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Renewable Energy

Advantages/Pro

- Sustainable - never runs out
- Clean energy - doesn't contribute to greenhouse gases
- reduces little or no waste products
- Economic Benefits

Disadvantages/Cons

- Only effective in certain areas
- difficult to generate quantity of electricity that is as large as traditional fossil fuel generators
- usually relies on weather for its source, this can impact reliability and consistency

Sources of Renewable Energy:

- wind, moving water
- sunlight, geothermal (heat from underground)
- bio mass
- Georgia - hydroelectric - fueled by water, makes us self reliant, plenty of water sources available

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Nuclear Energy

Advantages/Pro

- Less expensive than using coal/oil
- Reliable - can run nonstop for long periods of time reducing brownouts & blackouts
- No green house gases emitted.

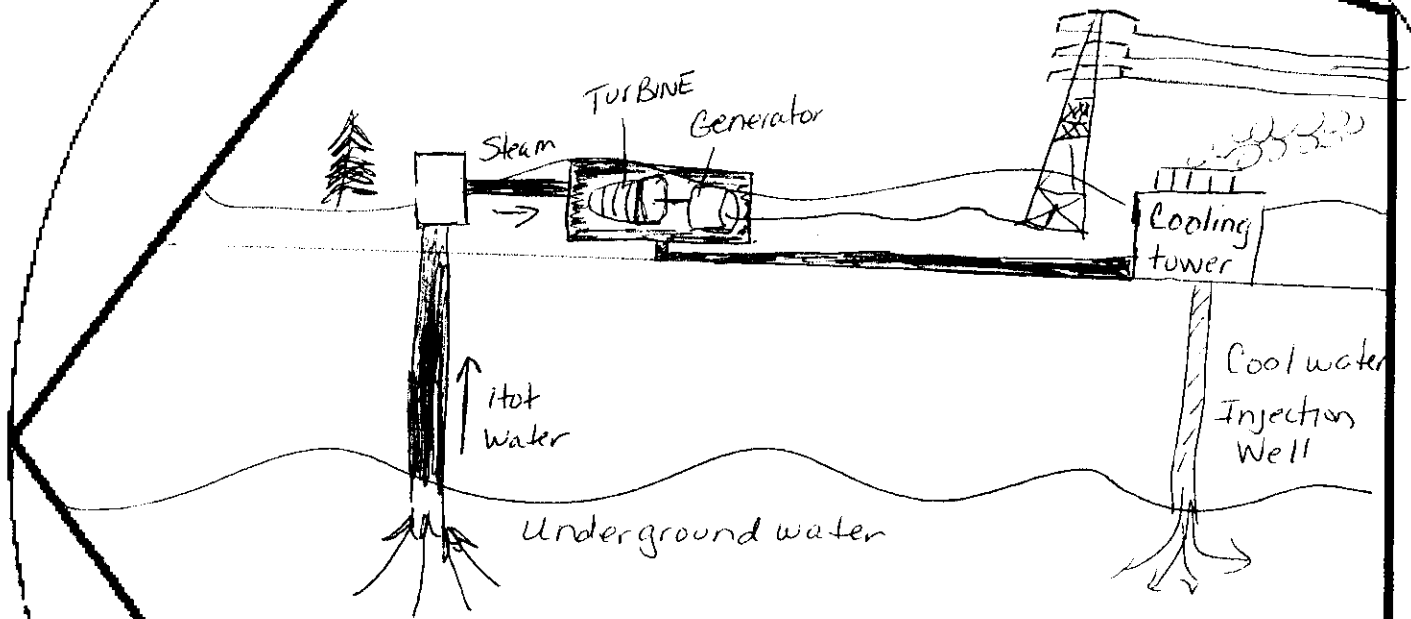
Disadvantages/Con

- *Storage of nuclear waste is major issue
- Raw material naturally unstable
- Possible water contamination
- Leaks of radiation

Why was it developed - 1940's it was used to develop bombs, then naval propulsion, and electricity

3

Geothermal Power Plant



Source of energy - ^{hot} Water - molten rock
is close to surface - heats water - water
turned to steam - passes through
turbine - generates electricity
water sent to cooling
tower then injected
back
underground

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The goal of sustainable energy is to find/use sources that will survive, flourish, and adapt to changing environmental conditions into the future.

Solar, wind, geothermal, hydropower, and Ocean energy are sustainable b/c they are stable and available in plenty.

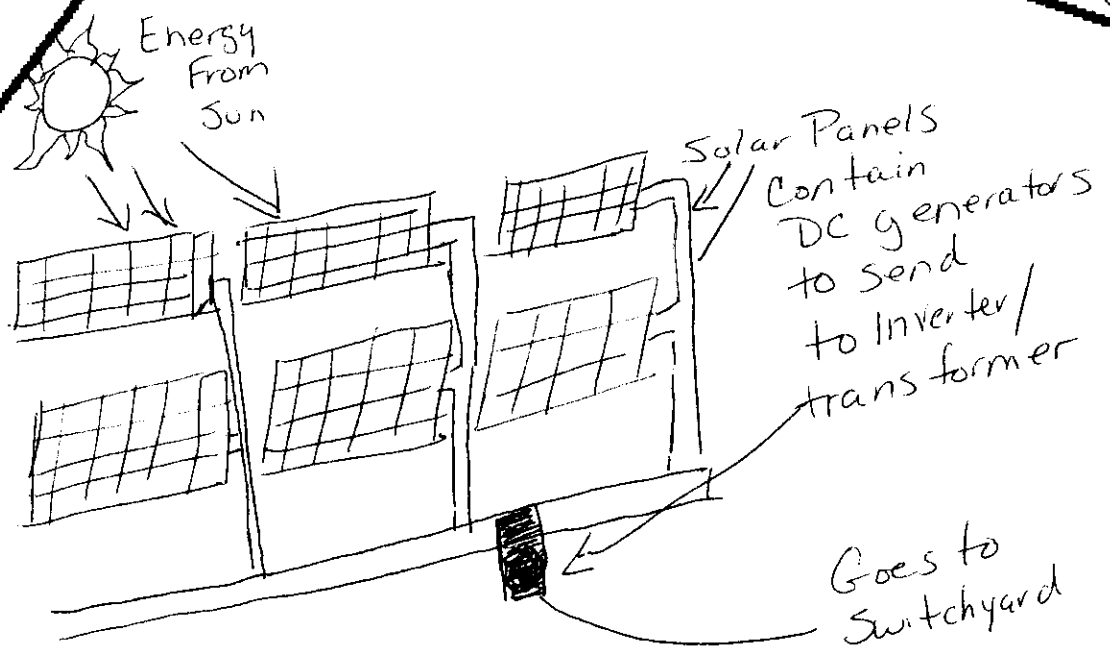
Exploitation of natural resources is the use of natural resources for economic growth with a cost. Cost can be economical energy, or environmentally costly (N.R. - land, air, water, biodiversity, soil)

Land/air, water damaged or destroyed by past uses. (deforestation, stripmining)

Fix by using less energy
alternate energy
replant, reuse
etc.

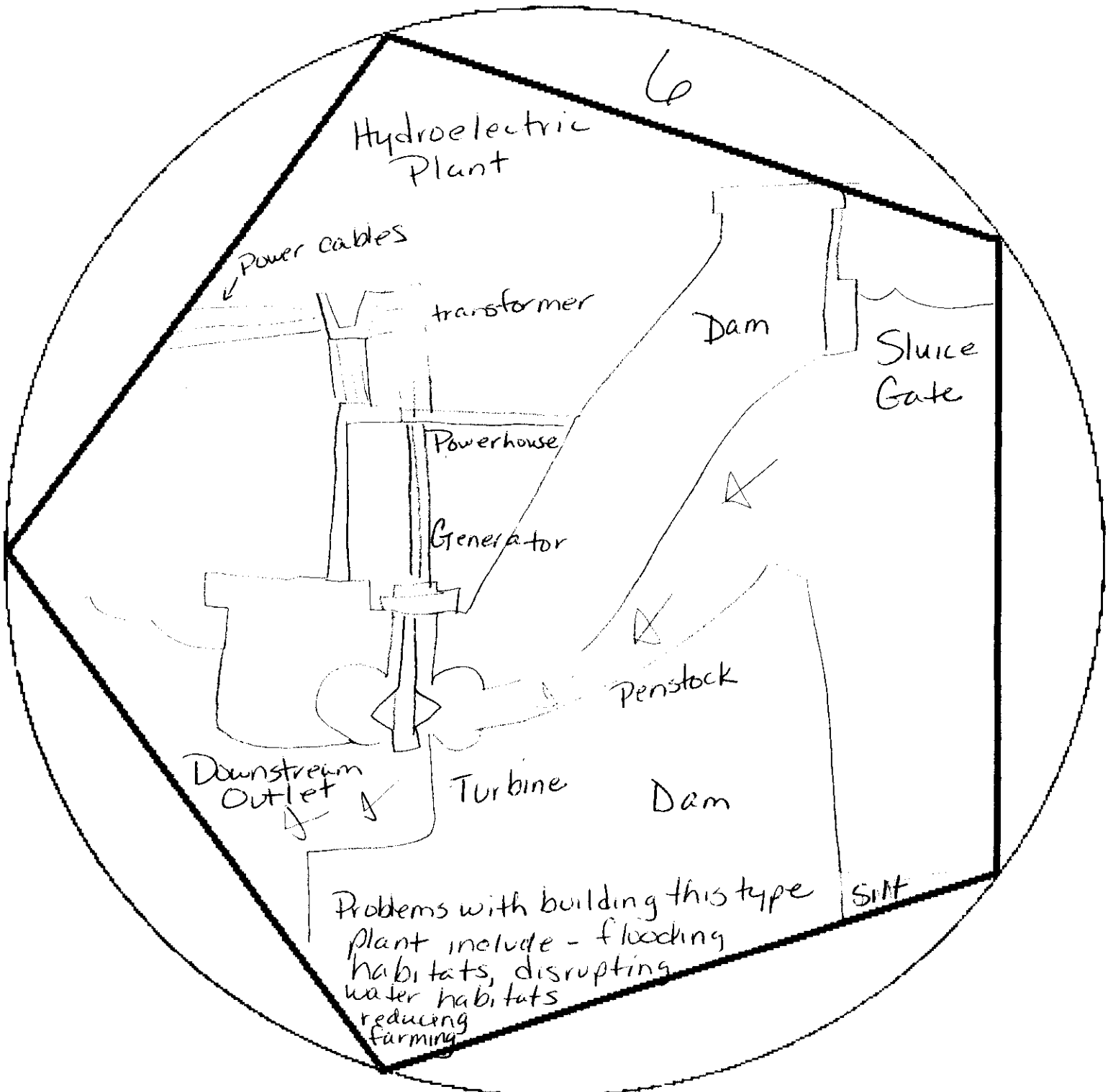
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Solar Energy Farm



Solar Farm is not yet economically competitive as a major energy source.

Goes to Switchyard and out to customers



Problems with building this type plant include - flooding habitats, disrupting water habitats, reducing farming

SMT

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Wind Power

Wind is renewable, no fuel cost, and no harmful polluting gases produced. On the other hand, wind farms are noisy, take up space, and spoil the view of neighbors. Most important disadvantage is wind is not constant.

Tidal Power

Tidal Power is better than wind power in that it is predictable and consistent. It is renewable, green, no harmful gases. After initial cost, it is cheap. It has a high energy density and plants have a long lifespan. Disadvantages include construction costs, limited locations, and limited useful periods.

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Methods of
disposing of solid waste
from a water treatment plant

Land fill

Problems w/ Landfill
include
waste takes up a great
deal of space
potential groundwater
contamination

greenhouse gases (like methane)
can escape - global warming

vs. Spread on Agricultural Land:
Problems w/ Ag. Land
Health problems w/ bacterial
waste contaminating
food/feed crops

Potential groundwater
contamination

field run off - eutrophication

#9

The most important thing about global warming is this. Whether humans are responsible for the bulk of climate change is going to be left to the scientists, but it's all of our responsibility to leave the planet in better shape for future generations than we found it.

Mike Huckabee

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Plants/Soil

Plants help stop erosion
by slowing down runoff and
holding soil in place.

Soil needs nitrogen and phosphorus
in order to help plants grow

Biomass fuels we use include wood,
plant material, manure

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Deforestation

When a forest is mismanaged trees are not replanted in a timely manner, or at all. This leads to soil loss, habitat loss and possible regional climate change. Similar issues arise from exploiting natural resources.

For example if the population continues to grow, and we continue to eat large quantities of red meat farmers/ranchers will need to grow more feed crops for the cattle and could possibly strip more forest of the trees to produce these feed crops. Also they could cut down more of the forest to build more pastureland to raise the cattle.

#12

Global Warming

Sulfur dioxide, SO_2 , is a byproduct of coal burning power plants as is nitrogen oxides. Acid precipitation is cause when these are released into the atmosphere and react with the molecules in the air and increase the acidity of the rain etc.

As we reduce our dependance on fossil fuels (gas, coal, etc) we can reduce the effects of acid rain. CO_2 , a greenhouse gas, is also increased due to the burning of fossil fuels. CFC's have been banned from certain products b/c they contribute to a hole in the ozone layer which causes an increase in global warming.

pH scale - 0-14 0-7 acid > 7 base
pH of ocean average has been slightly basic 8.2. Today it is about 8.1 representing an increase in acidity though
it is still basic