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ECODISCOVERY

"Play And Discover The Future"



PROJECT RESULT • ECOTOPIA GAME CONTENT

ECOTOPIA Game Chapters

Story World & Mission Design of the ECOTOPIA Educational Game

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About the ECOTOPIA Game

ECOTOPIA is a scenario-based, mission-oriented educational game developed within the EcoDiscovery Erasmus+ project by teachers and students from Türkiye, the Czech Republic and France. It invites middle-school learners aged **10–14** to become members of an Eco-Team and solve real environmental challenges across four themes: water, energy, biodiversity and waste. The story and mission structure in this document were designed during the project's LTT activities and reflect the final game.

The game is built in Unity and available on the web, Android, APK and Windows, in four languages (Turkish, English, Czech and French). It is free and requires no account.

How the missions work

- **Scenario.** Every mission opens with a short story that gives the player a clear goal.
- **Interactive steps.** Players click, drag, repair, sort and choose their way through each scene.
- **Information cards.** Correct and incorrect moves reveal fact cards; correct choices also show numerical data.
- **Scoring & ranking.** A score based on time and number of correct choices (0–100) feeds badges and a global leaderboard with privacy-masked names.
- **AI assistant.** Players can press the **R** key at any time to ask the Gemini-based assistant an environment question and receive an instant, age-appropriate answer.
- **Real-life action card.** Each mission closes by inviting the player to repeat the action in real life.

The four chapters are organised as a linear, spiral progression, so each new task builds on the last.

Chapter 1 | Protect Water

Players learn the value of water, sustainable water use and how to combat water pollution – moving from the household to the city scale.

Task 1 – Water Waste Detective

Scenario. As the home water hero, the player identifies and fixes wasteful habits in the kitchen and bathroom – dripping taps, long showers, open hoses – and sees the savings calculated for each fix.

Gameplay

- Inspect interactive kitchen objects (tap, dishwasher, vegetable washing, defrosting).
- Repair a dripping tap and choose to run the dishwasher only when full.
- Control bathroom habits: choose a short shower, fit a low-flow cistern, select Eco laundry mode.
- Watch a water-saving meter fill and earn a badge for high savings.

Did you know? A dripping tap can waste up to 550 litres of water per year.

Did you know? A 5-minute daily shower can save around 10,000 litres of water per year.

Did you know? Running the dishwasher only when full uses water about 30% more efficiently.

Learning objectives

- Identify everyday sources of water waste at home.
- Connect small daily choices to large yearly savings.

Real-life action card. Check the taps at home and review your shower habits today.

Task 2 – Manage the City's Water Budget

Scenario. The player zooms out to city scale and must balance a city's limited water supply, allocating resources fairly among the industrial, agricultural and residential sectors so none runs short.

Gameplay

- Review the water needs of industry, agriculture and homes on a city dashboard.
- Allocate the limited water budget between the three sectors.
- Observe the consequences of each decision and rebalance to keep the city sustainable.
- Complete the level when all sectors are supplied without waste.

Did you know? Agriculture accounts for around 70% of the fresh water people use worldwide.

Did you know? Balancing demand between sectors is key to managing water in a growing city.

Learning objectives

- Understand water as a shared resource at community scale.
- See the trade-offs involved in fair water management.

Real-life action card. Find out where your town or city gets its water and what uses the most.

Task 3 – Greywater System

Scenario. The garden is drying out under water restrictions. The player builds a grey-water system – collecting, filtering and reusing water – to revitalise the garden.

Gameplay

- Repair broken roof gutters hidden around the screen.
- Connect pipes in a puzzle to route water to the grey-water tank.
- Install a filtration unit, choosing between a simple or an advanced filter.
- Water the garden and revive the wilting flowers to earn a badge.

Did you know? Grey water is lightly used water from sinks, showers and washing machines.

Did you know? Filtered grey water can be reused for garden irrigation, cutting yearly water use by up to 30%.

Learning objectives

- Understand what grey water is and where it comes from.
- Appreciate the importance of sustainable irrigation.

Real-life action card. Explore how a simple rainwater-harvesting system could work at home.

Task 4 – Pond Microplastic Hunt

Scenario. The neighbourhood pond has turned cloudy and its wildlife is suffering from microplastics. The player cleans the pond with a scanning device and rescues the aquatic life.

Gameplay

- Scan marked zones of the pond with a sonar-like device to locate microplastics.
- Collect and sort microplastics; each type reveals a fact card.
- Free the affected species and earn a badge for each rescue.
- Choose everyday habits that reduce plastic use.

Did you know? Microplastics are plastic particles smaller than 5 mm formed as plastics break down.

Did you know? Microplastics building up in fish stomachs make feeding and survival harder.

Learning objectives

- Learn what microplastics are and how they form.
- Understand their impact on water ecosystems and how to reduce them.

Real-life action card. Reduce single-use plastics: carry a reusable bottle and bag.

Chapter 2 | Energy Revolution

Exploring renewable energy and efficiency, players develop solutions at the neighbourhood, school and home levels.

Task 1 – Energy Hunter

Scenario. Wearing an energy-scout jacket, the player tours the neighbourhood to find energy waste and offer green solutions.

Gameplay

- Spot streetlights, billboards and devices left on unnecessarily.
- Replace them with solar-powered lights and timer systems.
- Set correct operating schedules for advertising screens.

Did you know? Solar-powered lamps run on 100% renewable energy.

Did you know? A small wind turbine can generate around 500 kWh of energy per year.

Learning objectives

- Recognise energy waste and reach renewable solutions.
- Get to know solar and wind energy sources.

Real-life action card. Spot one source of wasted energy in your street and suggest a fix.

Task 2 – Solar Garden Setup

Scenario. The player builds a shared solar garden to start clean-energy production for the neighbourhood.

Gameplay

- Analyse the neighbourhood map and choose the area with the most sunlight.
- Optimise panel tilt angles to raise output.
- Install a Solar Tracker to increase energy production by about 25%.
- Run a one-day simulation and compare production with demand.

Did you know? Sun-tracking systems produce 25–35% more energy than fixed panels.

Did you know? One square metre of solar panel produces about 150 kWh of electricity per year.

Learning objectives

- Learn how location and system choice affect energy production.
- Discover innovations such as solar trackers.

Real-life action card. Check whether your school or home roof gets enough sun for solar panels.

Task 3 – School Energy Saver

Scenario. The player audits the school's energy use and adds renewable energy.

Gameplay

- Switch classroom computers to Eco Mode.
- Turn off lights left on during the day.
- Install solar panels on the school roof and adjust their angle.

Did you know? Eco mode lets computers use about 20% less energy.

Did you know? Solar-powered lighting can cut the electricity bill by up to 60%.

Learning objectives

- Build awareness of energy efficiency at school.
- See the role of solar energy in daily school life.

Real-life action card. Suggest an energy-saving idea to your teacher, such as switching off idle equipment.

Task 4 – My Home's Energy Detective

Scenario. The player hunts energy leaks at home and develops smart solutions.

Gameplay

- Use a thermal-camera simulation to find heat-loss points at doors, windows and the roof.
- Apply insulation or double glazing to fix them.
- Find and unplug "vampire" standby devices; set smart timers on appliances.

Did you know? An uninsulated window loses up to five times more energy.

Did you know? Standby devices make up about 10% of a home's energy bill.

Learning objectives

- Understand insulation and smart appliance use.
- Learn the concept of vampire (standby) energy.

Real-life action card. Unplug idle chargers and adapters at home to cut standby energy.

Task 5 – Smart Home Design

Scenario. Now an energy expert, the player combines everything learned to design the most efficient, eco-friendly smart home.

Gameplay

- Place solar panels and add a solar tracker for extra output.
- Replace bulbs with LEDs and switch off lights left on.
- Move heavy appliances to off-peak hours with timers.
- Review the final Green Score and earn a badge.

Did you know? LED lamps use about 80% less energy than traditional bulbs.

Did you know? Running appliances at low-demand hours can cut the bill by about 30%.

Learning objectives

- Learn correct ways to use solar energy.
- Understand efficiency through smart-home systems.

Real-life action card. Swap one home bulb for an LED and run heavy appliances at off-peak times.

Chapter 3 | Colours of Life

Covering biodiversity, ecosystem balance and species conservation, players observe, protect and restore nature.

Task 1 – Species Detective

Scenario. The player becomes a nature observer, documenting the variety of species living in a schoolyard.

Gameplay

- Move around the schoolyard and click creatures to scan them (squirrel, ladybird, sparrow, daisy).

- Read a fact card for each species about its role in the ecosystem.
- Document as many species as possible within five minutes to earn stars.

Did you know? A single ladybird can eat more than 5,000 pest insects per year.

Learning objectives

- Build biodiversity awareness.
- Recognise variety in nature through species observation.

Real-life action card. Observe and note how many different species live in a nearby garden or park.

Task 2 – Save Endangered Species

Scenario. After a fire damages a habitat, the player relocates animals to safe areas and rebuilds their homes.

Gameplay

- Find animals (fox, tortoise, owl) and carry them to safe zones.
- Rebuild a mini-ecosystem by placing bushes, trees and shelters.
- Restore vegetation so wildlife can return.

Did you know? Forest fires displace around 1.5 million animals from their habitats each year.

Did you know? Natural shelters are critical for animals' survival.

Learning objectives

- Protect species under threat.
- Understand the concept of habitat and responsibility.

Real-life action card. Learn which species are endangered in your region and how they are protected.

Task 3 – Pollinator Park

Scenario. The player designs a garden to support local pollinators – bees, butterflies and others.

Gameplay

- Place flower species by drag-and-drop (lavender for bees, zinnia for butterflies).
- Add irrigation and shelters such as birdhouses and stone nooks.
- Score points for each correct plant–shelter combination and watch pollinators arrive.

Did you know? About 35% of pollinators are at risk of extinction.

Did you know? Without bees, many crops such as coffee, strawberries and apples cannot grow.

Learning objectives

- Understand ecosystem services such as pollination.

- See plant–animal interaction and human impact.

Real-life action card. Plant a pollinator-friendly flower such as lavender at home or school.

Task 4 – Seed Collector

Scenario. The player collects seeds from regional plant species and replants them to revive a damaged area.

Gameplay

- Collect seeds from local plants around the map.
- Replant them in dry, damaged areas.
- Watch the area turn green and new animal species appear.

Did you know? Restoring local vegetation supports the return of animal species and a healthier ecosystem.

Learning objectives

- Learn how local plant cover can be restored.
- Understand why biodiversity matters.

Real-life action card. Plant native flowers or a small tree in a suitable spot.

Chapter 4 | Waste Warriors

Covering recycling, composting and bioenergy, players confront the fundamentals of waste management.

Task 1 – Recycling Detective

Scenario. The player sorts wrongly discarded rubbish in the neighbourhood into the correct bins.

Gameplay

- Walk a street lined with different waste bins.
- Drag and drop paper, plastic, glass and metal into the correct bins.
- Read a fact card to decide tricky “grey-zone” items such as milk cartons.

Did you know? A glass bottle can be recycled endlessly.

Did you know? Correct sorting at the source is the key to effective recycling.

Learning objectives

- Learn to sort waste into correct categories.
- Understand why correct separation matters.

Real-life action card. Set up simple sorting for paper, plastic, glass and metal at home.

Task 2 – Compost Kingdom

Scenario. The player builds a composting area, separating suitable materials and balancing the process.

Gameplay

- Sort kitchen waste (peels, egg shells, tea grounds) from non-compostable waste.
- Add only compost-suitable items to the decomposition area.
- Balance carbon (paper) and nitrogen (vegetables) in a mini-game.

Did you know? Done correctly, composting can produce natural fertiliser in about three months.

Did you know? Around 40% of household waste can be composted.

Learning objectives

- Learn what can and cannot be composted.
- Understand the carbon–nitrogen balance.

Real-life action card. Start a small compost bin for fruit and vegetable scraps.

Task 3 – Recycling Gallery

Scenario. The player matches waste items with the new products they can become for a school exhibition.

Gameplay

- Receive six waste items: plastic bottle, glass jar, aluminium can, cardboard box, old CD, battery.
- Drag each item to match the new product it can become.
- Unlock a fact card for every correct match and earn a badge.

Did you know? Recycling aluminium saves about 95% of the energy needed to make it from raw material.

Did you know? Plastic bottles can be turned into polyester fabric.

Learning objectives

- Learn which wastes turn into which new products.
- Grasp the economic and environmental benefits of recycling.

Real-life action card. Before throwing something away, ask what new product it could become.

Task 4 – Stop the Trash Mountain

Scenario. On a nature walk the player discovers a hidden pile of rubbish and cleans it up.

Gameplay

- Collect rubbish with gloves and a bag.
- Earn different points per waste type and sort what you collect.
- Unlock a bonus fact card and win a "Clean Area" badge.

Did you know? A newspaper decomposes in about six weeks, while plastic can remain for 400 years.



Learning objectives

- Understand decomposition times of different materials.
- See the impact of litter on nature.

Real-life action card. Take a bag on your next walk and collect any litter you find.