EnvEduOERs

ENVIRONMENTAL EDUCATION BY OPEN EDUCATIONAL RESOURCES FOR SUSTAINABLE COMMUNITIES

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Outline

- Environmental quality – human health consequences
- The 2030 Agenda – a call for action towards a sustainable planet
- Transition to sustainable communities – needs informed citizens
- Projects for developing knowledge for sustainability transition

Context: the world faces many increasingly pressing challenges

Global population	• ↑ **1.5% /year** • Predicted: 10 billion to 2050
Economic development	• **12 times compared to 1950**
Primary energy production	• ↑**62.91%** (2018 compared to 1990);
Electricity consume	• ↑**127.01%** (2018 compared to 1990)
Greenhouse gases emissions	• ↑**13.92%** (2018 compared to 1990)
Pollutants emissions	• **75% of landscape severely altered** • 40% of marine environment severely altered
Human health	• **12.6 millions of deaths (23% from total deaths)** due to improper environmental conditions

The 2030 Agenda

Adopted by United Nations Member States in 2015
Provides a shared vision for peace and prosperity for people and the planet
The heart of the 2030 Agenda: **the 17 Sustainable Development Goals** (SDGs)
which **interconnected** aim to transform the world by providing a new policy
framework

https://sdgs.un.org/2030agenda

The 2030 Agenda

Romania, as a member of the United Nations (UN) and the European Union (EU), has adopted the 2030 Agenda and its 17 Sustainable Development Goals.

This strategy is **citizen-centered** and focuses on innovation, optimism, resilience, and the belief that the role of the state is to serve the needs of each citizen in a fair, efficient, and balanced manner, **all within a clean environment**.
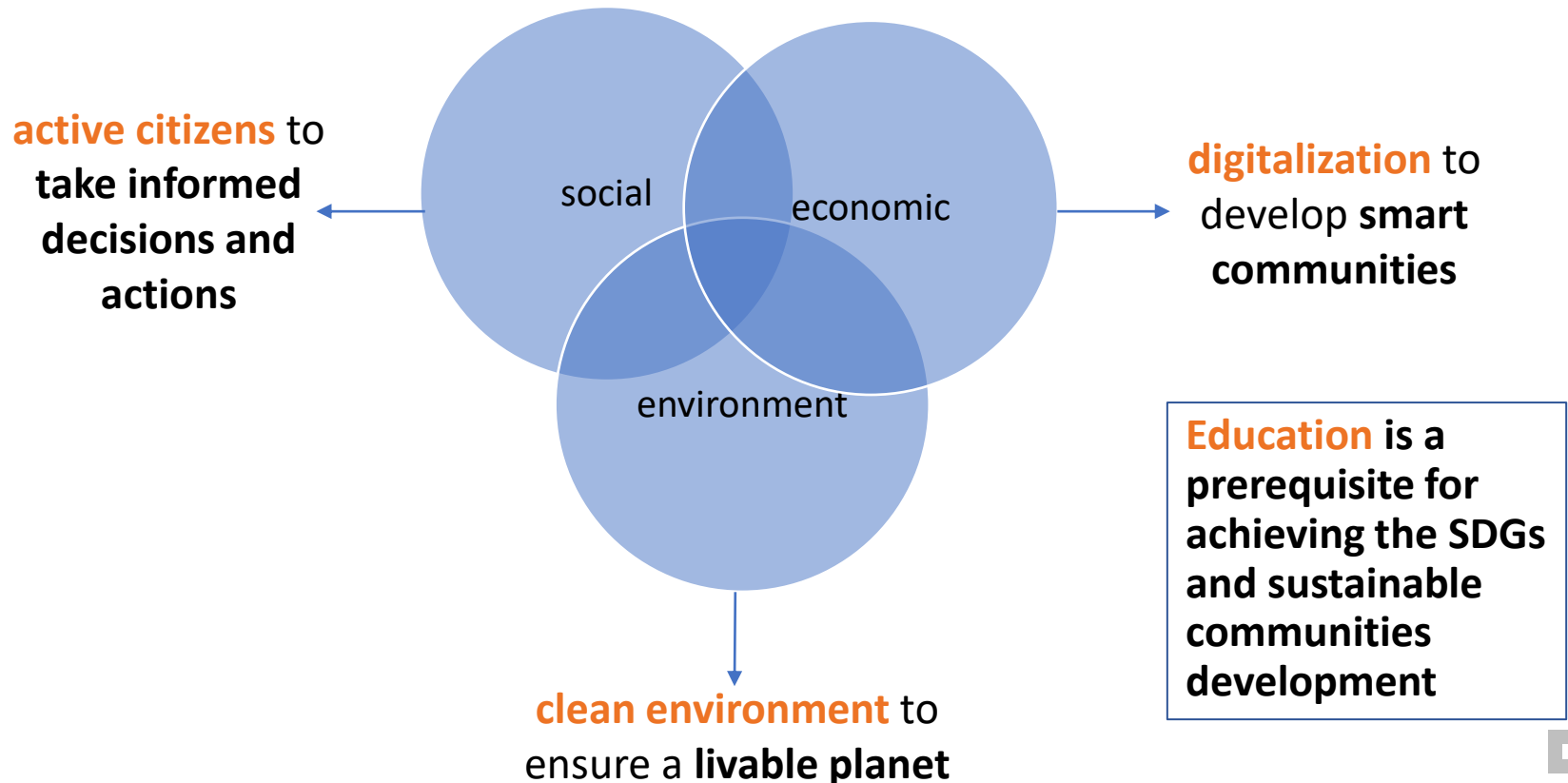
https://ec.europa.eu/info/sites/default/files/factsheet-eu-delivering-2030-agenda-sustainable-development_en.pdf
http://dezvoltaredurabila.gov.ro/web/about/

Sustainable community

- Integrates the sustainable development **three pillars**: social, economic, environment
- Functions as a **complex open system**
- Implies **efficient administration**, based on care, involvement and knowledge

active citizens to **take informed decisions and actions**

social

economic

environment

digitalization to develop **smart communities**

clean environment to ensure a **livable planet**

Education is a prerequisite for achieving the SDGs and sustainable communities development

Digitalization in education: "open learning"

Three accepted meanings for **open learning**:
1. **Open Universities**
2. **Massive Open Online Courses** (MOOCs)
3. **Open Educational Resources** (OERs)

(Report of the Joint Research Centre, of the European Commission)

Five levels of differences in the "openness" types:
1. definition of openness
2. certificates
3. degrees
4. target groups
5. main objects

(Witthaus et al., 2016, Validation of Non-formal MOOC-based Learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred)

Open Educational Resources (OERs)

OERs are teaching, learning, and research resources available in the public domain and include:

- full courses
- course materials
- **modules**
- **texts**/ textbooks
- streaming **videos/ commented slides**
- **tests**
- software
- any other tools, materials, or techniques used to support access to knowledge

(Witthaus et al., 2016, Validation of Non-formal MOOC-based Learning: An Analysis of Assessment and Recognition Practices in Europe (OpenCred)

Projects for developing knowledge for sustainability transition

global
- international
- decision: agreements at international level
- The 2030 Agenda – SDGs

macro
- states / groups of states
- decision: governs
- Erasmus+ & EEA programmes

mezo
- intermediate level: urban/regional
- decision: local/regional adimistration
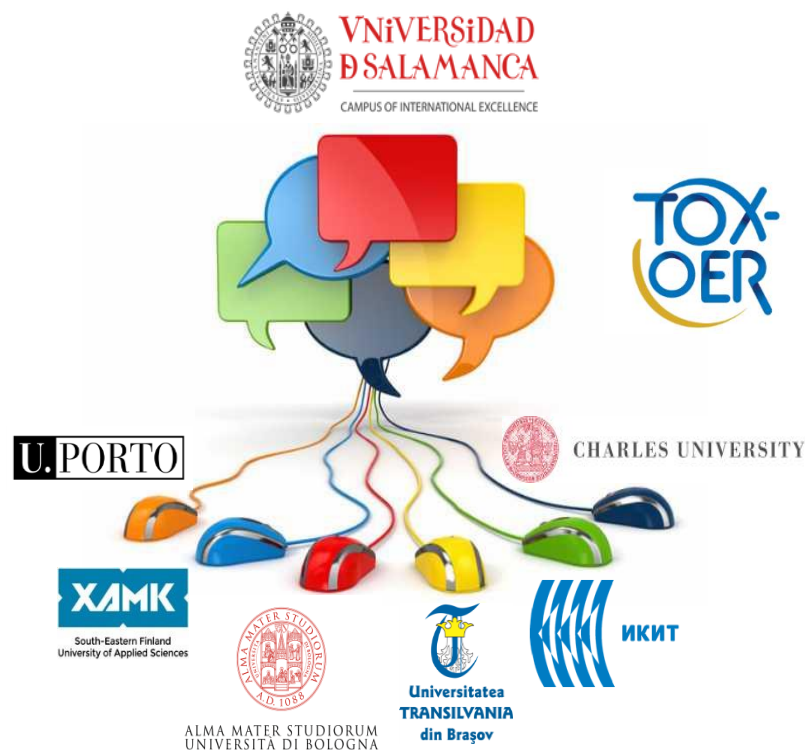- TOX-OER & EnvEdu-OERs projects

micro
- individual level
- decision: individual – students & citizens
- projects implementation

Learning Toxicology through Open Educational Resources – TOX-OER

◘ **Spain – Universidad de Salamanca (USAL)**

◘ **Bulgaria** – Space Research and Technology Institute (SRTI-BAS)

◘ **Czech Republic** – Univerzita Karlova V Praze (CUNI)

◘ **Finland** – South-Eastern Finland University of Applied Sciences (XAMK)

◘ **Italy** – Università di Bologna (UniBo),

◘ **Portugal** – Universidade do Porto (UPorto)

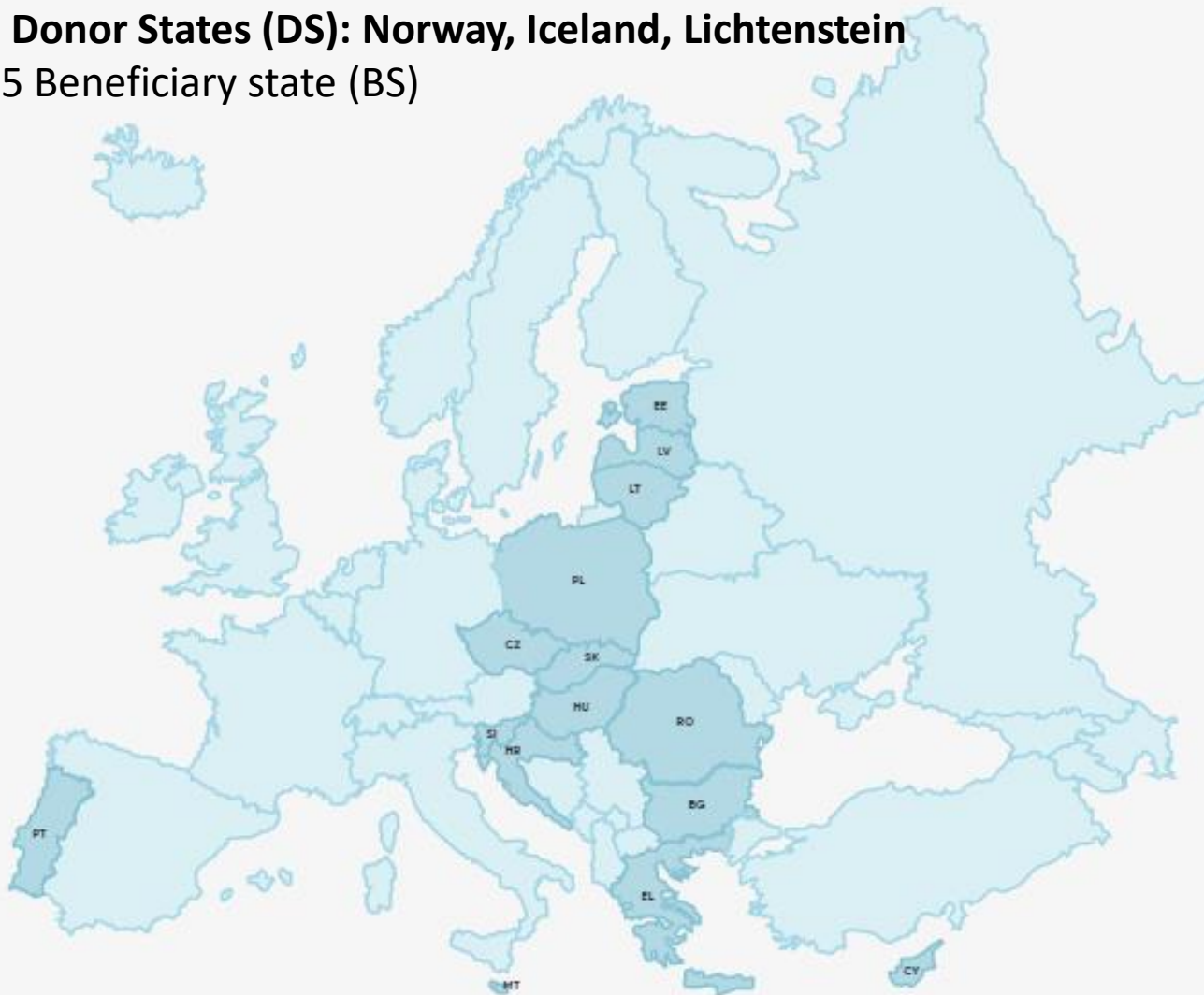◘ **Romania** – Universitatea Transilvania din Brasov (UTBv)

Learning contents – syllabus
providing courses for university students

Modules names (number of topics)	ECTS	Partners contribution
M1: General Concepts (1)	1	UPorto
M2: Pharmaco-Toxicokinetics (4)	6	UPorto
M3: Principal Groups of Xenobiotics (2)	4	UniBo
M4: Environmental Pollutants (5)	7	**UTBv**, CUNI, SRTI-BAS
M5: Target Organ Toxicity and Biomarkers (5)	8	CUNI, USAL, UPorto
M6: Environmental Toxicology (4)	7	**UTBv**, XAMK
M7: Patents and Patent Application (1)	2	UniBo
Total number of ECTS	35	OERs available in 8 languages https://toxoer.com/

(Manciulea, I., Vasilescu, A., Girotti, S., Ferrari, L., Protti, M., Mercolini, L., Dumitrescu, L., Perniu, D., Draghici, C.: Massive open online courses (MOOCS) with open educational resources for toxicology learning – drugs and pollutants as xenobiotics. Environ. Eng. Manage. J. 18(8), 1833–1842 (2019)

EEA Financial Mechanism – eligible states

3 Donor States (DS): Norway, Iceland, Lichtenstein
15 Beneficiary state (BS)

Countries List

- Bulgaria (BG)
- Croatia (HR)
- Cyprus (CY)
- Czech Republic (CZ)
- Estonia (EE)
- Greece (EL)
- Hungary (HU)
- Latvia (LV)
- Lithuania (LT)
- Malta (MT)
- Poland (PL)
- Portugal (PT)
- Romania (RO)
- Slovakia (SK)
- Slovenia (SI)

https://eeagrants.org/countries

EEA Financial Mechanism for Romania

1. **2007-2009** - €98.5 million
   - funded 69 projects
   - in areas as environment, health, cultural heritage

2. **2009-2014** - €305.95 million
   - funded 830 projects
   - in 22 financing programmes

3. **2014-2021** – €502 million
   - in 12 financing programmes (in progress)

EEA Financial Mechanism – 2014-2021

[12 financing programmes](#) established in the areas:

1. local development, reduction of poverty, Roma inclusion, children and youth at risk, human rights

2. renewable energy, energy efficiency, energy security

3. business development, innovation and SMEs

4. public health

5. research

6. cultural heritage, cultural entrepreneurship and cultural cooperation

7. justice, correctional services, fighting domestic and gender-based violence

8. home affairs, police cooperation and combating crime

9. **education, scholarships, apprenticeship and entrepreneurship for youth**

10. social dialogue and decent work

11. active citizens – civil society

12. environment and climate change

The Education, Scholarships, Apprenticeships and Youth Entrepreneurship Programme (ESAYEP) 2014-2021

- **ESAYEP – for high education**
  - mobility projects in higher education
  - preparatory visits for projects in higher education
  - **cooperation projects in higher education**

Environmental Education – OERs for Rural Citizens
EnvEdu – OERs

1 Nov. 2020 – 30 Apr. 2023

- **Transilvania University of Brasov – UNITBV**
- Reykjavik University – **donor state –** RU
- Bucharest University of Economic Studies – BUES
- "Gheorghe Asachi" Technical University of Iasi – TUIASI

(Perniu D., Manciulea I., Salca Rotaru C., Draghici C. (2021) Open Educational Resources for Environmental Education. In: Auer M.E., Centea D. (eds) Visions and Concepts for Education 4.0. ICBL 2020. Advances in Intelligent Systems and Computing, vol 1314, 327-334,. Springer, Cham. https://doi.org/10.1007/978-3-030-67209-6_35)

Project relevance towards the objectives of the EEA Grants Program

◪ Enhancing the human capital and knowledge base in Romania – areas of support:

  ◪ **The enhancement of the quality and relevance of education and training**

  ◪ **Professional development of teachers**

Project objectives

◪ to develop specific training resources (intellectual outputs)

  ◪ **6 teaching modules (O1)**

  ◪ 4 conference papers (O2)

  ◪ 1 learning platform (O3)

    ◪ project website

  ◪ 1 set of policy recommendations (O4)

◪ to implement project events

  ◪ 2 multiplier events (ME)

  ◪ 2 workshops

Intellectual outputs – Teaching Modules

Module	Module title	Responsible partner
M1	**Sustainable Communities and Social Communication**	**UNITBV**
M2	**Environmental Quality**	**UNITBV**
M3	Environmental Management, Impact and Risk Assessment	TUIASI
M4	Waste Management in Rural Communities	TUIASI
M5	Water Resources and Water Balance for Sustainable Community	RU
M6	Environmental Projects Management	BUES

Teaching Modules 1 and 2

TM1 Sustainable communities and social communication – Topics

 1.1 Sustainable rural community development

 1.2 Development of communication skills

 1.3 Case studies in Romanian and Icelandic communities

TM2 Environmental Quality – Topics

 2.1 Environmental Quality - Air, Water and Soil

 2.2 Legislation Related to Environmental Quality

 2.3 Case studies in Romanian and Icelandic communities

Teaching modules 3 and 4

TM3 Environmental Management, Impact and Risk Assessment – Topics

>   3.1 Environmental Pollution and Integrated Management Practices
>
>   3.2 Environmental Impact and Risk Assessment (EIRA)

TM4 Waste Management in Rural Communities – Topics

>   4.1 Waste Management in Rural Communities
>
>   4.2 Biomass Waste. Household Waste
>
>   4.3 Waste Collection, Treatment and Valorization

Teaching modules 5 and 6

TM5 Water Resources and Water Balance for Sustainable Community – Topics

   5.1 Water Resources

   5.2 Waste Water Management in Local Communities

   5.3 Sustainable Practices for Improving the Water Cycle in
         Local Communities

TM6 Environmental Projects Management – Topics

   6.1. Phases of Environmental Projects

   6.2. Resources Management. Risk Management

   6.3. Good Practice Examples

OERs development

- **Languages**
  - Romanian
  - English
  - translation

Project progress

◘ Development of the intellectual outputs
  ◘ teaching modules (RO & ENG)
  ◘ **1 conference papers**
  ◘ **e-learning platform – Moodle UNITBV (RO & ENG)**
  ◘ **project website (RO & ENG)**
  ◘ **survey for rural public administration representatives (RO & ENG)**
  ◘ policy recommendations for waste management in rural communities (RO & ENG)

In conclusion

The lessons learned from the **TOX-OER** project are and will be valuable inputs for the new **EnvEdu-OERs** project

- for an efficient rural community acceptance of the environmental education through OERs

- for other audience facing similar challenges and experiences in creating OERs

Acknowledgements

to the project "Environmental Education – OERs for

Rural Citizens (EnvEdu – OERs)"

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Area (EEA) Financial Mechanism 2014-2021

Cooperation Projects in the Higher Education area

project code 19-COP-0038.