NATIONAL AGENCY FOR EUROPEAN EDUCATIONAL PROGRAMMES AND MOBILITY

SUBJECT AREAS:

Social science

ACTIVITY DESCRIPTION:

Creating, Discussion, Research

OBJECTIVES:

- To understand the principles of a circular economy and its contrast with a linear economy;

 To identify opportunities for implementing circular economy principles in organic agriculture;
To evaluate the potential benefits and challenges of transitioning to a circular system and sustainable agricultural techniques;

- To develop critical thinking and problem - solving skills to sustainable agricultural practices.

MATERIALS:

Whiteboard or projector, markers, pens, handouts, worksheet, internet for brief research

GRADE/LEVEL:

Secondary school (15-18)

DURATION:

Preparation time: 15 min. Activity time: 50 min.

PLACE:

Classroom

AUTOR:

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Circular Economy in Sustainable Agriculture

INTRODUCTION:

The circular economy is a system where materials never become waste and nature is regenerated. In a circular economy, products and materials are kept in circulation through processes like maintenance, reuse, refurbishment, remanufacture, recycling, and composting. The circular economy tackles climate change and other global challenges, like biodiversity loss, waste, and pollution, by decoupling economic activity from the consumption of finite resources.

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The circular economy is based on three principles, driven by design:

- Eliminate waste and pollution
- Circulate products and materials (at their highest value)
- Regenerate nature

BACKGROUND:

Currently, our economy works in a take-make-waste system. We take raw materials from the Earth, we make products from them, and eventually we throw them away as waste. Much of this waste ends up in landfills or incinerators and is lost. This system cannot work in the long term because the resources on our planet are finite.

The circulate products and materials means keeping materials in use, either as a product or, when that can no longer be used, as components or raw materials. This way, nothing becomes waste, and the intrinsic value of products and materials are retained. By moving from a takemake-waste linear economy to a circular economy, we support natural processes and leave more room for nature to thrive.

Procedure:

- In the beginning, ask students what they eat or drink for breakfast (milk, meat, eggs), what material their clothing is made of. Engage the class in a brief discussion about where food or clothes comes from, the steps involved in its production, and where the waste goes. Introduce the concept of a "linear economy" (take-make-dispose) and its implications for resource depletion and environmental pollution. Use the handout for a visual comparison (Handout 1. for linear economic is below).
- Formally define the "circular economy" as a regenerative system that aims to minimize waste and maximize resource utilization. Emphasize the key principles of the circular economy: reduce, reuse, recycle, and recovery. Discuss how these principles can be applied to various industries





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> Explain the three pillars of sustainability:

- Environmental sustainability: soil health, biodiversity, water conservation.
- Economic sustainability: long-term profitability, reduced input costs, efficient resource use.
- Social sustainability: fair working conditions, rural development, food security.

(Handout 2. is below)

Demonstrate how sustainable agriculture fits into the circular economy (for example, organic production based on four principles (care, fairness, ecology, and healthy food) represents a model of agricultural practice and philosophy that can be utilized as a framework in the circular economy). Composting, closedloop water systems, soil regeneration practices, promoting farm biodiversity, caring for the environment, as well as prioritizing the well-being of people and animals, alongside premium pricing for products as an economic perspective.

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Divide the students into 4 groups (of 4-5 students each).

Assigning a topic related to organic production to each group:

- Group 1: Organic cotton production
- Group 2: Organic milk production
- Group 3: Organic meat production
- Group 4: Organic egg production

> Explain the task:

Each group should draw or create a model of organic production that:

- Incorporates the ecological, economic, and social pillars of sustainability (the sustainability triangle can be used as a guide).

- Illustrates the circular use of resources: water, waste, energy, food.
- Follows the four organic principles: care, fairness, ecology, health.

Additional instructions (can be written on a board or provided as a handout):

- How is water used and reused?
- How is fertilizer/organic waste utilized?
- Does production create waste? What happens to it?
- How does this production contribute to employment, community development, and the local economy?
- Name your "farm," adding symbols or elements that are important to their community.





FUN FACTS:

- The European Union produces more than 2.5 billion tons of waste every year.
- Extracting and processing raw materials impacts the environment and increases energy consumption and CO2 emissions.
- A circular economy could unlock \$4.5 trillion of value by 2030, a report by Accenture estimates.
- The average European generates about 190 kilos of packaging waste per year.
- Each European consumed 14.9 tons of raw materials in 2022.

ASSESSMENT:

The students will answer on the questions:

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- 1. Is sustainable development also economically sustainable?
- 2. Can sustainable agriculture be the future of farming? Why?
- 3. How does sustainable agriculture contribute to a circular economy?

EVALUATION:

Develop with the students several extension activities. For example:

- 1. Invite a guest speaker from a local dairy farm or food processing company to discuss their sustainability efforts.
- 2. Organize a field trip to a farm that implements circular economy practices.
- 3. Have students design a marketing campaign to promote circular milk production to consumers.





Handout 1.

The linear economy – The "TAKE-MAKE-WASTE" approach of production







THE SUSTAINABILITY TRIANGLE OF THE THREE CONFLICTING PLANNING GOALS

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Source: Campbell and Fainstein (2003)



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