

*Lesson scenarios
for secondary education*

HOW TO TALK ABOUT SUSTAINABLE DEVELOPMENT?

PUEB PRESS



POZNAŃ UNIVERSITY
OF ECONOMICS
AND BUSINESS

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Edited by
Magdalena Śliwińska



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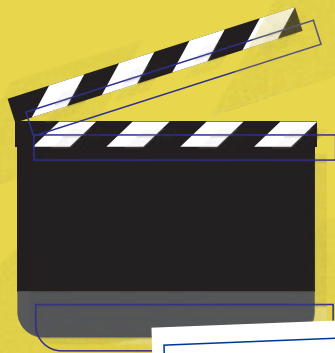
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INTRODUCTION

We are pleased to present the publication *How to talk about sustainable development? Lesson scenarios for secondary schools*. It is not by chance that we propose this topic as a supplement to the subjects you teach. Sustainable development, addressing urgent global problems of both social and environmental nature that impact numerous areas of socio-economic life, has become imperative. These topics can be integrated into various subjects, including geography, biology, social studies, computer science, and entrepreneurship.

Currently, we face the necessity of transforming our socio-economic system towards sustainability. This involves significant challenges, particularly the need to raise awareness about global social and environmental threats as well as to acquire the knowledge and skills essential for adapting to new conditions.

In Europe, the goal of achieving sustainable development includes reaching climate neutrality by 2050. This will involve transformations in climate protection, ecology, and the use of digital technologies, collectively referred to as the green and digital transformations. These transformations, often termed the twin transformations, involve leveraging technology extensively to support ecological changes. Many actions undertaken by businesses, government offices, and households combine both aspects and are integrated into virtually every area of operation. The European Union has prepared two main programs aimed at facilitating these transformations: the European Green Deal and the Digital Decade. Furthermore, environmental protection and digitisation are supported financially and legally through various initiatives and more specific programmes co-funded by the EU budget. Consequently, the green and digital transformations are strategic development directions for the European Union in the coming years. Education in this area is therefore crucial, as it prepares the younger generation to build a sustainable world.

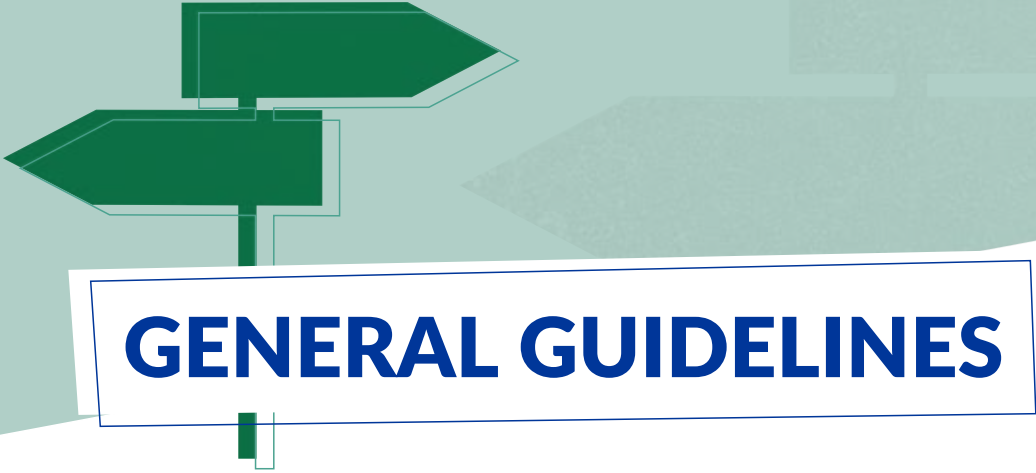
Below, we propose six 45-minute lesson scenarios on topics related to sustainable development. These plans cover a broad range of issues, providing young people with the opportunity to gain knowledge from various areas of this comprehensive field. The first two lesson plans address green and digital transformations, offering an overall understanding of the changes currently affecting European Union socie-

ties. The subsequent four lesson scenarios aim to provide students with practical knowledge on:

- sustainable food and the “farm to fork” strategy,
- the role of product sustainability certifications in fostering responsible consumer behaviour,
- building a circular economy through individual actions,
- implementing the zero-waste concept.

Each lesson scenario follows a consistent structure to facilitate conducting the lessons and preparing for them. Therefore, we first define the objectives, then the methods and forms of work, and subsequently list the key concepts and auxiliary materials that can be used during the lesson. The proposed course of the lesson is described in a few points, dividing it into an introduction, development, and conclusion. At the end of each lesson plan, you will find sources and useful links as well as auxiliary materials ready to be used during the lesson.

 *Ida Musiałkowska*  *Magdalena Śliwińska*



GENERAL GUIDELINES

We strongly encourage you to emphasise the critical importance of sustainable development to your students. Understanding the scale of the problems humanity currently faces motivates individuals to learn about ways to counteract them and to take action themselves. Few students realise that hunger affects as much as 10% of the world's population, and structural malnutrition, which impedes development and causes many diseases, affects up to 25%. Similarly, over 250 million children do not have the opportunity to attend school, and many are forced to work instead of learning. Such information can not only change students' thinking but also their attitude toward daily school duties, which they often take for granted.

Much is heard about climate change and environmental pollution, but we are not always aware that the World Overshoot Day, the date when humanity's demand for ecological resources and services exceeds what Earth can regenerate in a year, has been shifting dramatically from late December to mid-year over the last few decades. This means that from the end of July each year, we are living on resources that should be left for future generations, exploiting natural resources in ways that cannot be replenished. Is this the kind of planet we want to leave to our children? Does the young generation want to be robbed in this way? It is worth discussing with students the consequences of failing to act for sustainable development. This is the first and necessary step to encourage them to gain knowledge and take specific actions to address these threats.

It is also important to make them aware of the skills and competencies they will need in education, work, and daily life in a world increasingly dominated by artificial intelligence and digitalisation.

During lessons, we suggest using various forms of student engagement, allowing them to express their opinions and views. This can occur through group work as well as in-class discussions where the teacher asks open-ended, sometimes controversial, questions to encourage students to think. It is crucial to encourage creative thinking, seeking unconventional solutions, and praising inventiveness and non-standard thinking. The challenges of the modern world require bold and creative actions, so

it is very important for students to have the opportunity to practice bold and creative thinking in school. Our lesson scenarios suggest different ways to practice these skills. We encourage you to pay special attention to tasks and questions directed at students that give them the opportunity to independently seek solutions, answers, or new ideas, and to reward courage and creativity.

 *Magdalena Śliwińska*  *Ida Musiałkowska*

SCENARIOS



The European Green Deal – the path to climate neutrality



SCENARIO 1

 Judyta Cabańska  Grzegorz Mazur

Learning objectives

After the lesson, students will be able to:

- identify the main elements of climate change and explain its impact on the environment and human functioning (with an elaboration of the possible consequences in the future),
- list the main areas and measures planned and adopted for implementation in EU countries as part of the European Green Deal,
- identify examples of measures to implement the European Green Deal in their region/city/household,
- cooperate with other students, carry out their tasks, and present the results of their group's work to the class.

Methods and forms of work

- discussion,
- brainstorming,
- group work.

Key concepts

- climate change,
- European Green Deal,
- reducing greenhouse gas emissions,
- climate neutrality.

Supporting materials

- board
- paper and pens
- computer with projector
- supporting material no. 1. Ten scientific facts on climate change,
- supporting material no. 2. Consequences of climate change,
- supporting material no. 3. Areas of the European Green Deal,
- supporting material no. 4. Implementation of the European Green Deal.



1.1. Introduction

An introduction to climate change (7 minutes)

The teacher begins the lesson presenting the most important information on climate change, citing the latest available scientific data (supporting material no. 1. Ten scientific facts on climate change).



1.2. Development

Climate change consequences (8 minutes)

The teacher conducts a brainstorming session on the consequences of climate change, grouping the consequences mentioned by the students into three main areas, concerning, respectively, the impact on: humans (living conditions, health), the economy (impact on various sectors of human activity, infrastructure, development of settlements / cities) and the environment (atmospheric phenomena, functioning of ecosystems). The answers are written on the board in three circles relating to the above-mentioned areas (you can use the template – supporting material no. 2. Consequences of climate change).

European Green Deal (5 minutes)

The teacher asks students if they know what activities are undertaken by the EU to combat climate change. The teacher then shows a video about the European Green Deal (https://learning-corner.learning.europa.eu/learning-materials/eu-green-deal_pl). As part of the video's summary, the teacher highlights the key objectives of the European Green Deal, i.e. to transform the EU into a modern, resource-efficient and competitive economy that will achieve zero net greenhouse gas emissions by 2050 (climate neutrality) and in which economic growth will be decoupled from resource consumption. The teacher then introduces the areas of action in the European Green Deal (displays on the screen the supporting material no. 3. Areas of the European Green Deal).

Implementation of the European Green Deal (15 minutes)

The teacher divides the students into groups with several members. Each group is assigned one of the areas of the European Green Deal presented earlier (only a few areas can be chosen, e.g., transport, energy, agriculture, environment and oceans, climate). The students' task is to collect proposals for actions that should be taken to implement the European Green Deal at the level of their region and their household. Students write down the ideas they submit on sheets of paper (supporting material no. 4. Implementation of the European Green Deal). Before starting work in groups, the teacher can introduce the film EUClimateAction Climate Neutrality by 2050 as an inspiration – <https://youtu.be/IQOXO2jLzbQ?si=uRxXhpgFWz-aB7Dj>.



1.3. Summary

Presentation of ideas for implementing the European Green Deal (10 minutes)

After working in groups, the group representatives should put the sheets of paper in a visible place and briefly present the ideas they have collected. The teacher can encourage the students to ask the presenters additional questions and clarify any doubts. Afterwards, it is a good idea to hang the posters prepared by the students in the classroom.



1.4. Resources and useful links

- implementation of the European Green Deal: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en
- European Green Deal – movie: https://learning-corner.learning.europa.eu/learning-materials/eu-green-deal_en
- European Green Deal: <https://www.consilium.europa.eu/en/policies/green-deal/>, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en
- Climate neutrality by 2050 – EUClimateAction: <https://www.youtube.com/watch?v=ifxV4XMFWM>

- “Ready for the Green Challenge?” – part of the Green Trip campaign: https://learning-corner.learning.europa.eu/learning-materials/ready-green-challenge_en
- Internet game “2050 – It’s up to you”: https://learning-corner.learning.europa.eu/learning-materials/2050-its-you_en



1.5. Supporting materials

Supporting material no. 1. Ten scientific facts on climate change

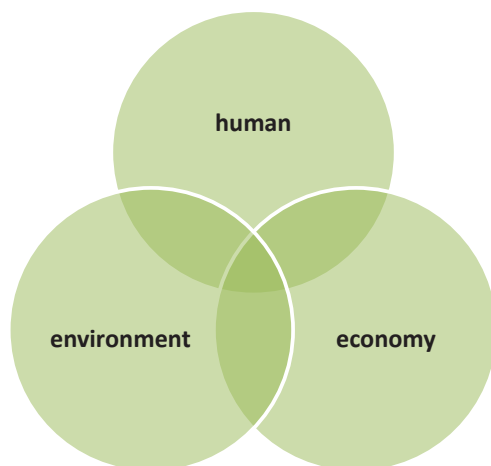
1. Between 2011 and 2020, the Earth’s average surface temperature was 1.1°C higher than in the pre-industrial period (1850–1900). During the same period, the average surface temperature of the oceans increased by 0.9°C.
2. 2023 was the warmest year in the history of global records (the months of June through December were the warmest on record), and the average temperature of the Earth’s surface was nearly 1.5°C higher than in the pre-industrial era.
3. Greenhouse gas emissions are rising constantly, reaching another record high in 2022. Fossil fuel combustion and industrial processes are responsible for 2/3 of these emissions.
4. Continuing and maintaining current efforts to reduce greenhouse gas emissions will lead to an average temperature increase of as much as about 3°C by the end of this century. In the most optimistic scenario, assuming the implementation of all relevant commitments, the Earth’s average temperature will rise by about 2°C by the end of this century.
5. The increase in the average temperature of the Earth’s surface means more frequent and more severe weather events, such as prolonged droughts and heat-waves, violent storms, and precipitation.
6. Climate warming disrupts the functioning of many ecosystems and threatens the proper functioning of humans, including their settlements and created infrastructure. As a result, not only many natural systems are being destroyed, but also cultivated areas or human settlements.
7. The costs associated with climate change are largely borne by countries and communities that are not most responsible for its occurrence.
8. Between 1977 and 2017, high-income countries accounted for nearly 3/4 of the world’s total resource consumption, with the US (27%) and highly developed EU countries (25%) leading the way.
9. Human-induced climate changes significantly affect ecosystems across the Earth, changing the geographic range of species and the seasonality of their life cycle. It is estimated that at least half (up to 2/3) of all plant and animal species have increased their latitude of occurrence, and about 2/3 of them

start their spring biological activity earlier. The geographic range (latitude and altitude) of certain diseases is also increasing, which brings new risks to the non-resistant species living there, including humans (expanding the range of tropical diseases).

10. Between 1970 and 2018, the population size of wildlife species (Living Planet Index) decreased by an average of 69%.

(Based on: IPCC. (2022). *Climate change 2022: Impacts, adaptation and vulnerability*); UNEP. (2023). *Emissions gap report 2023*).

Supporting material no. 2. Consequences of climate change



Supporting material no. 3. Areas of the European Green Deal

Climate

Europe the first climate-neutral continent by 2050

Energy

Clean and efficient energy transition

Environment and oceans

Protection of biodiversity and ecosystems

Agriculture

A healthy food system for people and planet

Transport

Efficient, safe and environmentally friendly transport

Research and innovation

The role of research and innovation as drivers of transformational change

Industry

An industrial strategy for a competitive, green and digital Europe

Finance and regional development

Sustainable investments as a contribution to the European Green Deal

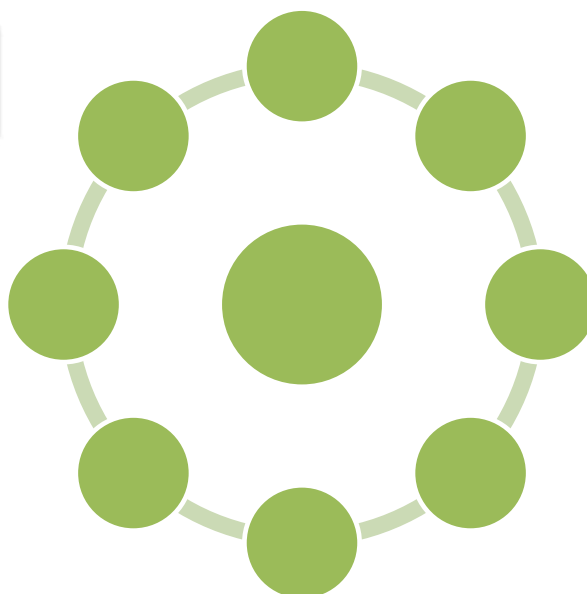
New European Bauhaus

Creative and interdisciplinary initiative linking the European Green Deal to the spaces we live and work in

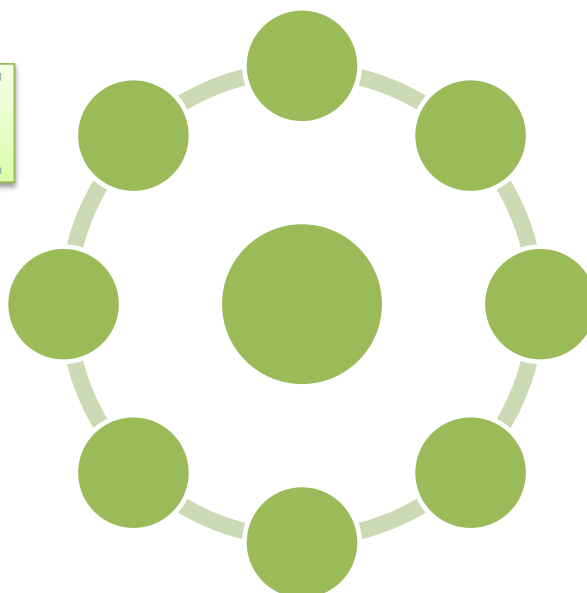
Supporting material no. 4. Implementation of the European Green Deal

*(in the centre, write the chosen area of the European Green Deal, and around – suggestions
for action to be taken at the level of your region and your own household)*

Region



Household



Competences of the future – what we need to be able to do on the labour market taken over by AI



SCENARIO 2

 Dorota Czyżewska-Misztal  Piotr Idczak

Learning objectives

After the lesson, students will be able to:

- identify the causes of job losses in technology industries,
- explain how the rapid development of generative AI in particular contributes to the elimination of jobs,
- list the competences of the future needed in a labour market occupied in part by AI,
- be aware of the inevitability of economic change and technological progress, and the consequent need to constantly acquire new skills.

Methods and forms of work

- group work,
- discussion,
- work with text,
- brainstorming.

Key concepts

- artificial intelligence,
- labour market,
- liquidation of jobs,
- competences in the labour market.

Supporting materials

- sheets of paper and markers,
- supporting material no. 1. Progress vs. activities in different professions,
- supporting material no. 2. Competences of the future.



2.1. Introduction

We establish the context of the situation (12 minutes)

We start the class by introducing the students to the substantive content of the issue: **Technology companies are slowing down at a tremendous rate.**

“2023 was a record year in terms of redundancies. **More than 260,000 people said goodbye to their jobs.** It was the worst year in this respect since the market collapse at the beginning of the 21st century. The crisis caused by the bursting of the dot-com bubble in 2000 led to more than 200,000 Silicon Valley employees being laid off. **Since the beginning of 2024, job cuts have already been carried out by 104 companies,** with 28,970 people losing their jobs (as of 31 January 2024). The list includes small start-ups, but also large companies such as Met, IBM, Amazon, Microsoft, Uber, Google or TikTok. One explanation for why redundancies come so easily in the industry is the development of AI. A perfect example of this situation is **Spotify**. Despite good financial results and sizable profits, the company laid off 1,500 employees last year. This happened a few days after the unveiling of Spotify’s Wrapped AI feature, where artificial intelligence is responsible for the playlist. In contrast, **Klarna**, a Swedish company that provides financial services online, has resolved to freeze its workforce. Its CEO, Sebastian Siemiatkowski, has decided that artificial intelligence would perform the new tasks. As he said: “Things that used to take a lot of time for humans can be done much faster and much shorter, and fewer people are needed to do the same thing. Hence the decision to stop hiring” (Source: *Forbes*).

The teacher asks one of the students to read the text aloud or distributes to the students copies of the text for reading. After reading the text aloud, the teacher asks whether the students understand all the concepts in the text, if not, explains the definitions and connections to them. The teacher also asks about students’ knowledge of the brands mentioned in the text and their associations with them. After clarifying any ambiguities, the teacher asks the pupils, based on the text, if they know what the topic of the lesson is. They then initiate a discussion on the causes of redundancies in technology industries and the importance of the development of AI for this phenomenon.



2.2. Development

So the next (digital) revolution? (8 minutes)

Here the teacher recalls the example of the Industrial Revolution, whose driving force was the steam engine. This event in the 18th century initiated the dynamic development of industry, motorisation and transport. The steam engine above all led in many areas to the replacement of work carried out by thousands of people. In addition, it was very efficient in operation and had high efficiency – work previously done by dozens of people was taken over by a machine that required no more than a few people to operate. At this point, referring to history, the teacher asks the students to give examples of jobs / activities for which humans were no longer needed. The teacher then goes on to point out later developments. The fact is that many people lost their jobs. But on the other hand, we note that there was the development of new industries developed, the economy shifted from food production to the processing of raw materials and the production of consumer goods, there was rapid population growth. Cities started to grow dynamically, and the development of transport made it possible to connect many inaccessible places. As a result, the standard of living rose markedly. What was once accessible to the few has become commonplace.

Here the teacher asks the question: If humankind's physical labour has been replaced by mechanical labour, have humans ceased to be necessary? Humans have lost their role as a 'supplier' of energy. Another source appeared, which was better, faster and cheaper. But they were and still are needed. Industry, agriculture and other sectors of the economy function to satisfy human needs. These, in turn, are unlimited, because humans constantly want more, better, easier, etc. And, of course, technological progress responds to this.

The teacher concludes that the Industrial Revolution ushered in rapid progress in technological and socio-economic development. Humans were, are and will continue to be central to this process. On the other hand, their role is constantly changing both in society and the economy. They are no longer needed as a 'provider' of energy: Humans are now expected to "provide" knowledge, creativity, intelligence or the ability to make the right decisions.

Or is it an evolution of development?

The teacher explains to the students what artificial intelligence is, and explains that AI is a very sophisticated application that uses sets of algorithms and mathematical models to process huge amounts of data in order to obtain specific information. Above all, the teacher emphasises that this tool does the same work that a human performs, only that it is able to complete a specific task more accurately, faster, more efficiently and more cheaply. It can therefore be considered to be the 'steam engine' of today, which will replace many human jobs. At this point, the teacher uses supporting material no. 1.

The teacher asks the students, referring to this material, in which groups of occupational groups AI is most likely to replace work done by a humans. They also ask the students to identify specific tasks that AI is certain to replace. What will then happen to the people who have hitherto performed these tasks? Students should (using the example of a steam engine) identify not what might happen, but what should happen, i.e. they should be aware of the changes taking place and try to prepare themselves to cope with them. They should decide well in advance to acquire the new skills needed to perform another task for which society and the economy is in demand.

Competences of the future (20 minutes)

AI is a technology whose full applications are currently not yet identified. This creates an incentive to push today's established boundaries to discover exciting new possibilities and opportunities. Therefore, the teacher invites students to work in groups to brainstorm ways to "go beyond" the current patterns in terms of task performance. Pupils work in groups of 4 and write down on cards the competences of the future that will be needed in a labour market partly occupied by AI.

After 10 minutes of group work, they write their list of competences on the board so that other groups can refer to them and so that one large list of these competences is created. The teacher comments on the results of the students' group work and, together with them, creates a joint list of competences of the future. If necessary, the teacher adds competences that have not been identified by the groups. The discussion also revolves around the relevance of the individual competences and how they can be acquired or developed by learners now. Supporting material no. 2 is provided for use.



2.3. Summary

Brief summary of the main points covered in the lesson (3 minutes).



2.4. Resources and useful links

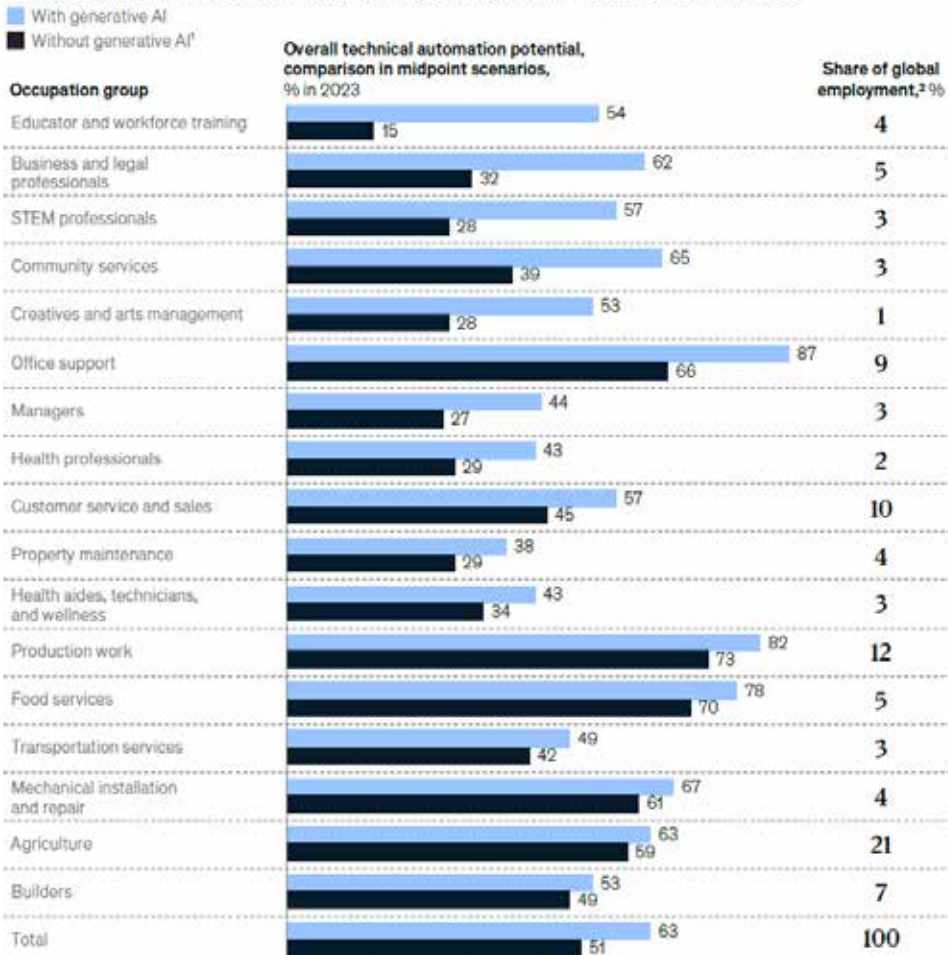
- *Technology companies are making layoffs at a staggering rate. The reason: investors like it* – <https://forsal.pl/lifestyle/technologie/artykuly/9418711,firmy-tech-nologiczne-zwalniaja-na-potege-powod-inwestorzy-to-lubia.html>
- *Fewer offers for juniors in IT. They are competing with artificial intelligence* – <https://www.pb.pl/mniej-ofert-dla-juniorow-w-it-konkuruja-ze-sztuczna-inteligencja-1214004>
- *Artificial intelligence is revolutionising the job market. These professions could disappear* – <https://forsal.pl/praca/artykuly/9444098,sztuczna-inteligencja-to-rewolucja-na-rynku-pracy-te-zawody-moga-znik.html>
- *The economic potential of generative AI: The next productivity frontier.* McKinsey& Company – <https://tinyurl.com/3m8u39yh>



2.5. Supporting materials

Supporting material no. 1. AI progress and expected changes in various professions

Impact of generative AI on technical automation potential in midpoint scenario, 2023



Note: Figures may not sum, because of rounding.

[†]Previous assessment of work automation before the rise of generative AI.

²Includes data from 47 countries, representing about 80% of employment across the world.

Source: McKinsey & Company. (2023). *The economic potential of generative AI: The next productivity frontier*. <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#introduction>

Supporting material no. 2. Competences of the future



Sustainable food – the “Farm to Fork” strategy



SCENARIO 3

 Piotr Idczak  Joanna Witczak
 Dorota Czyżewska-Misztal

Learning objectives

After the lesson, students will:

- be able to characterise the main intentions included in the “Farm to Fork” strategy aimed at reforming agriculture and changing people’s eating habits,
- understand the need for more environmentally friendly agricultural practices used in food production,
- be aware of the need to introduce changes in the diet and use products supplied directly by farmers on a larger scale.

Methods and forms of work

- team-working,
- didactic discussion with brainstorming,
- educational game.

Key concepts

- organic farming,
- sustainable food consumption,
- food security,
- short supply chains.

Supporting materials

- a board or, possibly, sheets of paper and markers,
- picture of fertiliser and mechanical soil cultivation,
- supporting material no. 1. The Journey of Mr. Potato,
- supporting material no. 2. Scheme from Farm to Fork.



3.1. Introduction

What does “from farm to table” mean – associations (8 minutes)

After greeting the students, the teacher briefly introduces the topic of the classes, asking the students what first thought comes into their minds when they hear the term “from farm to table”. Students can refer, e.g., to information they have recently heard or read, their own knowledge or simply associations; provide various ideas characterising this term. All these ideas and suggestions are written up on the board. Then, referring to the ideas given, the teacher briefly describes the “Farm to Fork” strategy, pointing out that this is an action plan addressed not only to farmers producing food, but also to all citizens, for whom food is essential to life.



3.2. Development

Sustainable farming (8 minutes)

The teacher explains to the students that the natural environment is the basic production factor for agriculture. Everything that a farmer produces is a derivative of the processes and development cycles that occur in the environment. Very intensive forms of agricultural production used by farmers often lead to unfavourable changes in the environment. To illustrate the issues discussed, the teacher gives two examples of agricultural practices, illustrating them with photos:

- fertilisers – excessive amounts of these leads to contamination of ground and surface waters (eutrophication), acidification or salinization of soils (deterioration of their properties) and the accumulation of undesirable and harmful substances in plants,
- leaving the soil uncovered for a long time or its intensive mechanical cultivation (e.g. ploughing) – these operations, if carried out on a large scale, may contribute to water and wind erosion, which ultimately leads to a deterioration of the water storage capacity and, as a consequence, to desertification.

The “Farm to Fork” strategy encourages farmers to minimise treatments that interfere with the soil, e.g., by eliminating ploughing and sowing without ploughing or limiting the use of artificial fertilisers in favour of increasing the use of organic fertilisers (manure, compost, crop residues). The use of crop rotation (the succession of different plants) and covering the soil with living plants for as long as possible are encouraged. All this has a positive effect on increasing the organic matter in the

soil and improving its properties. As a result, this may contribute to improving the environment and producing better-quality food.

Shortening the food supply chain (8 minutes)

The teacher asks students where they or their parents usually buy food. The answers given (they can also be written up on the board or on cards) should allow the teacher to determine whether this happens directly at the farmer's place or almost at the farmer's place (e.g., at the market). If this answer turns out to be dominant, it will mean that the short supply chain is already working in practice. If other answers appear, the teacher asks students to indicate differences in the way they shop or, if possible, the quality of products offered directly from the farmer or other commercial establishments.

The teacher can support the students' discussion by using arguments in favour of shorter supply chains, i.e. production takes place at a short distance from the customer, (almost) direct delivery from the producer to the customer, products from the local market, unprocessed products, deliveries of fresh products, lack of preservatives used during long-distance transport and storage, products delivered in reusable packaging (less packaging), environmental benefits related to reduced transport burdens due to shorter distances, etc.

As a result of the moderated discussion, students should be able to formulate conclusions regarding the aspects that should be taken into account when purchasing food in order to make choices that are good for both their own health and the environment.

The history of potatoes, or what the implementation of the Farm to Fork strategy looks like in practice (15 minutes)

For this part of the lesson, the following will be helpful: supporting material no. 1. The Journey of Mr. Potato (to be used by the teacher) and supporting material no. 2. Scheme from Farm to Fork. The teacher divides the students into groups of 4 and gives each group a copy of the "Farm-to-Fork" diagram. Students are asked to complete a diagram showing potatoes growing in a field and French fries. The idea is to indicate the stages of Mr. Potato's journey in accordance with the principles of sustainable agriculture and shortening the food supply chain. Students can draw these elements on the diagram or write their names. The level of detail in the diagram may vary. It is important that there are 2–3 stages related to potato cultivation and 2–3 stages related to the activities of the consumer/person preparing French fries. Supporting material no. 1 gives guidance on the individual steps. Then each group presents its diagram, and the teacher discusses it, adding to it if necessary

(12 minutes). Additionally, the teacher may use the points included in supporting material no. 1 for assessment. The total number of points obtained will depend on the number of proposed stages of Mr. Potato's journey and the choices made regarding one's own behaviour.



3.3. Summary

What surprised me/what we learned (5 minutes)

The teacher briefly summarises the main content discussed in the lesson, emphasising the relevance and importance of the everyday choices made when shopping and their wider context in relation to the farm-to-table.



3.4. Resources and useful links

- “Farm to Fork” strategy – <https://www.consilium.europa.eu/pl/policies/from-farm-to-fork/>
- *History of Potatoes* – <https://www.youtube.com/watch?v=xROmDsULcLE>
- *Potato* – Disney’s movie – <https://www.youtube.com/watch?v=7Bk5YVosidw>
- *Educational film about potatoes* – <https://www.youtube.com/watch?v=tR9Z20PLA58>



3.5. Supporting materials

Supporting material no. 1. The Journey of Mr. Potato

Mr. Potato's journey describes the journey that vegetables take to become French fries or crisps.

What do we expect from a farmer?

1. A farmer grows potatoes in a field where legume plants, which have the ability to accumulate nitrogen in the soil, were previously grown.
2. The soil has been properly prepared in advance, including by means of balanced natural fertilisation – manure was used.
3. Disease control treatments are carried out mainly with the use of copper preparations, along with weed control mainly using mechanical treatments (redrowing, harrowing).
4. The farmer collects the plant (so-called 'diggings') during sunny weather. Potatoes are of high commercial quality and meet all quality requirements for this type of products (nutritional value and health safety).
5. The farmer delivers some of the potatoes packed in boxes or aerated bags directly to the market or to wholesale fruit and vegetable markets located close to large cities.
6. The remaining potatoes are stored in special storage rooms (in piles or boxes) at a low temperature and high humidity with a complete lack of light.

What should my behaviour be?

1. **Option A:** I go to the market and buy fresh potatoes delivered directly by the farmer or from a seller who previously purchased them on the wholesale fruit and vegetable market and has appropriate confirmation (of what?). (2 points)
Option B: I go to the store and buy ready-made French fries (frozen) or chips. (0 points)
2. **Option A:** I choose potatoes from a box or bag and put them in a reusable net. (2 points)
Option B: When I go to the store, I buy ready-to-eat potatoes (washed and peeled) or powdered mashed potatoes. These products are packed in plastic or paper packaging, which I then throw away. (0 points)
3. **Option A:** I wash the potatoes thoroughly, then peel and cut them into sticks (if I want to make fries) or slices (if I want to make crisps). (2 points) An alternative solution is the option without peeling – I wash the potatoes thoroughly and then cut them. Then I do not generate any waste (zero waste). (3 points)

- Option B:** I simply remove ready-made French fries (frozen), chips or mashed potatoes from the package and throw them away. (0 points)
4. **Option A:** Sprinkle the prepared potatoes with olive or vegetable oil, but do not soak them in oil. Additionally, I can season the potatoes with herbs, e.g., Provençal herbs, rosemary, pepper. (2 points)
- Option B:** I don't have to do anything because the fries will be deep fried. (0 points)
5. **Option A:** Bake the potatoes for 25–30 minutes in an oven preheated to 180 degrees. (2 points)
- Option B:** I throw the finished fries into a deep-fat fryer with heated oil. (0 points)
An alternative solution is to use a fat-free air fryer. (1 point)
6. **Option A:** In the case of chips, place the potatoes cut into thin slices on a baking tray with baking paper so that the slices do not overlap. I bake them in the oven under similar conditions. (2 points)
- Option B:** I don't prepare my own chips at all. I use a ready-made product. (0 points)
7. **Option A:** After peeling potatoes, I throw them into a bio-waste container or composter. I get healthy food without generating other waste. (2 points)
- Option B:** I buy the finished product and throw away only the plastic or paper packaging. (0 points)

Supporting material no. 2. Scheme from Farm to Fork



Authors: Ludwik Misztal and Karol Misztal

How to become a responsible consumer – the role of sustainable development certifications



SCENARIO 4

 Magdalena Śliwińska

Learning objectives

After the lesson, students will be able to:

- understand the importance of sustainable development certifications in promoting responsible consumer behaviour,
- identify key sustainable development certifications and their criteria,
- recognise the impact of responsible consumption on the environment and society,
- develop strategies for making informed and sustainable purchasing decisions.

Methods and forms of work

- group work,
- discussion,
- working with the texts / tasks in the support materials,
- mini-lecture / presentation,
- brainstorming.

Key concepts

- sustainable development,
- responsible / sustainable consumption,
- sustainable development certifications,
- sustainable development labels.

Supporting materials

- projector for slides projection,
- supporting material no. 1. A scatterplot of pictures of products with sustainability labels (cut-out for group work),
- supporting material no. 2. Important sustainability labels (cut-out for group work).



4.1. Introduction

What do we associate responsible consumption with? – associations (7 minutes)

After greeting the class, the teacher asks the students what comes to mind when they hear the term “responsible consumption” / “responsible consumer”. The students write their associations on the board or a sheet of paper. The teacher tries to encourage as many students as possible to express their opinions and write down their associations, as these will be referred to in the next part of the lesson. The teacher then presents the objectives of the lesson and discusses the working methods that will be used.



4.2. Development

What is sustainable development? (7 minutes)

The teacher asks why the topic of the need for sustainable and responsible consumption is being raised more and more, and why this topic is so important. Summarising the pupils’ answers, the teacher emphasises that responsible consumption constitutes a prerequisite for counteracting global social threats (e.g., growing inequalities, hunger affecting nearly 10% of the Earth’s population) and environmental threats (e.g., climate change, environmental pollution, depletion of resources crucial for life and development), and for contributing to sustainable development. The teacher refers to the students’ answers on the associations with responsible consumption (4.1). They reflect together on how “sustainable purchasing” can contribute to counteracting the problems mentioned.

The teacher asks the students about their understanding of sustainable development and, summarising their answers, draws attention to its social and environmental aspects – explains to pupils that sustainable development is economic development which takes into account the environmental limitations of our planet and does not take place at the expense of the weakest (the poorest) market participants or at the expense of future generations; thus, it is development which not only takes into account global social and environmental threats, but actually contributes to their mitigation. The teacher emphasises that sustainable consumption (sustainable purchasing) is one of the prerequisites for sustainable development.

Characteristics of sustainable products (7 minutes)

Starting the task, the teacher notes that a responsible consumer is one who is aware of what he or she is buying and why.

The teacher divides the class into several groups and distributes cut-out pictures of different foods to each group (supporting material no. 1). The students are asked to look at the pictures and consider whether it is possible to sort these products according to certain criteria, their particular characteristics. Students should find for themselves the criteria for the four groups of products (3 different sustainability labels and a group of products without such labels), and if they have difficulty doing so, the teacher suggests they look at the labels on the packaging.

Once the students have completed the task, the teacher asks them whether such a label indicates any particular features of the product. If the answer is positive, the teacher asks them if they know what qualities the labels or the lack of labels indicate (i.e. socially and environmentally responsible production). On the basis of supporting material no. 2, the teacher gives a 2-minute mini-lecture on three of the most common food labels to be found in Poland. Referring to Task 1, he or she points out that some products have more than one sustainability label, and that all three of these certificates cover environmental issues, but only the European green leaf relates to typical organic farming.

Why do we need sustainable development certification? (7 minutes)

In the form of a discussion, the teacher reflects together with the students on whether and why sustainability certificates can be useful and tries to lead the discussion to a few key conclusions:

- the sustainable development label informs consumers that a product contributes in certain respects to sustainable development, i.e. that it has been produced according to certain criteria that are important for sustainable development, e.g., that it is organic or has not been produced using child labour,
- the individual certification schemes focus on different sustainability issues: some on just one, e.g., biodegradable packaging, and others on several or more sustainability criteria (different ecological and social aspects),
- these labels help consumers to make informed purchasing decisions, as they can quickly assess in store whether the product in question contributes to solving a specific problem related to the need for sustainable development,
- sustainable development certification gives companies the opportunity to change the way they operate so that they contribute more to sustainable development,
- if a company is certified or obtains certified raw materials, it is possible to place an appropriate label / sustainability mark on the packaging of the resulting product.

What sustainability labels can we find on food packaging? (12 minutes)

The teacher again divides the class into groups of several students and distributes a handout to each group (supporting material no. 2). He or she explains that each envelope contains three of the most common sustainable development labels that can be found in Polish food shops and asks them to match them with the corresponding descriptions found in the envelope. Students can use their existing knowledge, the mini-lecture given by the teacher a few minutes earlier, their intuition, and the Internet. After 8 minutes, the teacher checks with the pupils if the exercise has been carried out correctly – each group chooses one label and tells the rest of the class which descriptions they have assigned to that label.

After completing the task, the teacher asks the pupils whether they have seen these labels in shops, if so, in which shops and on which products. He or she also asks them if they have noticed that these products are more expensive than those without such labels. The teacher then asks the pupils why the price of this type of product has to be a little higher (e.g., to ensure an appropriate price and payment to producers to cover basic needs, e.g., Fairtrade price, organic production methods are more labour-intensive or less efficient non-pesticide-intensive crops).



4.3. Summary

Responsible consumer (5 minutes)

The teacher encourages the students to complete the sentence: “In today’s lesson I learned that...”. He or she refers to the introduction of the lesson, when students wrote down their associations with the concept of “responsible consumer”. The teacher points out that paying attention to sustainability labels on products is one important way of becoming a responsible consumer.

The teacher then encourages students to take an interest during their next shopping trip in whether the goods they purchase have the sustainability labels learnt in today’s lesson or otherwise.

Finally, the teacher asks students to consider which sustainability problems they think are particularly important and whether they could be countered by other certifications. Students can cite examples familiar to them or let their imagination run wild as to which problems could be addressed with which certifications.



4.4. Sources and useful links

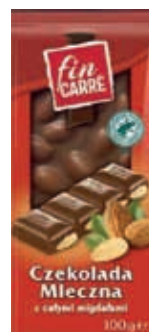
- Link to the Public Procurement Office's brochure on social labels – <https://www.gov.pl/web/uzp/etykiety-o-charakterze-spoiecznym>
- Link to the website of the Polish Fair Trade Association and information about the certificates and labels associated with it – <https://www.sprawiedliwyhandel.pl/certyfikacja-oznaczenia-produktow-sprawiedliwego-handlu/>
- Link to Fairtrade Polska website – <https://www.fairtrade.org.pl/>
- Links to information on Rainforest Alliance certification:
<https://controlunion.pl/certyfikat-rainforest-alliance-2020/>
https://ekonsument.pl/s216_rainforest_alliance.html
<https://www.rainforest-alliance.org/>
- Links to the website of the Ministry of Agriculture and Rural Development and the European Commission on the EU organic logo:
<https://www.gov.pl/web/rolnictwo/logo-produkcji-ekologicznej-ue>
https://agriculture.ec.europa.eu/farming/organic-farming/organic-logo_pl
- Link to the Office of Competition and Consumer Protection (UOKiK) consumer guide *How to choose organic products/ Jak wybierać produkty rolnictwa ekologicznego* – <https://uokik.gov.pl/download/17344>



4.5. Supporting materials

Supporting material no. 1. A scatterplot of pictures of products with sustainability labels





Supporting material no. 2. Important sustainability labels in Poland



The “Green Leaf” of Organic Food
EU organic production logo
certification valid in all EU member states for products sold as organic
at least 95% of the product’s ingredients must be of organic origin
ecological production methods must be used at all stages of production
the use of chemical pesticides is prohibited in the production of such labelled goods
the certification excludes the presence of GMO products and their derivatives in the product



Fairtrade
most widely recognised Fair Trade label globally
the label awarded to products and raw materials originating from Latin America and the Caribbean, Africa, South-east Asia, and Oceania
the primary goal of this certification is to combat extreme poverty and the marginalisation of the poorest market participants
the label ensures that producers receive a fair payment – the Fair Trade price – which covers the actual costs of production. Additionally, a development premium is provided to the local community for projects that are crucial for improving the quality of life and work for that community. Production methods are also environmentally friendly
the label guarantees that decent working conditions are maintained for the producers of the raw materials used to make the product (e.g., cocoa)
the label ensures that no child labour or any form of modern slavery was used at any stage of production, and that gender equality was upheld



Rainforest Alliance
this certification encompasses both environmental criteria (related to sustainable agriculture, climate protection, biodiversity conservation, forest preservation, and natural resource management), and social criteria (involving the adherence to human rights, economic improvement, and poverty alleviation among farmers, workers, and their families)
the label ensures that the production of the product did not violate fundamental human rights, such as the prohibition of child labour, forced labour, discrimination, and workplace violence and harassment
the label guarantees fair wages, living conditions, and working conditions for workers involved in the production of the productnie, warunki życia i pracy pracowników zatrudnionych przy produkcji danego towaru
the label ensures care for the efficiency and economic viability of the operation, transparent and inclusive management, with a focus on gender equality
the label guarantees traceability, providing a transparent system for tracking the product in the supply chain from the farmer to the retailer
the label indicates the use of sustainable agricultural practices during the production process

Source: own compilation based on: Urząd Zamówień Publicznych / Public Procurement Office (2022). *Etykiety o charakterze społecznym / Social labels*. <https://www.gov.pl/web/uzp/etykiety-o-charakterze-spolecznym>; Urząd Ochrony Konkurencji i Konsumentów (2015). *Jak wybierać produkty rolnictwa ekologicznego*. <https://uokik.gov.pl/download/17344>

Circular economy – how to extend the product life cycle



SCENARIO 5

 Piotr Idczak  Łukasz D. Wróblewski

Learning objectives

After the lesson, students will:

- be able to characterise the most important assumptions of the circular economy,
- be able to understand the need to change current attitudes and human behaviour related to making purchases and dealing with used or unnecessary products,
- be aware of the consequences and threats resulting from the persistence of the current scale of consumerism in the everyday life of the modern generation,
- identify and apply in practice methods of conduct and human behaviour consistent with the assumptions of circular economy.

Methods and forms of work

- teamwork,
- discussion,
- educational game,
- mini-lecture,
- presentation,
- talk,
- brainstorm.

Key concepts

- recycling,
- sharing,
- repairing,
- not wasting,
- renting,
- composting

Supporting materials

- a board or, possibly, sheets of paper and markers,
- projector for film projection,
- mobile phones with Internet access,
- supporting material no. 1. Table. Good consumer practices supporting circular economy,
- supporting material no. 2. Butterfly diagram.



5.1. Introduction

What does the term “circular economy” mean? (7 minutes)

After greeting the students, the teacher introduces the issue by asking them a question: how do they imagine an economy characterised by a closed loop? This question may be preceded by introducing the concept of the product life cycle and illustrating it in the form of a circular diagram on a board or a piece of paper. This diagram should indicate that the life cycle is a process of transformation initiated by obtaining and processing natural raw materials → transport to production sites → production of finished products → use by people → disposal of used products and waste disposal. In this way, the teacher creates a reference context – how this scheme can be translated into the functioning of the entire economy. Students submit various ideas based on their own knowledge, recently read information or by referring to associations. All ideas and imaginations are written down on the board.

Then, referring to these, the teacher presents the definition of a circular economy – a model of production and consumption that seeks to extend the life cycle of a product by sharing, borrowing, reusing, repairing, renewing and recycling existing materials and products for as long as possible so as to minimise the amount of waste produced. In this way, the life cycle of products is extended.

The teacher emphasises that the success of a circular economy depends not only on entrepreneurs who will have to change their current production models, but above all on people who are expected to change their behaviour, lifestyle and consumption patterns.



5.2. Development

What awaits us if we do not change the way we manage natural resources? (8 minutes)

The teacher asks students questions that try to determine what their patterns of behaviour are in various everyday situations. For example, they are asked such questions as: What do they do when their shoes break (do they repair them or throw them away and buy new ones)? Do they buy and use used devices? Do they exercise due care when segregating waste? Do they give things or objects that they no longer

need to others or sell them using available online applications? Do they waste food? Do they only buy items they really need?

Depending on the answers provided, the teacher continues the discussion with the students. If the above questions are answered positively, the teacher emphasises the students' appropriate behaviour, stating that in this way they contribute to sustainable development.

If negative answers appear, the teacher presents the students with potential threats resulting from the consumer model of behaviour. This model involves the so-called linear economic development, which comes down to the principle: produce → buy → consume → throw away. This approach may have serious consequences in the future. The constantly growing number of people in the world and their ever-growing needs increase the need for continuous growth based on the exploitation of raw materials. The large scale of this phenomenon means that, according to the UN, we can quickly reach a level of exhaustion of natural resources, which will constitute a barrier to further economic development. This may cause conflicts between countries due to limited resources. In the worst-case scenario, this could lead to the collapse of life support systems on Earth. Therefore, it is very important to implement behavioural patterns and consumption models that support GO, i.e. rational use of resources and minimising the negative impact on the environment.

What is a circular economy (5 minutes)

The teacher explains to the students that the main goal of a circular economy is to optimize both production and consumption processes. The idea is not to increase the use of natural resources but to better manage those resources that are already in circulation. What we obtain from the environment should be used many times. Only that part of finished production that cannot be further processed and reused should be returned to the environment. This means we cannot throw away things we do not need. We should give them away, resell them, repair them, process them and, when nothing more can be done, "throw them away". Moreover, the word "throw away", which the teacher clearly emphasizes, means "to give back to the environment in a form that can be absorbed by it without any harm". In this way, we will extend the life cycle of products.

Summarising this part of the lesson, the teacher states that the circular economy approach creates a need to change business models, i.e. better design and production of products to make them more durable, repairable (availability of spare parts) and as environmentally friendly as possible. Moreover, the success of the circular economy does not depend only on producers: we also need to change our behaviours and habits.

Good practices in implementing a circular economy by consumers (10 minutes)

Using supporting material no. 1, together with the students the teacher analyses examples of good consumer practices that are consistent with the assumptions of the circular economy. The teacher can also ask students how they follow the rules in the table.

My contribution to circular economy (10 minutes)

The teacher invites students to conduct an educational game aimed at proposing as many steps as possible in dealing with the product in order to extend its life cycle. The teacher divides students into groups and hands out or displays a butterfly diagram on the screen. Students' work in groups will consist in proposing their own behaviours and practices leading to the extension of the product life cycle.

Students choose any three products and propose the maximum possible number of stages that extend the life cycle of a given product. They write down their suggestions on cards. The teacher awards a certain number of points for each stage. If it is only one stage that ends in an expulsion, the group receives 0 points. If there are more stages and each of them extends the product's life cycle, the group receives one more point for each subsequent stage. For example, you bought a vacuum cleaner which then broke down – I bought it → I threw it away (0 points), I bought it → I repaired it (1 point), I bought it → I repaired it → I gave it away / resold it (I don't need it anymore) (2 points) etc.



5.3. Summary

What surprised me / what did we learn (5 minutes)

The teacher briefly summarises the main issues covered during the lesson, emphasising the importance and significance of changing everyday human behaviour in relation to purchasing decisions and dealing with products. The teacher also draws attention to the broader context of these activities.



5.4. Resources and useful links

- Michalak, D., Rosiek, K., & Szyja, P. (2020). *Gospodarka niskoemisyjna – gospodarka cyrkularna – zielona gospodarka. Uwarunkowania i wzajemne powiązania* [Low-emission economy – circular economy – green economy. Determinants and interconnections]. Wydawnictwo Uniwersytetu Łódzkiego.
- Link to the website *W kierunku gospodarki obiegu zamkniętego. Wyzwania i szanse* [Towards a circular economy. Challenges and opportunities]. <https://kampania17celow.pl/wp-content/uploads/2017/08/w-kierunku-gospodarki-obiegu-zamknietego.pdf>
- Kulczycka, J. (2019). *Gospodarka o obiegu zamkniętym w polityce i badaniach naukowych* [Circular economy in policy and research]. Wydawnictwo Instytutu GSMiE PAN. <https://min-pan.krakow.pl/wydawnictwo/wp-content/uploads/sites/4/2020/04/GOZ-ca%C5%82osc.pdf>



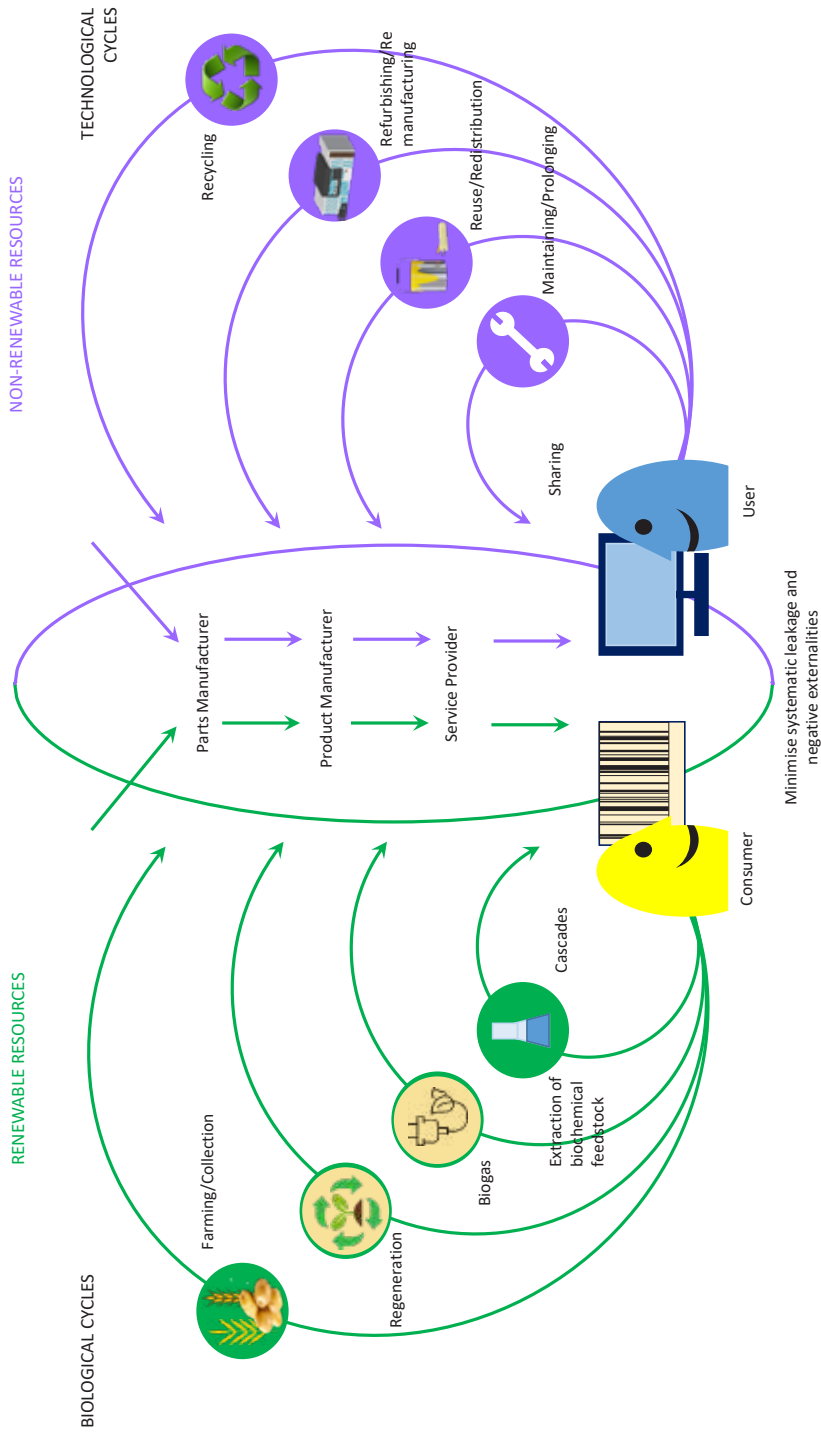
5.5. Supporting materials

Supporting material no. 1. Table. Good consumer practices supporting the circular economy

Principles of circular economy	General characteristics	Good practices
Refuse	Don't buy too many products. Try to reduce overall amount of waste	Are you going shopping? Great, but don't buy a plastic bag – it does not decompose. Don't buy cheap items, e.g., T-shirts. Choose good-quality products, even if they cost more. Their life cycle is usually longer
Reduce	Buy only what you really need	"Black Friday" sounds great but think about whether you really need another pair of jeans or shoes
Reuse	Buy and sell used items	Are you going to upgrade your PC? Great, but try to buy used computer components rather than a new computer
Repair	Repair broken items	Don't throw your old laptop into the garbage. Try to repair it by yourself or take it to an appropriate service centre rather than buying a new one
Recycle	Segregate waste	Learn how to segregate waste and do it every day and at every opportunity
Rot	Don't waste food and compost the leftovers	Don't waste food. Only cook as much as you can eat or at least compost the leftovers

Source: own work.

Supporting material no. 2. Butterfly diagram



Source: adapted from (Ellen MacArthur Foundation. (2019). *Circular economy systems diagram*. <https://www.ellenmacarthurfoundation.org/circular-economy-diagram>

Zero waste – let's not **WASTE** the planet



SCENARIO 6

 Judyta Cabańska

 Dorota Czyżewska-Misztal

 Joanna Witczak

 Maria Sielicka-Różyńska

Learning objectives

After the lesson, students will be able to:

- explain what the concept of zero waste is and why it is relevant to everyday life,
- characterise the 5Rs principle and give relevant examples of responsible consumer behaviour,
- apply the 5Rs principle at school and at home,
- communicate and cooperate in a group,
- cooperate with other students, carry out given tasks and present the results of the group's work to the class.

Methods and forms of work

- discussion,
- case study,
- brainstorming,
- individual and group work.

Key concepts

- the zero waste concept
- the 5 Rs principle,
- sustainable consumption,
- conscious consumer,
- waste recycling.

Supporting materials

- sheets of paper, post-it notes and markers (there should be as many colours of post-it notes or markers as there are groups)
- computer with projector / interactive whiteboard
- jar
- supporting material no. 1. Case study about the Poznański family,
- supporting material no. 2. Bea Johnson – initiator of the zero-waste movement,
- supporting material no. 3. The principles of zero waste,
- supporting material no. 4. Poster: The 5R principle in my class.



6.1. Introduction

Case study about the Poznański family (7 minutes)

After welcoming the students and taking their attendance, the teacher shows the students on the interactive whiteboard (or overhead projector) or distributes a printed story (supporting material no. 1). Case study about the Poznański family. He or she asks one of the students to read the whole text and the others to listen actively. The teacher then asks the students if they have guessed the topic they will discuss in class. The students suggest that it will be about reducing waste and sorting rubbish. The teacher confirms that students have identified the topic well, writes it on the board and explains how they will work in the lesson.



6.2. Development

The zero waste concept – the example of Bea Johnson (8 minutes)

The teacher shows the students a 1-litre glass that he or she has brought (or show such a jar on an interactive whiteboard / projector). The teacher then asks the students if they have any rubbish from the current day that they would like to throw away (if so, the teacher allows those students who have volunteered to put it in the jar). Then he or she asks the pupils to try to imagine putting all the rubbish they produce at home in a week / month / year into such a jar. The teacher asks them if they think it would be easy. At the end of their talk, the teacher tells them that what they are talking about is called reducing waste and is a way of respecting the environment and taking environmental action. The teacher explains the idea of zero waste and shows that reducing waste is possible, using Bea Johnson as an example. For this part of the lesson, the teacher can use supporting material no. 2. Bea Johnson – initiator of the zero-waste movement.

5Rs principle (18 minutes)

The teacher divides the students into groups of several and distributes material on the 5Rs principle to them. The teacher shows the terms that appear and introduces their meaning. Continuing the earlier discussion, the teacher describes some ways to reduce waste using the 5R's. The teacher then briefly explains the task to students and chooses leaders for each group. He or she asks students to prioritise the princi-

ples discussed (using the handouts provided, supporting material no. 3), encourages pupils to ask questions and express their own opinions, and allows a short discussion on the topic. The teacher refers to the case study of the Poznański family and asks students to identify what the Poznański family could do to be more zero-waste.



6.3. Summary

Working in groups, exchanging ideas and creating a poster The 5R's in my class (12 minutes)

The teacher asks students to think about what they could do and what they would need to do to implement the 5R's in their classroom. The teacher asks them to and write down their ideas on post-it notes.

After a set time for group work, the group representatives present the collected ideas. The teacher can encourage the pupils to questions to the presenters and to clarify any doubts. After the discussion, the leaders of each group stick the slips of paper with the selected ideas on the poster: 5R's in my classroom (it is useful to use supporting material no. 4. The 5R's in my classroom or a poster made by the students with the same title). The teacher analyses with the pupils the poster they have made. They re-read the 5R's together. The students from the group that has placed the most cards on the poster get points for the activity. It is a good idea to hang the poster in the classroom after the lesson.



6.4. Resources and useful links

- *Two adults, two kids, zero waste*, TEDx Talks with Bea Johnson – <https://www.youtube.com/watch?v=CSUmo-40pqA>
- Short film showing the idea of reducing litter and household waste collected in a jar – <https://www.youtube.com/watch?v=Bv9iier5yQE>
- Zero Waste website – <https://zerowastehome.com>
- *Zero Waste - recycling is not about more but less*, Tedx Talks with Bea Johnson – <https://www.youtube.com/watch?v=kWnsmzSSgdI>
- Definition of Zero Waste – https://en.wikipedia.org/wiki/Zero_waste



6.5. Supporting materials

Supporting material no. 1. Case study about the Poznański family

The Poznański family lives in a block of flats in the Grunwald district of Poznań. The mother, Christine does the housework and looks after her three children: 8-month-old Barbara is breastfed by her mother, 4-year-old Eric attends public kindergarten and 8-year-old Filipina goes to primary school. The Poznański family have a 12-year-old car. They mostly use public transport to get to kindergarten and school. The father of the family, Waldemar Poznański, is a driver in international transport, so he is often away from home (he travels to Germany and the Netherlands, returning home every other weekend).

Christine used to buy disposable nappies for all the children and now sees how much waste she generates. She would like to sort the waste and pass the idea on to her children and husband, but she has noticed that these rules are not fully respected on the estate. Filipina is allergic and has been diagnosed with coeliac disease, so she has to buy packaged gluten-free products.

Christine used to buy her children various snacks such as mousses, yoghurts and juices in single packaging and had the added dilemma of how to separate this waste. She also bought a lot of clothes for her children, most of which were low-budget, which meant they often ended up being thrown away. Inspired by Bea Johnson, who popularised the concept of Zero Waste, she decided to make a change in her life. Her thoughts began to revolve around the slogan: Zero waste – when less is more.

Supporting material no. 2. Bea Johnson – initiator of the zero-waste movement

Bea Johnson is a world-renowned blogger and author of the book *Zero waste home*. *Zero waste home* has become a bestseller and has been translated into 12 languages, including Polish (published in 2017 under the title *Zero śmieci w domu*). Bea is credited with launching the global zero-waste movement.

Originally from the South of France, Bea currently lives in California with her family (husband and two sons). Since 2008, she and her family have produced only one litre of waste per year, which fits into one jar.

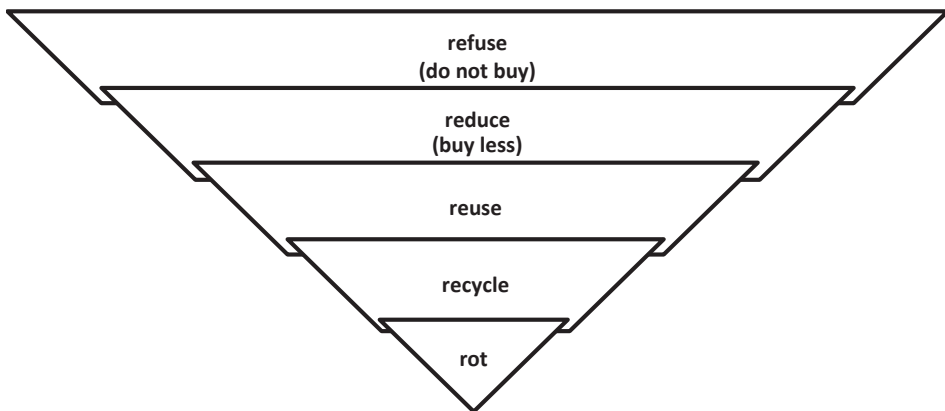


Source: <https://zerowastehome.com>



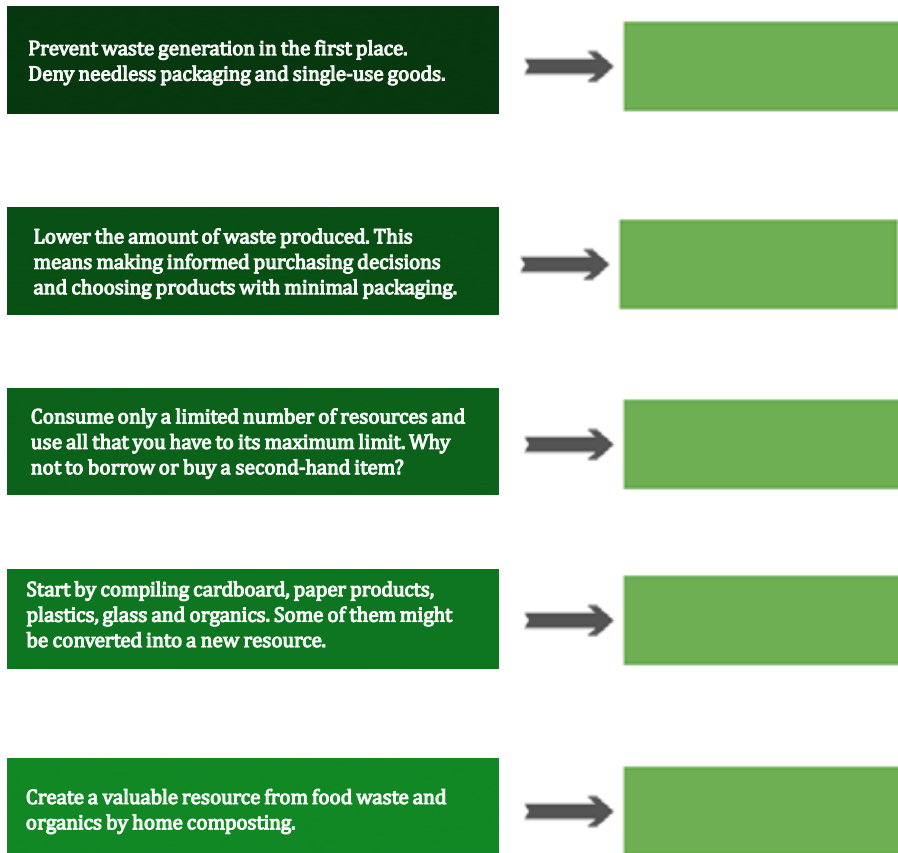
Source: <https://www.ograniczamsie.com/2016/11/bea-johnson-zero-waste-home.html>

Bea promotes a lifestyle aimed at drastically reducing waste in line with the 5 principles of zero waste:



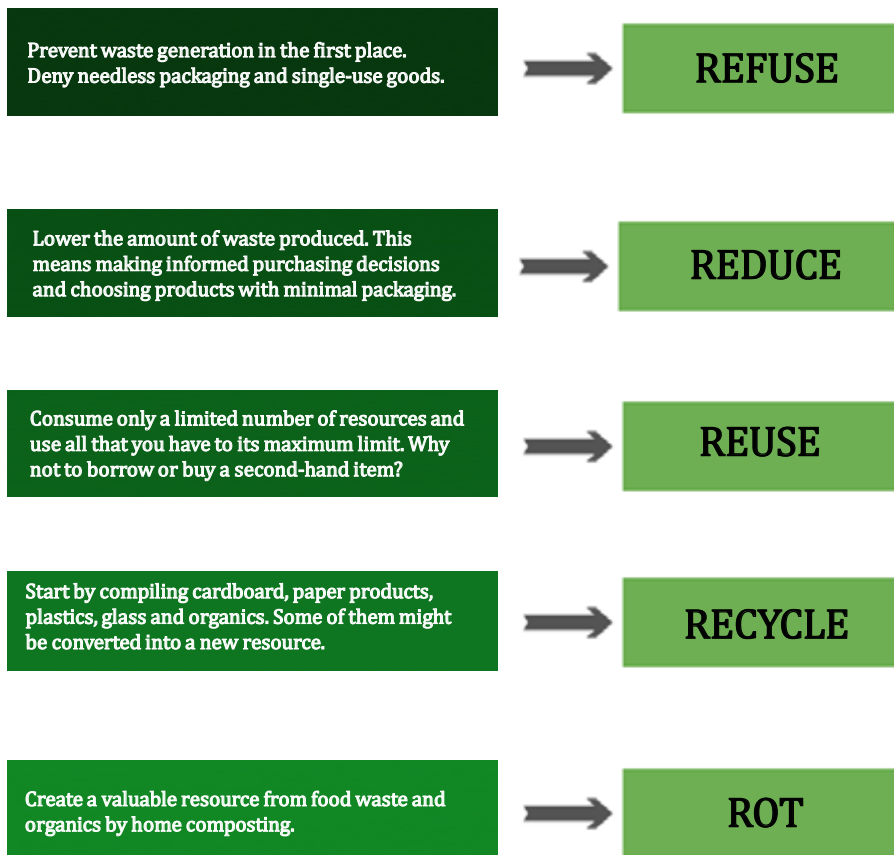
The idea behind zero waste is to reduce and limit the amount of waste produced. Zero-waste practices encompass all areas of life, particularly the consumption of food and drink, clothing, hygiene products or the use of transport. Zero waste means living without waste, which benefits health and the environment, and saves time and money.

5R's of Zero Waste



Select the appropriate: REUSE, RECYCLE, ROT, REFUSE, REDUCE

5R's of Zero Waste



Select the appropriate: REUSE, RECYCLE, ROT, REFUSE, REDUCE

Supporting material no. 4. Poster:
The 5R principle of zero waste in my class

THE 5R PRINCIPLE IN CLASS...

WHAT we do?

HOW we do?

REFUSE
(we do not buy)

REDUCE
(we buy less)

REUSE

RECYCLE

ROT

