Science 14

Unit B: Energy transfer technologies

Efficient machines and renewable sources

A solar cooker and a hand-wound radio

- A solar cooker sends sunlight into a pot and some of that energy warms the food.
- A hand-wound radio turns muscle work into sound and also into wasted heat in the gears.

Efficiency and renewable energy

- Efficiency compares the useful output with the total energy you put in.
- Sunlight and wind are renewable because they can supply energy again in a person's lifetime.

Key terms

efficiency

The fraction of the energy input that becomes useful output in a device.

renewable energy source

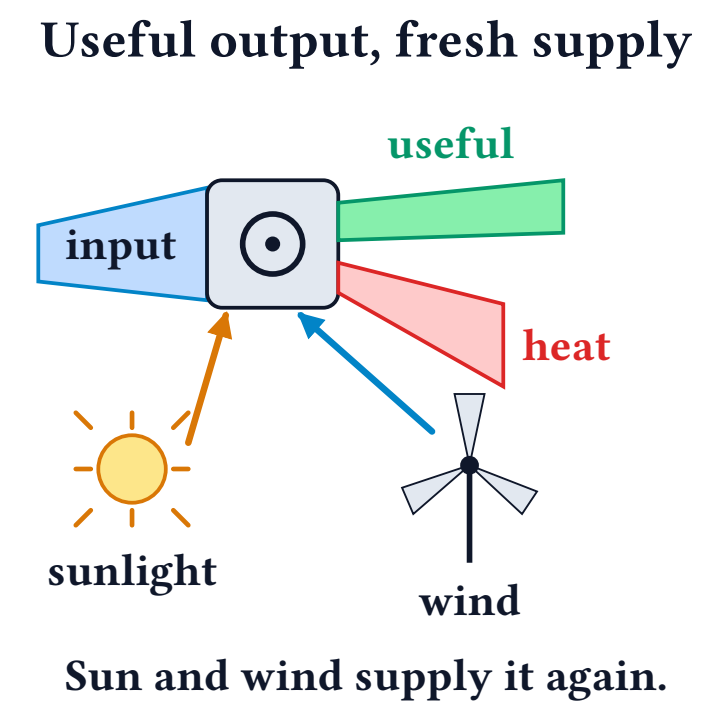
A source that is replenished on a human timescale, such as sunlight or wind.

nonrenewable energy source

A source that is used far faster than Earth replaces it, such as coal, oil or natural gas.

Useful output over input, then the source

- A machine does better when more of the energy you put in becomes the job you wanted.
- Sunlight and wind can supply that energy again within a person's lifetime.



A solar cooker

- Sunlight goes in and hot food is the useful output.
- Some of the energy also leaves as thermal energy around the pot.



A hand-wound radio

- Muscle work goes in.
- Sound is the useful output, and the gears also warm up.

A week of meter readings

- Cooking, hot water, and laundry make the daily peaks.
- A more efficient appliance lowers the energy those jobs use.

A peer unit check

- Name the input, the useful output, the energy source, and one change that would waste less.
- Meter readings over a week show when the household demand peaks.

Image credits

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