

Case Studies in Bioeconomy Education, Training and Skills Development

Case study sample: Bioeconomy
foresight scenarios towards 2050 (JRC
KCB)

Europe

FVA



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Bioeconomy foresight scenarios towards 2050 (JRC KCB)

1 Abstract

The Scenario Exploration System (SES) is a board game developed by the Joint Research Centre to facilitate the practical use of scenarios from foresight studies and the application of futures systemic thinking to policy-making.

The Bioeconomy edition is based on four scenarios for future transitions in the bioeconomy towards sustainable development and a climate-neutral economy, developed in a previous foresight study. Participants take on the roles of different stakeholders (primary producer, consumer, policy maker, businesses, and public opinion) and navigate different scenarios. The tool enables them to develop a long-term perspective and experience the constraints and opportunities they might face in designing actions towards reaching long-term goals and objectives and when interacting with other stakeholders.

2 Target Groups

Quadruple helix stakeholders

3 Case Study Category

Art to elicit new ways of thinking and develop skills needed in bioeconomy education

4 Training Provider

EC Joint Research Centre - Knowledge Centre for Bioeconomy

5 Region

Europe

6 Language

English

7 Objectives of the Educational Format

Other – Improving systemic thinking in stakeholders interested in bioeconomy

8 Final Objective of the Educational Format

Although the foresight exercise was designed to involve experts and actors in a systemic reflection with a long-term perspective, it has intrinsic potential for education bridging bioeconomy and art (a gamified experience). Each participant assumes a specific stakeholder role in the bioeconomy. The exercise stimulates discussion and engagement and opens the minds of stakeholders, who can bring new perspectives into their activities.

9 Scope and Context of the Educational Format

In December 2019, the European Commission set up an ad-hoc network of external experts to contribute to the Commission's Knowledge Centre for Bioeconomy with forward-looking analysis. As part of this work, the experts contributed to a foresight exercise, organized in collaboration with the EC Competence Centre on Foresight, with the participation of external bioeconomy stakeholders, from within and outside the Commission services. The results of the foresight phase included the development of four scenarios of how the EU bioeconomy could evolve by 2050 (as the long-term time horizon) addressing the question: "How can the EU bioeconomy best contribute to specific Sustainable Development Goals and to the transition towards a climate-neutral economy by 2050?"

The scenarios describe plausible alternative narratives of the bioeconomy in 2050, based on the multiple drivers that can affect its future, and their interplay, and depending on the realization of specific boundary conditions. Each scenario describes the world, Europe, and the bioeconomy in 2050 and to what extent each scenario would contribute to the objectives of the EU Bioeconomy Strategy and to selected United Nations Sustainable Development Goals (SDGs).

Scenario 1: Do it for us - proactive policy, Paris target nearly achieved (2 °C global temperature increase by 2100), no societal change (Business As Usual trend for consumption);

Scenario 2: Do it together – integrative policy, Paris target fully achieved (1.5 °C global temp. increase by 2100), fundamental societal change (towards sustainable consumption);

Scenario 3: Do it ourselves - societal action, Paris target missed (global temperature increase 2.5 °C by 2100), fundamental societal change (towards sustainable consumption);

Scenario 4: Do what is unavoidable - reactive policy, Paris target clearly missed (3.5 °C global temperature increase by 2100), no societal change (Business As Usual trend for consumption).

10 Specific Skills and Competencies Addressed

Valorization competencies: assessing risks, assessing sustainability, system thinking, solving complex systems, holistic view of the system to be studied, with a critical, analytical, and creative attitude.

Transversal competencies: critical thinking and problem-solving, communication, teamwork, prioritizing and organizing, entrepreneurial competences, curiosity, accuracy, time management, strategic thinking

11 European Qualification Framework level(s)

Level 6 and Level 7

12 Main Benefit to the Participants

Participants move through the scenarios by implementing actions to pursue their objectives and goals, considering the specific context of each of the 4 scenarios. 88% of attendees confirmed that the workshop helped them develop a strategic perspective on the future of the bioeconomy. Moreover, playing this board game helps participants acquire specific competences that can be transferred to their practices, specifically for foresight and systemic thinking.

13 Main Cost Categories Considered

The JRC – Knowledge Centre for Bioeconomy is a European Commission initiative on better knowledge management for policymaking on the bioeconomy. It is funded by two programs: Horizon 2020 and The EURATOM Research and Energy Program. All budget and resource figures are available in the JRC annual reports.

14 Importance and Impact

Two workshops have already been organized with a focus on the bioeconomy, engaging 90 stakeholders from 17 European countries. In general, the actions of the participants are all directed towards the pursuit of sustainable objectives, even if the scenarios do not report favorable conditions. The next workshop will focus on Central-Eastern Europe.

15 Relevance (of the Format)

The format is highly relevant as it provides a tool to elicit systemic thinking through a gamified experience. The development of scenarios is one of the techniques used in foresight. It identifies the relevant drivers of change of the system being considered and analyzes the interplay between the respective drivers. This helps to develop a deep understanding of the logic of various possible future developments.

16 How can it Inspire BioGov.net? (Why was it designed in this specific way / what are the success factors?)

The uniqueness of the format lies in exploring scenarios in the bioeconomy using a gamified experience to involve quadruple helix stakeholders. A 360° perspective covering societal, technological, ecological, economic, and political drivers and zooming in from overarching to bioeconomy-specific factors helps avoid tunnel thinking. The Bioeconomy foresight scenarios towards 2050 are under a Creative Commons license and can be easily used and replicated in BioGov.net to engage the stakeholders of the Communities of Practices in the context of the workshops foreseen. The format can also be replicated by local stakeholders to design strategies and roadmaps for the implementation of the bioeconomy in their region.

17 Data Sources

- **Online resources:**
<https://publications.jrc.ec.europa.eu/repository/handle/JRC123532>
- **Resource persons:** BORZACCHIELLO Maria Teresa; SANCHEZ LOPEZ Javier; AVRAAMIDES Marios - JRC KCB
- **Other sources, if any:** [JRC Publications Repository - Scenario Exploration System - Future transitions for the bioeconomy towards sustainable development and a climate-neutral economy \(europa.eu\)](#)

