# Key learning points

## Meaning and SI Unit of Energy

Energy is the ability to do work. It helps us to move, cook, light our homes, and operate machines. The SI Unit of energy is the Joule (J). One joule is the energy used when a force of one newton moves an object one metre.

## Forms of Energy in the Environment

- Energy exists in many forms. Each form plays a special role in our daily life: They include;
- Light Energy: Energy that our eyes can see. It comes from the sun, fire, bulbs, or torches and helps us see in the dark.
- Heat (Thermal) Energy: Energy that moves because of a temperature difference. It comes from the sun, burning fuels, or electric heaters and keeps us warm or helps cook food.
- Sound Energy: Energy produced when objects vibrate, such as guitar strings, voices, or speakers.
- Electrical Energy: Energy caused by the movement of electrons. It powers lights, fans, and appliances.
- Kinetic Energy: Energy of moving objects, e.g., a rolling ball or running person.
- Potential Energy: Energy stored in objects due to their position or shape, e.g., water in a dam or a stretched rubber band.
- Chemical Energy: Energy stored in fuels, batteries, and food, which can be released during reactions to produce heat, light, or motion.
- Energy Sources
- Energy comes from various places or things called sources of energy. They are grouped into renewable and non-renewable sources.

## Renewable Energy Sources

These sources can be replaced naturally and do not run out easily:

- Solar Energy – from sunlight (used in solar panels).
- Wind Energy – from moving air (used in Adapted PE for learners with special needswind turbines).
- Water (Hydroelectric Energy) – from moving water in rivers or dams.
- Geothermal Energy – from heat inside the earth.

## Non-Renewable Energy Sources

These sources can run out and take millions of years to form:

- Coal
- Oil
- Natural Gas

## Transformation of Energy

- Energy can change from one form to another but cannot be created or destroyed this is known as the Law of Conservation of Energy.

### Examples of Energy Transformation

- Torch: Chemical → Electrical → Light
- Fan: Electrical → Kinetic
- Candle: Chemical → Heat + Light
- Solar Panel: Light → Electrical
- Motor: Electrical → Mechanical
- Generator: Mechanical → Electrical

Energy transformation allows us to use energy efficiently in our daily lives.

Applications of Energy Transformation in Daily Life

- Cooking: Chemical energy in fuel changes to heat energy.
- Transportation: Chemical energy in petrol changes to kinetic energy for movement.
- Communication: Electrical energy changes to sound and light in phones.
- Home Lighting: Electrical or solar energy changes to light energy.
- Industry: Machines use electrical energy and convert it to mechanical energy for production.

These transformations make it possible for people to work, travel, communicate, and live comfortably.

Safe Use of Energy

When using energy, safety is very important.

Always remember to:

- Avoid touching electric wires with wet hands.
- Turn off appliances when not in use.
- Handle fire carefully to avoid burns.
- Keep flammable materials away from heat sources.
- Use protective gear when operating machines.
- Report faulty electrical wires to an adult.