than environment?)
4. Use the "Thinking Organizer" to discuss which organization you will recommend. Be prepared to explain why your group is recommending a specific company and why you decided to eliminate the other two. Your argument should include facts and examples from the handouts.
5. Your group should work well together as each person offers his or her opinion.



Overview and Background Information

India is in a severe energy crisis that will continue to increase in severity. Coal accounts for over 70% of India's energy production, but it is a limited resource that also hurts the environment. Even if more coal was mined, people are still using more energy than can be produced.



Because of the lack of energy resources, some Indian households go without electricity for several days. This can be a severe problem during the summer when temperatures reach over 100 degrees in southern and western India. Energy demands in the future will continue to increase as India's population (over one billion) continues to grow.

The lack of energy resources is an even larger problem in rural areas. Although India has emerged as a global leader in software and business services, the majority of Indians still live a rural agricultural life. Nearly 75% of the rural population of India still depends on bio-fuels (firewood, agricultural residues, and dung). The available fuel is only about 1/3 of what is needed. Indian villagers are forced to spend from two to six hours per day gathering fuel for their household cooking fires. India's reliance on firewood has led to deforestation and pollution. Every day, at 4pm, the majority of the people in India light their cooking fires for dinner, using fuels like dung and firewood. By 6 pm the smoke and haze has filled the air and it is difficult to see even a few feet. As a result, some people even wear masks to try to protect themselves from the polluted air.

Over 400 million people in India live below the poverty line. They survive on less than one dollar per day. India also suffers from drought, flash floods, deforestation, air pollution, water pollution and a rapidly growing population that is straining all of the natural resources.



The Salisbury Energy Company

Headquarters: Salisbury, United Kingdom

Proposal: Build a Nuclear Power Plant to service approximately 72 million people

Location: Hyderabad, Andhra Pradesh, Central India

PROS

- Today nuclear power is safely used in many parts of the world. It provides about 17% of the world's electricity.
- Nuclear power can make large quantities of energy without releasing greenhouse gases.
- The new power plant will provide many needed jobs and produce electricity for over 3 million people.
- The plant does not depend on the weather.
- India has three uranium mines and can provide all the uranium needed. Uranium is the fuel that powers the nuclear plants.
- India already has several successful nuclear reactors and this power plant would triple the energy output of the others.
- A nuclear fuel pellet, about half an inch long, provides the same amount of electricity as 1.5 half tons of coal.

CONS

- Nuclear power plants produce waste that remains toxic for centuries. Currently, there is no safe permanent storage facility for it -the company is proposing to bury it in rural central India.
- The mining of uranium also produces toxic waste.
- A risk of radiation leak or melt down of a nuclear reactor is extremely hazardous as are radioactive dust, radioactive gases and contaminated water.
- Uranium, which nuclear plants run on, is a limited resource.
- To build the nuclear power plant and mine the uranium, many local and tribal people will be forced to move.



Sunny Solar Energy Company

National Headquarters: Sidney, New South Wales, Australia

Proposal: To provide individual households with rooftop photovoltaic cells to generate electricity for approximately 56 million people.

Location: Jaipur, Rajasthan, Western India

PROS

- Solar energy is free and renewable.
- It is quiet and does not hurt the environment.
- The cost of solar energy equipment has dropped significantly in the past few years and is predicted to fall further as mass production increases.
- Solar energy is useful in remote areas far from a source of conventional electricity.
- Solar energy will provide the power for cooking eliminating the need of bio-fuels.
- The Thar Desert, near Jaipur, receives over 300 days of sunshine annually.

CONS

- Most homes would need to be redesigned to accommodate rooftop solar panels.
- Solar energy is not very efficient because it uses only about 15% of the sunlight's energy.
- Equipment can be expensive.
- It is difficult to store solar energy for when the sun is not shining
- Some of the huge batteries are an environmental risk if not disposed of properly.
- Toxic chemicals are also used in the production of parts of the solar energy equipment.
- Solar energy may not work well during the two month monsoon season in Jaipur.



Bettel Industries

National Headquarters: Minneapolis, MN, United States

Proposal: Large dam, reservoir and hydroelectric facility to provide power for approximately 80 million people on the

Location: On the Ganges River near Allahabad, Uttar Pradesh, Northern India

PROS

- Hydropower is non-polluting.
- Hydropower is renewable because water flows are replenished by the monsoons.
- India has the suitable climate and topography for hydroelectric power.
- The dam and reservoir will help control the devastating yearly flooding.
- Dams and reservoirs will improve navigation of the river.
- Multi-billion dollar project that will take at least 10 years to build and it will create many jobs to boost the local economy.
- Will provide 10% the nation's electrical needs.

CONS

- Building of the dam and reservoir will force approximately 1.5 million people to move.
- The habitat of the endangered fresh water Ganges River Dolphin will be reduced. Currently, there are only 4000 Ganges River Dolphins.
- Several valuable archeological and cultural sites will be flooded
- Forests will need to be cut down.
- Flooding is a potential hazard if the dam bursts or the reservoir fills with sediment.
- The Ganges River is regarded the holiest of rivers by the Hindus.



THINKING ORGANIZER

As you contemplate the pros and cons of each company's proposal, complete the following organizer. Consider the pros and cons for each company and decide which one is best for each category.

What company would your group recommend if sustainable energy was your priority? Why?

What company would your group recommend if the environment was your priority? Why?

What company would your group recommend if economic impact was your priority? Why?

After completing your organizer, discuss what is most important to your group and decide on the company you are going to recommend to the Indian Government.

Name of
Company _____