

Scientific Concepts in Environmental Science (102E)

**First Level- Environmental Science/ Environmental
Science and Chemistry Students**

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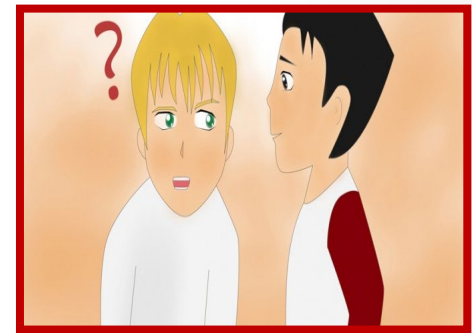
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INSTRUCTIONS



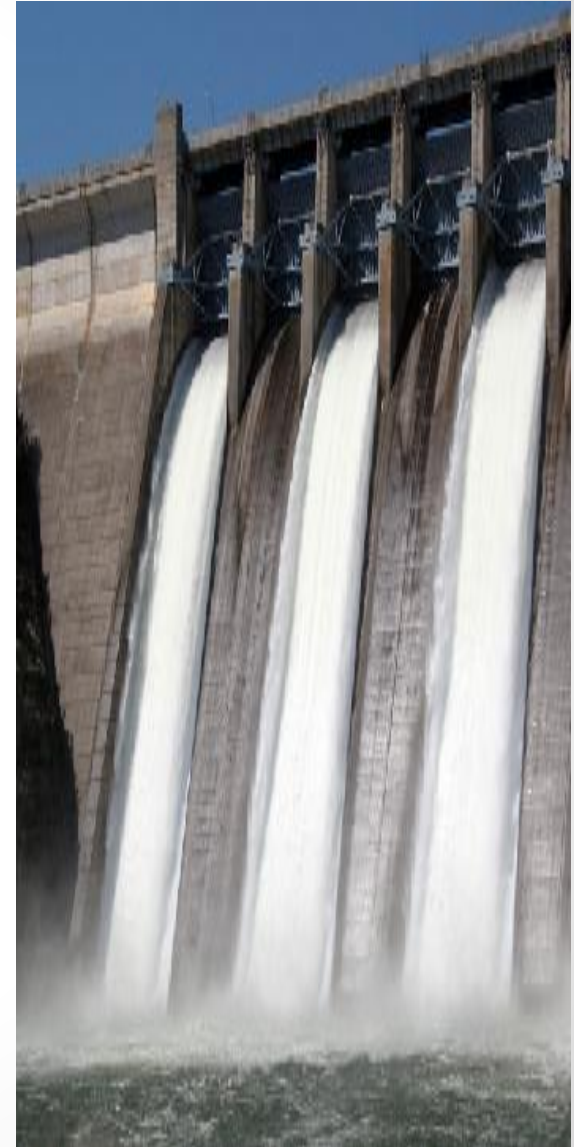


Hydroelectric Power

Lecture (4)

Hydroelectric Power

- This uses water flowing down a natural gradient to turn turbines to generate electricity by constructing dams across rivers.
- Between 1950 and 1970, Hydropower generation worldwide increased seven times.



- **Most hydroelectric power is generated by dams across large-flow rivers.**
- **A dam built across river creates a reservoir behind it.**
- **The height of the water behind the dam is greater than that below the dam, representing stored potential energy.**
- **When water flows down through the penstock of the dam driving the turbines, some of this potential energy is converted into electricity.**

CENTRALE HYDRAULIQUE

محطة مائية

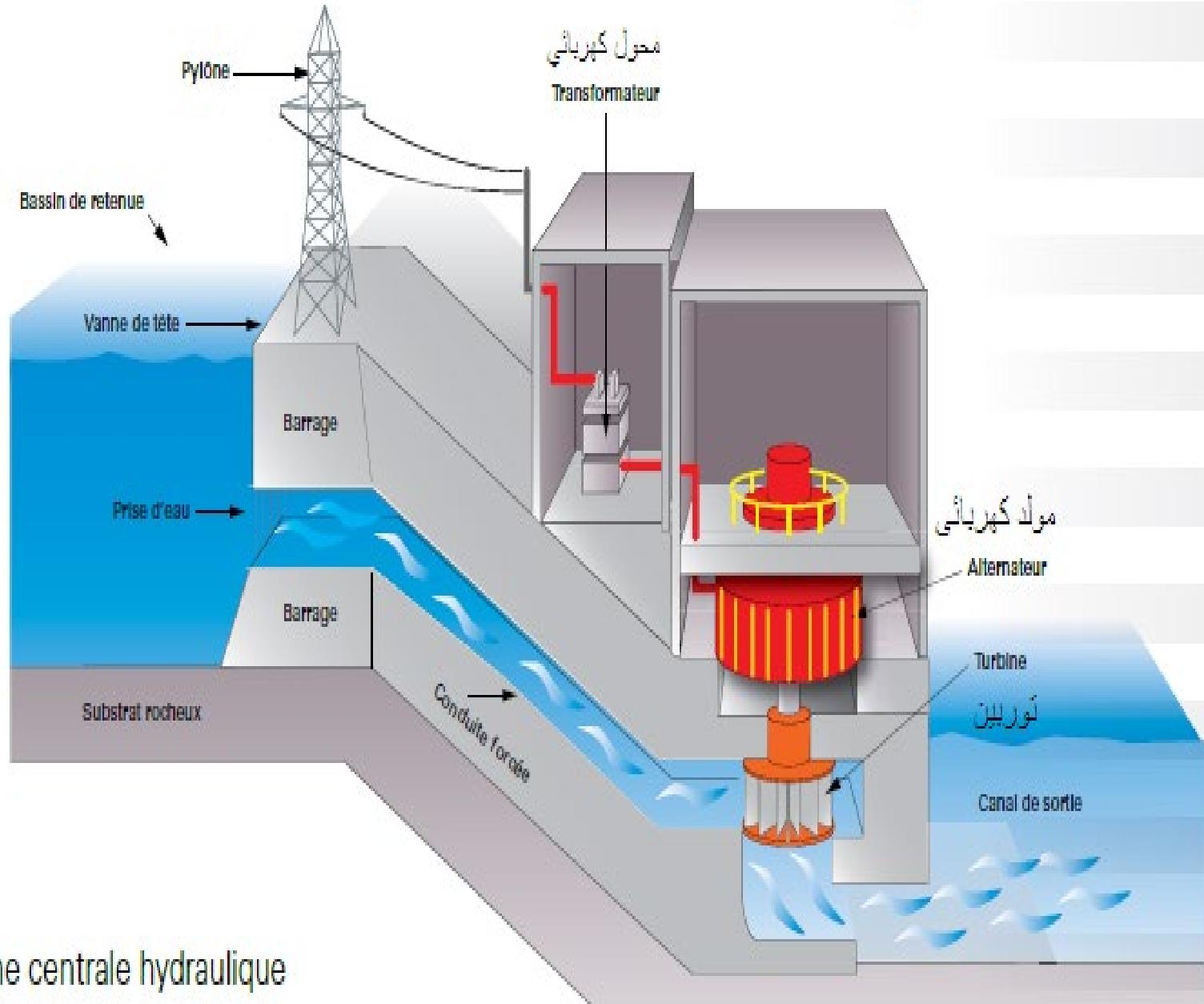


Schéma d'une centrale hydraulique



What are the advantages and disadvantages of hydroelectrical plant?



Advantages

- ✓ **The long life of hydropower plants**
- ✓ **The renewable nature of the energy source**
- ✓ **Very low operating and maintenance costs**
- ✓ **Clean fuel source**



Disadvantages

- 1. Large areas of forest and agricultural lands are submerged. These lands traditionally provided a livelihood for local tribal people and farmers.**
- 2. Water is required for many other purposes besides power generation. These include domestic requirements, growing agricultural crops and for industry.**

3. The use of rivers for navigation and fisheries becomes difficult once the water is dammed for generation of electricity.

4. The reservoir drown large areas of farm land, wild life habitats and places of historical & cultural importance.

- 5. In certain regions large dams can induce seismic activity which will result in earthquakes.**

- 6. Resettlement of displaced persons is a problem for which there is no ready solution. The opposition to many large hydroelectric schemes is growing as most dam projects have been unable to resettle people that were affected and displaced.**