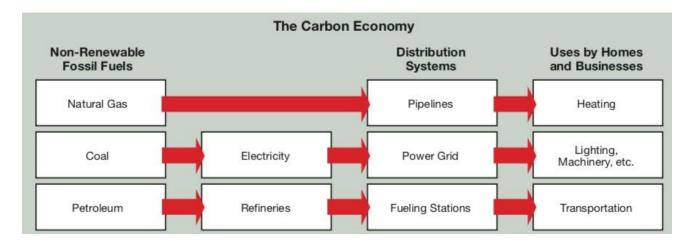
Science 30	Unit D: Energy and the Environment
Lesson 5 - Review	84 mins

## Science 30 - Lesson 41 - Unit D - Mid Review

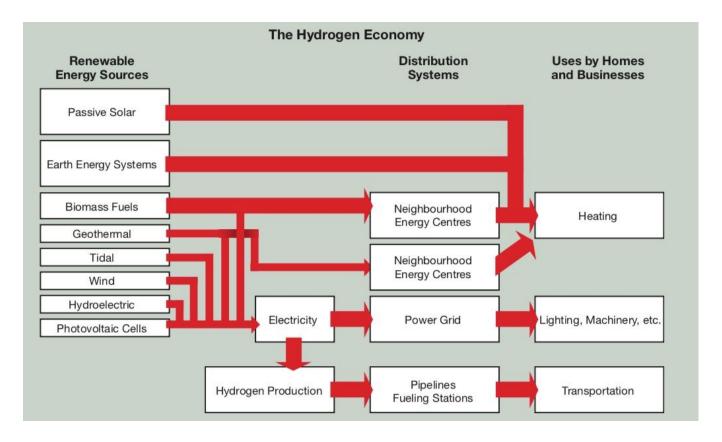
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Many people think that within the next twenty years, hydrocarbons will no longer be primary sources of energy and that renewable energy sources will have increasing importance. One proposal calls for the use of renewable energy sources to generate electricity and for the use of hydrogen fuel cells in vehicles. Such a proposal would make hydrogen a primary fuel and result in the development of a hydrogen economy.

**carbon economy**: an economy that depends on fossil fuels as the primary source of energy, resulting in excessive emissions of carbon dioxide



**hydrogen economy**: an economy that depends on renewable sources of energy to generate electricity and depends upon hydrogen as the fuel for transportation



1) The following table summarizes the important renewable technologies studied in this chapter. Complete the table. Key Disadvantages Renewable Original Energy Main Use (e.g. **Key Advantages** Technology Source heating, electricity) Hydroelectric Tidal Wind Solar Earth energy system Photovoltaic cell Geothermal Biomass 2) Explain the meaning of the term sustainable development. 3) A sustainable source of energy must satisfy criteria in three broad categories of sustainability. Describe the key characteristics that describe each of these categories. 4) Describe two renewable ways an individual household can generate electricity.

5) Describe the energy transformations that occur when electricity is produced from geothermal energy. Begin

with the original source of the energy and finish with electricity.

6)	Identify one way geothermal energy is used other than to generate electricity.
7)	Identify the range of materials classified as biomass. Explain how each of the materials listed can be used as a source of energy.
8)	Look at the flowchart on the first page. Describe how a hydrogen economy might work in the future. Identify two challenges and two benefits associated with developing a hydrogen economy.
9)	Compare hydroelectric energy with tidal energy. List the similarities and differences.
10)	Iceland is a country that has officially committed to switching from a carbon economy to a hydrogen economy. Briefly describe how this hydrogen economy could best be supported by sources of renewable energy in Iceland.

many p	nat nuclear fission does not appear as an entry in the hydrogen economy or in the carbon economy. Yet beople think that nuclear power could play a critical role in a period of transition between the current economy and the proposed hydrogen economy.
a)	Suggest a reason why nuclear fission does not appear on the flowchart for the carbon economy or on the flowchart for the hydrogen economy.
b)	Explain the role that nuclear fission could play during a period of transition between these two
	economies.