

Science 30	Unit D: Energy and the Environment
Lesson 3 - Sustainability	84 mins

Sustainability

<ul style="list-style-type: none"> - capable of being maintained at length without interruption, weakening, or loss of essential characteristics (such as matter and energy) <p>Sustainable Development: the development of industrial and natural resources that meets the needs of the present generation without compromising the ability of future generations to meet their own needs</p>	<ul style="list-style-type: none"> - Ecosystems, sun shine. Etc. - not sustainable - Garbage Dumps, Fossil Fuels - Okotoks Alberta - restricts development to ensure sustainability
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Types of Sustainability

<ul style="list-style-type: none"> - ecological sustainability: functioning in such a way as to not adversely affect air, water, land, biodiversity of organisms, or natural ecosystems - societal sustainability: the ability of a group to support adequate living standards for its members; includes housing, health care, and respect and maintenance of cultural values - economic sustainability: the ability to provide employment opportunities and have access to goods and services in a manner that does not decrease the availability of natural resources 	<p>An energy technology that demonstrates ecological sustainability</p> <ul style="list-style-type: none"> • is based on a renewable energy source • maintains the quantity of surface water • maintains the quality of surface water • does not contribute to acid deposition • does not contribute to the presence of persistent organic pollutants in water, soil, or air • does not contribute to the presence of heavy metals in water, soil, or air • recycles liquid and/or solid waste products • does not contribute to deforestation or habitat destruction • does not contribute to greenhouse gas emissions • does not contribute to emissions of ozone-depleting materials • does not contribute to emissions of particulate matter • does not contribute to photochemical smog • does not threaten the survival of species at risk • does not contribute to the destruction of fragile ecosystems • does not contribute to the release of ionizing radiation • does not contribute to the mass of radioactive waste produced <p>An energy technology that demonstrates societal sustainability</p> <ul style="list-style-type: none"> • does not decrease life expectancy through exposure to pollution • stimulates a healthy economy, enabling adequate health care • requires a highly trained workforce • requires the workforce to adapt to change through continuous training • reduces excessive land use (e.g., urban sprawl) • encourages per capita energy consumption to be reduced • stimulates a healthy economy, enabling affordable housing • requires co-operation of diverse cultural groups in decision making <p>An energy technology that demonstrates economic sustainability</p> <ul style="list-style-type: none"> • supports full-time employment for the population • enables a higher proportion of the workforce to be paid reasonable wages • has a relatively low cost per megajoule (MJ) • enables development of other industry or opportunity • reduces the import of energy, contributing positively to the GDP • enables the export of energy, contributing positively to the GDP • can be used in a variety of locations that are well-suited to industry • allows for continuous, around-the-clock production • does not decrease the availability of natural resources
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