CZYSTA MOC ENERGII

Grade
V
Time
45 min.

LESSON TOPIC

How does electricity get to the socket?

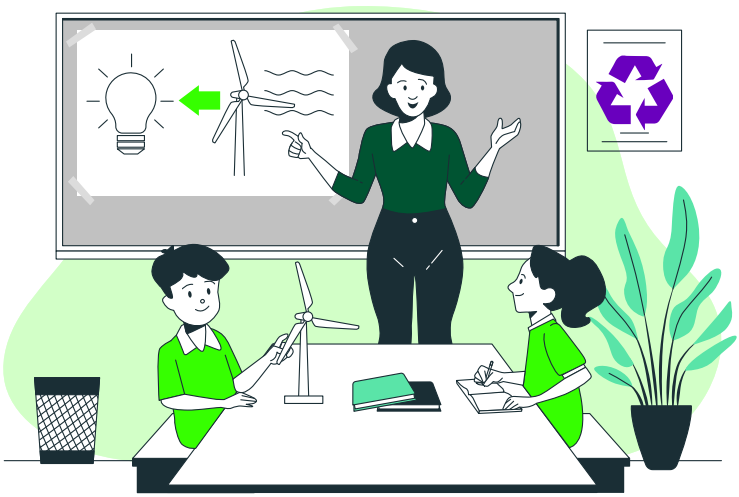
OBJECTIVES IN LINE WITH THE SCHOOL CURRICULUM:
General education:
Geography:

- Identifying regularities in the spatial diversity of natural environmental conditions and of human life and various activities.

CONTENT IN LINE WITH THE CURRICULUM:
Physics:

- Distinguishing between different forms of energy into which electricity is converted; identifying sources and uses of electricity;

Lesson plan



INTRODUCTION:

- Present the topic of the lesson to students.
- Hand out the worksheets

COURSE OF THE LESSON:

- Ask students to get into pairs

1. **Ask students to form pairs and think for a while about where electricity found in wall sockets comes from.** When the pairs have completed the task discuss their work together.
2. Using the presentation, tell students about the path electricity covers from the energy source to the electrical socket.

   the RES presentation
3. If students need to be reminded of information on energy sources, this presentation contains a link to another presentation which addresses this subject. .

   the RES presentation
4. Ask students to complete Tasks 1 and 2 on their worksheets.

   Task 1 is designed to consolidate knowledge, while in Task 2 students evaluate the aesthetic qualities of the power plant. Discuss Task 2 together, and if you there is time, you can talk about the topic in more detail.
5. **Offer students the educational game „Fact or Myth”.** Everything you need to carry it out is on the presentation slide. **The game aims to familiarise students with popular myths about renewable energy and debunk them.**

SUMMARY

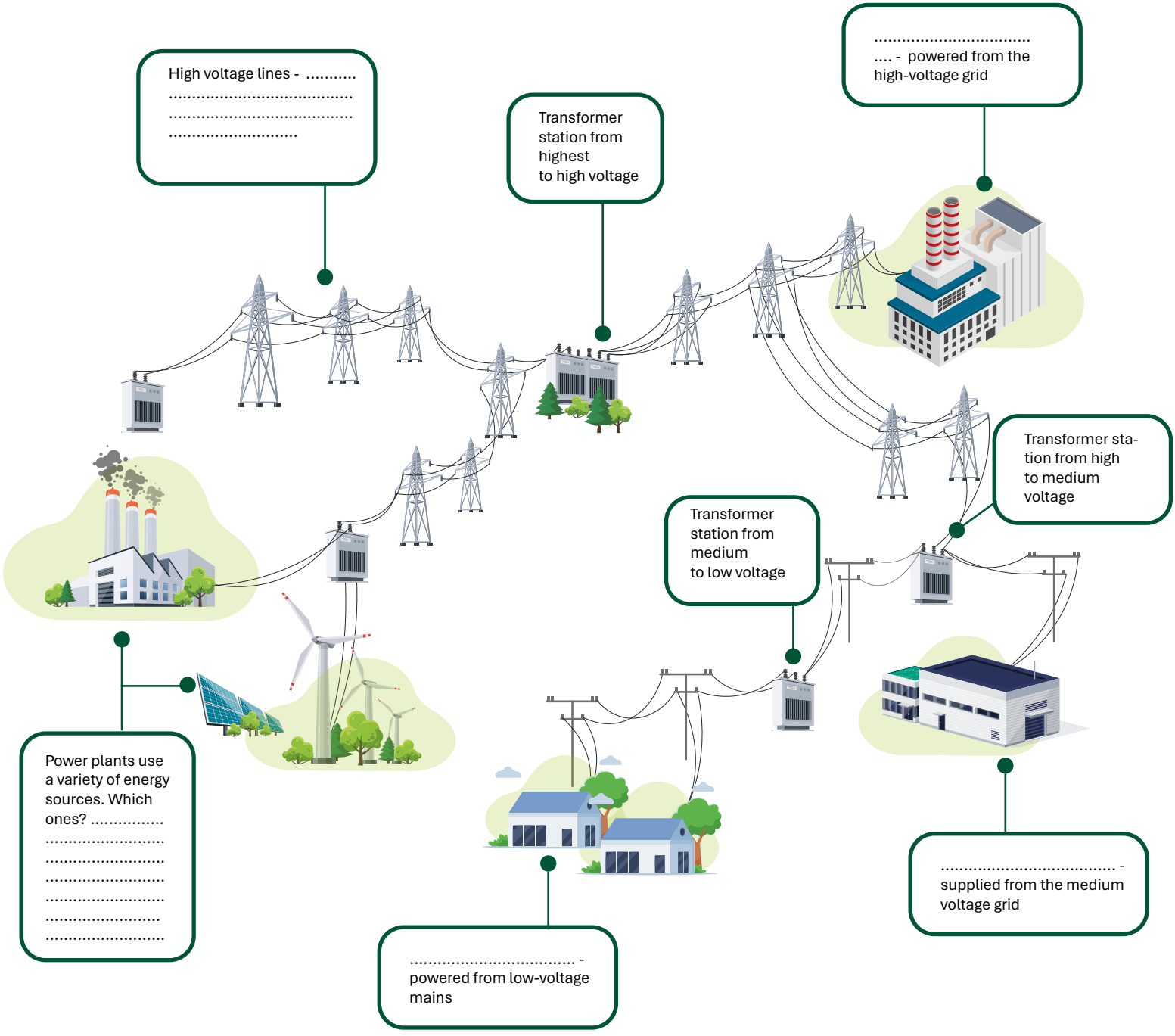
- Sum up the lesson.
- Highlight what students should remember.

WORKSHEET

How does electricity get to the socket?

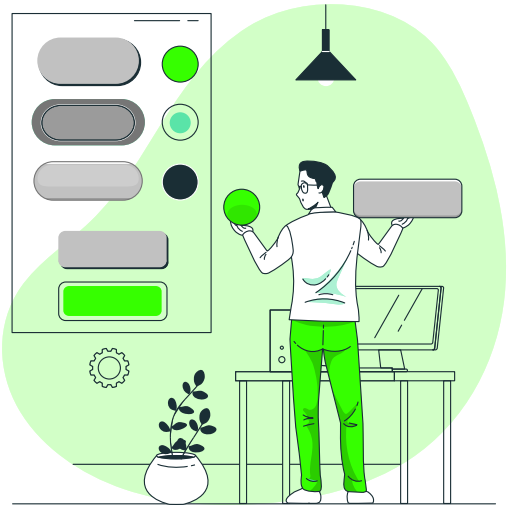
TASK 1

Below is a diagram showing the path of electricity from the power station to your home. **In the blank boxes, draw and describe the missing elements of the power grid.**



WORKSHEET

How does electricity get to the socket?



TASK 2

Below are pictures of different power plants (insert pictures here). **Look at them, evaluate and mark on a scale how you think they affect the landscape.**

Coal power plant

It burns hard coal or lignite.

Gas power plant

It burns natural gas or LNG.

Biomass power plant

It burns organic waste, such as wood, straw, and biogas.

Hydroelectric power plant

It uses the energy of flowing or dammed water.

Nuclear power plant

It uses the atomic fission reaction to generate heat and produce electricity.

Wind power plant

Converts the kinetic energy of the wind into electrical energy.

Solar power plant

Converts solar energy into electricity using PV panels.

Geothermal power plant

It uses the heat coming from the from the Earth's interior.

APPENDIX 1

How does electricity get to the socket?

FACTS AND MYTHS

True FACTS:

- Renewable energy comes from sources that are naturally renewable, such as sun, wind, water, biomass and geothermal.
- Solar panels convert solar energy into electricity using photovoltaic cells.
- Wind power plants produce electricity by using the movement of air to drive turbines.
- Hydropower comes from the flow of water, for example in rivers or dams.
- Geothermal energy uses heat stored inside the Earth.
- Biomass is organic material that can be burned or processed into biofuels, such as bioethanol or biodiesel.
- Wind power plants are one of the most popular and efficient ways of using renewable energy.
- Solar energy can be used both to produce electricity and to heat water (solar panels).
- Many countries around the world are aiming for 100% renewable energy production.
- Iceland relies almost entirely on renewable energy, mainly hydropower and geothermal energy.
- Wind turbines can operate both onshore and offshore.
- Renewable energy helps to reduce greenhouse gas emissions and combat climate change.
- Renewable installations can reduce household electricity bills.
- Hydropower plants are one of the oldest ways of using renewable energy.
- Some regions of the world, such as deserts, have enormous potential for harnessing solar energy.
- Globally, renewable energy already accounts for more than 30% of electricity generation.
- Renewable energy storage batteries are becoming more efficient and cheaper.
- Renewable energy contributes to improving air quality by reducing emissions.
- Solar and wind farms can be combined with agricultural crops (agri-energy).
- The development of renewable energy supports technological innovation and creates new jobs.

APPENDIX 1

How does electricity get to the socket?

FACTS AND MYTHS

False claims - MYTHS

Renewable energy is too expensive compared to fossil fuels.

FACT: Renewable energy costs are falling and in many cases are competitive already now.

Wind turbines are very noisy and harmful to health.

FACT: Modern turbines are quiet and studies do not confirm any harm to health.

Solar panels do not work on cloudy days.

FACT: Solar panels also work with diffused light, albeit less efficiently.

Renewable energy is only available in developed countries.

FACT: Developing countries are investing more and more in renewable energy.

Wind turbines kill large numbers of birds.

FACT: Modern turbines minimise the risks and there is less risk to birds than with other energy sources.

Hydropower plants always cause serious environmental damage.

FACT: Technologies exist to minimise environmental impact.

Renewable energy installations require vast areas of land.

FACT: Some technologies, such as wind farms, take up relatively little space on the ground.

Renewable energy is unstable and cannot be relied upon.

FACT: Modern storage systems and integration of different sources increase reliability.

The production of solar panels requires more energy than they can ever generate.

FACT: Solar panels produce far more energy than they consume.

Wind turbines negatively affect tourism and the landscape.

FACT: Many regions use wind farms as tourist attractions.

Solar and wind farms pose a threat to agriculture.

FACT: They can be integrated into crops, supporting agriculture.

Renewable energy is just a fad and has no real impact on the climate.

FACT: Renewable energy significantly reduces greenhouse gas emissions.

Geothermal power plants can cause earthquakes.

FACT: Risks are minimal with proper management.

Wind and sun are insufficient sources of energy for the whole world.

FACT: They have the potential to meet global energy demand.

Renewable energy is not suitable for industrial applications.

FACT: More and more industries are using renewable energy sources.

Energy storage batteries are always harmful to the environment.

FACT: Battery technologies are becoming increasingly environment-friendly.

Solar farms cause excessive heating in surrounding areas.

FACT: There is no evidence of a significant effect on temperature.

Renewable energy is only a technology of the future, not the present.

FACT: Renewable energy sources are already widely used.

Transition to renewable energy will destroy the economy.

FACT: It actually accelerates economic development and creates jobs.

Solar panels and wind turbines are not recyclable.

FACT: Recycling technologies for these plants are already being developed and implemented.