

COULD THE CIRCULAR ECONOMY BE THE SOLUTION?

BRIEF OVERVIEW

In the circular economy programme, participants recall important ecosystem services (nature's benefits) and discuss the overconsumption of resources, accumulation of waste and impoverishment of the biosphere resulting from a long-term linear economy. We discuss Earth Overshoot Day, map the causes of problems and – through group work and a collaboration game – look for solutions for a more sustainable economy in terms of production, design, consumption and waste management.

TARGET GROUP OF THE PROGRAMME

Grades 10–12, adults, students of universities and vocational schools

LANGUAGE OF INSTRUCTION: Estonian, English.

GROUP SIZE: up to 36 students

DURATION AND APPROPRIATE TIME/TIMING

100 min, year-round

PLACE

The programme can be conducted at Tartu Nature House or at an educational institution on-site. The introduction and mindfulness exercise 'What necessary and good things does planet Earth provide us with?' (*first 15 min*) takes place outdoors.

Activities require a larger space/environment and chairs for each student (or cushions or something else to sit on).

From April to October, it is also possible to conduct the programme entirely outdoors in case of good weather.

If the programme takes place outdoors, a flat surface and seats for participants nearby would facilitate group work.

Necessary equipment (rubber boots, pens, sandwiches, etc) that students need during the field trip

Indoor shoes if the programme takes place at Tartu Nature House. Some tasks require a smart device (mobile phone) for searching information.



OBJECTIVES (LEARNING OUTCOMES) OF THE EDUCATIONAL PROGRAMME

A student who has completed the educational programme:

- ▶ **takes** a responsible approach to the living environment, values biodiversity and a sustainable and responsible lifestyle;
- ▶ **understands** the concept of Earth Overshoot Day;
- ▶ **recognises** ecosystem services (nature's benefits), formulates and solves problems of everyday life, looks for solutions to environmental and human development issues, including through creative and critical thinking;
- ▶ **better understands** the interrelationships between man and the environment and the scarcity of resources, which leads countries, businesses and people to change their choices and make decisions in favour of a sustainable lifestyle;
- ▶ **understands** the essence of the circular economy.

LINKS WITH THE CURRICULUM

Completing the educational programme supports the appreciation of biodiversity and sustainable development, as well as safe behaviour.

Discussions, photos and a collaborative activity help students notice the problems of everyday life, and they find solutions and make decisions (in the context of the educational programme) using knowledge and skills in the field of natural science.

Studying provided diagrams and solving tasks, students improve their ability to search for, understand and interpret information.

During the programme activities, students learn to accept the differences in their own and their peers' values and take them into account when interacting.

Links with geography:

Topic: 'Population and economy: the development of society and changes in the global economy'

The student: 1) understands interconnections between technology, economic and social development and spatial organisation in the agrarian, industrial and information ages.



Links with biology:

IV course 'Man and the environment'. Environmental protection

The student: 1) analyses the role of human activity in the extinction of species and takes a responsible approach to their own activities in the natural environment; 3) acknowledges the interdependencies between nature, technology and society and explains the importance of sustainable development at personal, local, national and international level, and recognises the importance of the green transition; 5) solves environmental dilemma problems based on local examples, taking into account scientific, economic, ethical and legislative points of view.

Links with the elective subject 'Economic and Business Studies'

Topic: The essence of economy. Study content: Wants and needs. Scarcity and compromise. Economic circuit. Main points of decision for the economy: What? How? For whom? Factors of production: natural resources, human resources and capital. The limit of production capabilities.

Topic: International economy. Study content: Globalisation in the global economy, depletion of resources and environmental problems. Sustainable economy.

Topic: Business. Study content: Responsible and social entrepreneurship. Circular economy. The role of entrepreneurship in the economic circuit and in the state.

GENERAL COMPETENCES

- ▶ Social and civic competence
- ▶ Cultural and value competence
- ▶ Learning competence
- ▶ Entrepreneurship competence
- ▶ Competence in mathematics, science and technology
- ▶ Communicative competence

INTERDISCIPLINARY INTEGRATIONS

Integration with art subjects

Learning outcomes in the field of design are related to planning and idea development: the student generates an idea, develops the initial idea further, researches, designs/redesigns or creates a product or service, presents the result, if desired, with the support of visual aids, and creates in collaboration with others.

The structure of the educational programme as a whole supports the **development of social and civic competence**, as a core keyword of the programme is cooperation with classmates.



The educational programme is integrated with **geography** – students develop an understanding of the Earth as a whole and the interdependencies between the environment and human activity.

ACTIVITIES AND SCHEDULE, CONTENT AND METHODOLOGY OF THE EDUCATIONAL PROGRAMME

Pre-programme activity:

Before the programme, we send the participants (the teacher) a recommendation to watch 1–2 videos with students at school or individually at home beforehand (<https://science.nasa.gov/exoplanets/habitable-zone/> and/or TEDx video – <https://youtu.be/9RT-kZaX1cHO?si>) on the habitable zone, or Goldilock zone.

ACTIVITIES

1. Introduction (3 min)

Introduction of the instructor, brief overview of what is to come, setting learning objectives, schedule, agreements for a safe and collaborative environment.

2. Mindfulness exercise 'What necessary and good things does planet Earth provide us with?' (12 min)

We focus on nature's benefits both individually and in small groups (eight groups of 2–4 people). Group work, sharing the results with the whole class.

3. Welcome to planet Earth! (5 min)

We gather around planet Earth – a small globe with various orbits (coloured ribbons: 'the orbit of benefits', 'the orbit of problems', 'the orbit of solutions'), which are related to activities throughout the programme.

A discussion round on the topic 'The Goldilock zone in the Universe'

Adding the results of group work to the 'orbit of benefits'.

4. Planet Earth – the past, present and future (20 min)

Group work: interpreting Earth Overshoot Day diagrams; group work on problems and their causes; sharing results; discussion and adding results to the 'orbit of problems' (10 min)

Group work: What do pictures tell us? (8 min)

- ▶ Interpreting illustrative photos and assigning them to the orbits of benefits, problems, and solutions.
- ▶ Linear economy (2 min)



A brief summary of the linear economy with the whole class; the construction of a diagram of a linear economy on the basis of photos.

5. 'There's power in working together!' (50 min)

- ▶ Through group work and discussions, we look for and consider solutions to problems in the context of the circular economy and add the results of the discussions to the 'orbit of solutions'.
- ▶ A collaboration game with a string system and a hook, where the whole class, working together, 'fishes' a circular economy-themed task bucket for each group. (8 min)
- ▶ Group work: solving circular economy related tasks (different groups focus on different levels of the economy (resources-design-production-distribution-consumption-waste-recycling)). (15 min)
- ▶ Presentation of group work results, interconnections between the thematic areas of different groups, discussion of proposed solutions, adding the results of group work in the orbit of possible solutions. Discussion 'Could a circular economy be the solution?' (20 min)
- ▶ Let's make our footprint as small as possible! Taking photos of the results created during the programme, if desired. Joint cleaning of response discs. (3 min)

6. Summary (10 min)

Feedback round: what I gained from the programme and what was meaningful, important, or new.

POSSIBLE FOLLOW-UP

After the programme, students and teachers will receive a smart consumer reminder app via a QR code and/or a link. The app contains questions which the participant – going shopping either alone or with a friend – can use at a reuse centre or any other store to think through the purchase before buying (want, need, alternatives, material, impact, etc).

If desired, the teacher will be sent a video for follow-up with the class, which discusses clean water and soil as a resource, as well as the need to protect it.

METHODS

Discussions, analysis and interpretation of images and diagrams/drawings, group work, collaborative game, solving problem tasks, cleaning up the group footprint at the end of the programme.





EQUIPMENT

Laminated response discs for group work 30 pcs, whiteboard markers 8–10 pcs, a small globe, strings (green, red, blue), circular economy diagram with icons, Earth Overshoot Day diagrams for each group, illustrative photos 30–40 pcs, lidded containers with tasks 8–10 pcs (depending on class size), hook system for the collaborative activity, cleaning wipes for each group, cleaning agent.

ADDITIONAL INFORMATION AND SAFETY

The educational programme is suitable and safe for students with different mental and physical abilities. Please inform us in advance of any special requests and special needs so that we can adapt the programme accordingly. At the beginning of the programme, agreements are made to ensure that the programme runs smoothly throughout all learning activities.

INSTRUCTORS

Liina Niinemägi

Master's degree in Nature Tourism, Estonian University of Life Sciences

In-service training programme provided by the University of Tartu Viljandi Culture Academy: 'Application of active learning in conducting nature programmes' + traineeship (2008)

In-service training for non-formal environmental education specialists on teaching about the environment and sustainable development (Tallinn University, 2013/2014)

Previous experience: environmental education specialist at the Estonian Environmental Board (2012–2016) and head of educational programmes at Tartu Nature House (2021–2023)

Lecturer of Nature Interpretation Methodology at the Estonian University of Life Sciences (from 2020 to the present)

Training and mentoring programme 'Enhancing the involvement of young people with special needs in youth work', group II (2021)

Various seminars and trainings on circular economy and climate change (2023)

Piloting of circular economy programmes and Kierätyskeskus in Finland (2024)

Instructor of educational programmes since 2009.

EXPECTATIONS FOR THE ACCOMPANYING TEACHER, FEEDBACK

The teacher has coordinated with the students and the contact person of Tartu Nature House the place where the educational programme is to be carried out.

The teacher has provided the students with information about where and what will be learned and what to take along, and has enabled pre-programme work (watching videos together or sending the video link to students so that they can prepare for the programme at home).

We ask the teacher to be present and help the instructor during the educational programme if necessary, as well as to give feedback to our programme after it is completed. The feedback questionnaire will be sent to the teacher via email after the programme.

The teacher is advised to highlight how the programme's learning outcomes are related to what has been studied in other subjects, where possible (so-called follow-up activities).

The teacher can ask for additional information and supplementary programme conducted in cooperation with the Reuse Centre (Uuskasutuskeskus).

KEYWORDS

- ▶ sustainable development
- ▶ circular economy
- ▶ resources
- ▶ environmental protection
- ▶ water
- ▶ food
- ▶ environmental problems
- ▶ solutions
- ▶ Earth Overshoot Day

PRICE 165 euros



ADDITIONAL INFORMATION

Authors of the programme:

Liina Niinemägi, Tartu Nature House

Annelie Ehlvest, Tartu Nature House

Aili Elts, Tartu Nature House

Aire Orula, Tartu Nature House

Gedy Matisen, Tartu Nature House

Design: Kati Kekkonen, Tartu Nature House

The programme has been created within the framework of the collaborative project [Together Towards Improved Quality of Environmental Education](#) (QualitE).

MAIN REFERENCES FOR THE PROGRAMME:

► Mayri Tiido, Kadri Kalle, 2023, Ringmajanduse põhimõtted ja olemus, Teeme Ära SA

► <https://ringmajandus.envir.ee/et/ringmajandus>

Educational Programs' Coordinator:

Leelo Kurbel

leelo.kurbel@tartuloodusmaja.ee

TARTU NATURE HOUSE – THE WAY TO NATURE

