PRESS

Promoting Relevant Education in Science for Sustainability

08.09. 2025 – 11.09.2025

Batumi, Georgia

10.09.25 -11.09.25 only for consortium members

Conference Venue

Batumi Shota Rustaveli State University

Participant registration will take place in the First Building, Ninoshvili Street 35, in the foyer of the Rustaveli Hall

All plenary talks will be held in the First Building, Ninoshvili Str. 35, Rustaveli Hall

All workshops will be conducted in the Second Building, located at Rustaveli Street №32,

Rooms №303, №306, №307, №311, №312, №325, №327

Conference Program

08 September 2025

9:00 – 09:30	**Registration**	
9:30 – 09:45	**Opening ceremony**	
9.45 – 10.30	**Promoting Relevant Education in Science for Sustainability**	**Prof. Ingo Eilks** University of Bremen, Germany
10.30 - 11.00	**Coffee break**	
11.00 – 12.30	**Impact of the PRESS project in partner countries**	**Georgia** - Prof. Marika Kapanadze, Prof. Rusudan Khukhunaishvili **Indonesia** - Dr. Safwatun Nida, Dr. Robby Zidny **Israel** - Prof. Yaron Lehavi, Dr. Ahmad Basheer, Dr. Naji Kortam
12.30 – 13.30	**Lunch break**	

13.30 – 14.45	"Transforming Education for a Sustainable Future: Bridging Policy, Practice, and Research" Focus: How to align educational systems with global sustainability goals	Panel Discussion - Chair: Marika Kapanadze **Ingo Eilks** University of Bremen, Germany **Avi Hofstein** Weizmann Institute of Science, Israel **Hadi Suwono** Universitas Negeri Malang, Indonesia **Guranda Bagrationi** Directorate of Environment Protection and Natural Resources, Biodiversity and Integrated Environment Management Service, Georgia **Davit Kharazishvili** Batumi Botanical Garden, Georgia **Manana Ratiani** Ilia State University, Georgia **Hanna Malhonen (invited)** Ministry of Education, Austria
14.45 – 16.15		**Poster session N1**
16.15 – 17.30		**Reception**

09 September 2025

9.30 – 10.15	Sustainability in STEM learning	**Prof. Avi Hofstein** Weizmann Institute of Science, Israel
10.30- 12.00	Workshop	**Parallel Workshops (1-6)** **1.Using systems thinking in educating for sustainability** Rachel Mamlok-Naaman Weizmann Institute of Science, Israel **2.Project-based learning in ESD** Outi Haatainen, Reija Pesonen University of Helsinki, Finland **3.Education for Sustainable Development: From Idea to Action** Tamar Doborjginidze, Marika Kapanadze Ilia State University, Georgia **4.Developing Sustainability Awareness Using Problem-Based Learning: Jigsaw Discussion (PBL-JD) Through Social Media Spaces** Muhamad Hugerat, Ahmad Basheer, Avi Hofstein Academic Arab College for Education, Israel **5.Measuring Impact, Shaping Change: Ecological Footprints in Sustainable Living** Naji Kortam, Ahmad Basheer, Fayad Sheabar, Academic Arab College for Education, Israel **6.Innovating Science and Chemistry Education For Sustainability by Integrating Indigenous Knowledge and Related Ideas** Robby Zidny Universtas Sultan Ageng Tirtayasa (UNTIRTA), Indonesia

12.00– 13.00		Lunch break
13.00 – 14.30	Workshop	Parallel Workshops (7-12) **7.Cooperation, networks and networking** Franz Rauch, Andrea Frantz-Pittner, Christina Pichler-Koban, Hanna Malhonen, Petra Korenjak University of Klagenfurt, Austria **8.Scientific Media Literacy and ESD** Nadja Belova University of Bremen, Germany **9.Hands-on experiments to teach energy coherently across different scientific domains** Yaron Lehavi David Yellin Academic College of Education, Israel **10.Promoting Relevant Education in Science for Sustainability through Non-formal Learning** Nida Safwatun Universitas Negeri Malang, Indonesia **11.Environmental Education and Sustainability Activity in a Multicultural Setting-Workshop focus on Carbon Footprint** Naim Najami, Randa Khair-Abbas, Zaki Kamal Academic Arab College for Education, Israel **12.SDGs 3- Good health and well-being (problem and project-based learning)** Marina Nagervadze, Rusudan Khukhunaishvili, Shorena Gabaidze Batumi Shota Rustaveli State University, Georgia

14.30- 15.00		Coffee break
15.00 – 16.30		Poster session N2
19.00		Conference Dinner

10 September 2025
(only for PRESS Consortium)

8.30 – 17.00	Field trip with Lunch	Paliastomi Lake https://nationalparks.ge/en/site/kolxetinp/tripsInner/68

11 September 2025
(only for PRESS Consortium)

9.30 – 12.30	Consortium Meeting	With coffee break
12.30 – 13.30	Lunch break	
13.30 – 17.00	Consortium Meeting	With coffee break

Parallel workshops
Abstracts

Workshop part 1

09.09.2025, 10.30 - 12.00

1. Using Systems Thinking in Educating for Sustainability

Rachel Mamlok-Naaman
Weizmann Institute of Science, Israel

The OECD (2019) envisions an educational landscape where students and educators work together, foster motivation, and define clear learning objectives and essential lifelong skills. Ultimately, this approach seeks to empower individuals not just with knowledge but also with the ability to navigate a dynamic world proactively and informedly.

Sustainable development was defined in 1987 as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". In subsequent years, sustainable development became a guiding principle of international policy. As an essential step toward sustainability, the idea of education for sustainable development (ESD) was suggested.

In the current workshop, we will choose several examples of education for sustainable development, combined with systems thinking. There are several definitions for systems thinking. However, in the current workshop, the definition of Chiu, Mamlok-Naaman and Apotheker (2019), who suggested a goal-based triple facet of the systems thinking for education, will be used. It includes (1) understanding systems structure, (2) understanding complex behavior, and 3) understanding systems at a different scale. The focus of the activities will be on linking society, science, and technology and technology from the views of global issues on sustainability, environmental protection, and applications.

2. Project-based learning in ESD

Outi Haatainen, Reija Pesonen
University of Helsinki, Finland

Join us for an engaging workshop centered on project-based learning (PBL) in education for sustainability (ESD). This interactive session includes practical examples and best practices gathered from educators worldwide, demonstrating how PBL can be effectively integrated into sustainability-focused science education curricula. You will have a chance to share ideas and co-create your own PBL module

3. Education for Sustainable Development: From Idea to Action

Tamar Doborjginidze, Marika Kapanadze
Ilia State University, Georgia

Education for Sustainable Development (ESD) aims to integrate sustainable development approaches into all aspects of teaching and learning. It seeks to ensure that education contributes meaningfully to achieving the goals of sustainable development by fostering the development of key competencies such as critical and systems thinking, collaboration, responsible action, and value-based decision-making. These competencies are essential for the formation of active citizenship and ensuring an ecologically sustainable future.

As part of the Erasmus+ funded project PRESS (Promoting Relevant Education in Science for Sustainability), a course titled "Science Education for Sustainable Development" was developed and implemented at Ilia State University. The course aims to support pre-service primary school teachers in gaining the knowledge and skills necessary to integrate ideas of sustainable development into their teaching practices through the design and implementation of relevant projects.

During the workshop, participants will be introduced to student projects implemented within the course, work in small groups, engage in practical activities, examine real-life teaching examples, and develop ideas on how to adapt such activities to their own teaching environments.

4. Developing Sustainability Awareness Using Problem-Based Learning: Jigsaw Discussion (PBL-JD) Through Social Media Spaces

Muhamad Hugerat, Ahmad Basheer, Avi Hofstein
Academic Arab College for Education, Israel

Across the globe, educators recognize that teaching science is one of the best ways to build public understanding of sustainability. Because scientific subjects-often chemistry, for example-provide so many chances to explain how society can protect the planet, they have become a key focus for sustainability training. Teachers remain central to the move toward sustainability in education. Evidence shows that the way instructors guide lessons and interact with students strongly influences how young people grow aware of environmental issues and act on them.

The rise of social media has notably reshaped educational practice, changing on-campus equipment, daily routines, and the way sustainability content is designed and delivered.

This workshop will contribute both to diagnostic insights regarding the current state of the participants' awareness of sustainability and to the evaluation of the effectiveness of an innovative integrated social media intervention to address the deficiencies observed in the world's environmental problems. Also, to reveal how social media can be used as a pedagogical tool to foster environmental awareness among the participants and will affect intentions to act for the environment.

5. Measuring Impact, Shaping Change: Ecological Footprints in Sustainable Living

Naji Kortam, Ahmad Basheer and Fayad Sheabar
Academic Arab College for Education, Israel

Sustainability education calls for teachers to bridge global environmental challenges with everyday choices. Understanding the concept of an ecological footprint helps educators see how individual and collective actions shape our planet's resources. By exploring the link between ecological footprints and sustainable living, in-service teachers can develop practical strategies and classroom experiences that inspire students to adopt responsible habits. This workshop empowers teachers to model

sustainable living themselves and to guide future generations in reducing their impact and contributing to a more sustainable world.

The workshop "Measuring Impact, Shaping Change: Ecological Footprints in Sustainable Living" invites participants – teachers and educators – to engage with an ecological footprint calculator as an experiential tool for measuring their personal environmental impact and exploring ways to integrate it into their teaching and daily practice.

During the workshop, participants will complete the ecological footprint calculator, which examines various areas of life such as nutrition, transportation, energy use, recycling, housing type, and consumption habits. The calculator provides a quantitative picture and a personal illustration of how one's lifestyle affects the planet's resources.

After completing the calculator, participants will analyze their results, compare them to local and global averages, and discuss the social and environmental implications of modern living patterns. Building on these insights, participants will develop practical approaches to incorporate the topic into their educational work – from guiding students to measure and evaluate their own impact to encouraging everyday decisions that contribute to sustainable living.

The workshop combines personal experience, group discussion, and practical pedagogical tools, with the aim of inspiring teachers to serve as role models and to educate generations of learners toward environmental responsibility.

6. Innovating Science and Chemistry Education For Sustainability by Integrating Indigenous Knowledge and Related Ideas

Robby Zidny
Universtas Sultan Ageng Tirtayasa (UNTIRTA), Indonesia

Bringing tradition and indigenous (traditional) knowledge and related ideas into science education serves to integrate scientific knowledge and the life experiences of students. This makes science relevant, inclusive, and culturally responsive. This summary of research papers highlight some author's studies on how indigenous knowledge and related ideas can innovate science and chemistry education curricula that allow students to be inspired by indigenous practices that have made sustainability a foundational ethos in their communities, meanings that would

primarily refer to principles of green chemistry and sustainability education that lean toward a more long-term ecological balance and preservation of natural resources. Case studies, student feedback, and curriculum evaluations highlighting how such integration can facilitate learning, promote engagement, and enable better educational outcomes. The results are discussed below in view of the impact on students' engagement, cultural relevance of the material and concepts of science, besides real-world relevance of the curriculum. The inclusion of Indigenous Knowledge in science education has the potential to enrich the curriculum and broaden the perspectives of students. However, in addition to counting all of the anticipated benefits of this endeavor, educators, policymakers, and communities will need to address a variety of challenges in order to realize the full potential of these efforts.

Workshop part 2

09.09.2025, 10.30 - 12.00

7. Cooperation, Networks and Networking

Franz Rauch, Andrea Frantz-Pittner, Christina Pichler-Koban, Hanna Malhonen, Petra Korenjak
University of Klagenfurt, Austria

The workshop will demonstrate the importance of establishing and utilising networks to support ESD. It will introduce some key concepts and present examples from Austria (like OEKOLOG, Science_Link…)

8. Scientific Media Literacy and ESD

Nadja Belova
University of Bremen, Germany

Social media plays a powerful role in shaping how young people think and act—especially around complex topics like sustainability and chemistry. Posts on platforms like Instagram or TikTok can spread awareness, but also oversimplify or distort scientific facts. In particular, messages related to sustainable chemistry are often

emotionally charged, misleading, or unscientific—shared by influencers promoting "green" but not necessarily evidence-based products.

In this hands-on workshop, we'll explore how social media influences students' perceptions of chemistry and sustainability. Together, we'll examine strategies for fostering critical scientific media literacy in the classroom. Participants will engage with examples of online content and develop lesson ideas that help students navigate social media critically, connect with sustainability issues, and align with the SDGs.

9. Hands-on Experiments to Teach Energy Coherently Across Different Scientific domains

Yaron Lehavi
David Yellin Academic College of Education, Israel

Energy is a central concept in science, yet it is often taught fragmentally across the different scientific disciplines and educational levels. This workshop proposes an approach that focuses on energy change (rather than energy itself), measured via calorimetry, as a unifying and cross-cutting concept. Inspired by Joule's historical work, we developed a series of experiments in which the change in temperature serves as a standard scale to compare quantitatively mechanical, chemical, electrical, and radiative processes. These experiments support the emergence of quantitative relationships and familiar energy formulas from empirical observations. The approach offers new meaning to traditional energy terms such as "types," "conversion," and "transfer," and lays the foundation for teaching energy conservation as an experimentally grounded principle. The participants in the workshop will experience using the experimental setups, designed for a regular classroom.

10. Promoting Relevant Education in Science for Sustainability through Non-formal Learning

Nida Safwatun
Universitas Negeri Malang, Indonesia

The urgency of addressing global sustainability challenges calls for innovative approaches in science education that go beyond traditional classroom instruction. This workshop shows how non-formal learning environments, such as community-based projects, science museum, field investigations, and collaborative outreach activities—

can serve as powerful platforms to promote relevant education in science for sustainability. Workshop participants will involve in interactive discussions, hands-on activities, and case study analyses to examine how non-formal learning can foster systems thinking, problem-solving, and active citizenship. Taking from best practices and lessons learned from international collaborations, the workshop highlights the importance of connecting scientific concepts with local and global sustainability contexts.

11. Environmental Education and Sustainability Activity in a Multicultural Setting- Workshop focus on Carbon Footprint

Naim Najami, Randa Khair-Abbas, Zaki Kamal
Academic Arab College for Education, Israel

In an era where climate change and the need for sustainability have become global challenges demanding urgent solutions, environmental education is more crucial than ever. This workshop focuses on the concept of "carbon footprint" and aims to equip participants with the knowledge and tools to reduce their environmental impact.

We live in a multicultural environment, every community and culture possesses a unique perspective, traditions, and knowledge related to nature and resource utilization. The rationale for this activity lies in the recognition that an effective approach to environmental education have to be inclusive, culturally sensitive, and diverse. Only by creating a space where knowledge and experiences from various cultures meet and mutually enrich each other can we harness the full human potential to address the environmental crisis.

12. SDGs 3- Good health and well-being (problem and project-based learning)

Marina Nagervadze, Rusudan Khukhunaishvili, Shorena Gabaidze
Batumi Shota Rustaveli State University, Georgia

In September 2015, the world agenda set the Sustainable Development Goals by 2030. Education plays a crucial role in achieving the Sustainable Development Goals. The most productive way to transform the values of young people is to raise their awareness. Education at all levels must necessarily incorporate the principles of sustainable development. Young people should receive knowledge that is oriented

towards their future growth. One of the goals of sustainable development is "Healthy life and well-being". This is precisely what our workshop is about.

It is essential to realize that each person has the power and responsibility to implement positive changes and ideas on a global scale. It is on the actions of each of us today that the future of humanity on Earth will depend. And it is education based on values that gives hope for a better future; therefore, a generation raised on the correct values creates a safe environment and cares about the future of humanity.
Within the framework of the workshop, participants will be introduced to specific projects, and a plan of practical activities will be created for them. Based on this plan, they will work in small groups, exchanging ideas and views.

Poster Session N1

08.09.2025, 14.45 – 16.15

1. **Detecting Visual Manipulation in Illustrations and Graphs - Evaluation of a Teaching Unit on Scientific Media Literacy**
   Pauline Mundt
   University of Bremen, Germany

2. **The Martian mindset – Space Travel as a Context for Sustainability Education in a Student Competition**
   Ina Barwich
   University of Bremen, Germany

3. **Controversial Science Issues - a challenge for teaching ESD?**
   Karoline Dütemeyer
   University of Bremen, Germany

4. **Student-teachers' Authority Bias and Critical Thinking in the Context of Attitudes Toward the use of Disposable Tools, with a Focus on Their Ability to Formulate Well-founded arguments**
   Tali Berglas Shapiro, Guy Sion, Yaron Lehavi
   David Yellin Academic College of Education, Israel

5. **The Impact of Ecology Studies in a College of Education on Changes in Attitudes towards Environmental Issues among Adults**
   Chen Sherman
   David Yellin Academic College of Education, Israel

6. **Student-teachers' Final Projects in a PRESS Course Focused on Teaching Energy as a Crosscutting Concept in a Sustainability Context**
   Yaron Lehavi
   David Yellin Academic College of Education, Israel

7. **The ÖKOLOG Network**
   Hanna Malhonen, Petra Korenjak, Franz Rauch
   University of Klagenfurt, Austria

8. **Green Energy – Designing, Building, and Operating a Model that Simulates Wind Energy Production**
   Naji Kortam, Ahmad Basheer
   Academic Arab College for Education, Israel

9. **Touching Nature – Creating Environmentally Friendly Products Using Natural Ingredients Extracted from Plants**
   Naji Kortam, Muhamad Hugerat
   Academic Arab College for Education, Israel

10. **Co-designing Science Clubs for Non-formal STE(A)M Learning Environments through Design-based Research**
    Maija Aksela, Outi Haatainen
    University of Helsinki, Finland

11. **Hands-On ESD: Designing and Reflecting on Student Projects**
    Tamar Doborjginidze, Marika Kapanadze, Ekaterine Slovinsky, Manana Varazashvili
    Ilia State University, Georgia

12. **Towards a Contextualized TPACK Framework: Development and Validation of an Instrument to Measure Teachers' Knowledge for Sustainable Development with Emerging Technologies**
    Eka Kurniati, Hadi Suwono, Erni Yulianti
    Universitas Negeri Malang, Indonesia

13. **A Case Study of Integrating Non-formal Learning for Developing Teaching Resources for Sustainability During a Science Teacher Education Course**
    Nida Safwatun Maija Aksela
    Universitas Negeri Malang, Indonesia

14. **Paper for U: Utilization of Wood Dust and Coconut Fiber Waste for Paper Production as the Implementation of Green and Sustainable Chemistry Project Based Learning**
    Vita Oktiani, Neng Angeli, Alvina Pratami, Uswatun Hasanah, Robby Zidny, Lusiani Dewi Assaat
    Universtas Sultan Ageng Tirtayasa (UNTIRTA), Indonesia

15. **Innoleaf Ink: Writing the Future With Green and Sustainable Organic Ink**
    Patricia Putri, Kissya Rintyaningtyas, Sabrina Amelia Halizsyah, Alya Muna Zhafirah, Siti Azha Hukmia, Robby Zidny
    Universtas Sultan Ageng Tirtayasa (UNTIRTA), Indonesia

16. **Eco Citrus Peel to Clean : Eco-Friendly Innovation of Natural Cleaner from Orange Peel Waste**
Dede Febriana, Zahra Aiska, Adila Nur Ramadhani, Naylla Diva Aisyah, Ratu Afifah Khairunnisa, Lusiani Dewi Assaat, Robby Zidny
Universtas Sultan Ageng Tirtayasa (UNTIRTA), Indonesia

17. **Fostering Sustainability Waste Recycling and Green Corners in Multicultural Landscape**
Naim Najami, Muhamad Hugerat
Academic Arab College for Education, Israel

18. **The Production of Green Energy "Ethanol" from Food Waste**
Fayad Sheabar, Ahmad Basheer
Academic Arab College for Education, Israel

19. **Case Study on the Ecology of Paliastomi Lake in the Context of ESD**
Inga Diasamidze, Rusudan Khukhunaishvili, Marina Nagervadze, Tea Koiava, Mariam Gogitidze, Ruslan Davitadze, Paata Vadachkoria
Batumi Shota Rustaveli State University, Georgia

20. **Waste Management Project as an Effective Tool for ESD**
Lali Zghenti, Nana Mamuladze, Marina Koridze, Sopiko Tskvitinidze, Shorena Gabaidze, Nino Varshanidze, Nini Jakeli
Batumi Shota Rustaveli State University, Georgia

Poster Session N2

09.09.2025, 15.00 – 16.30

1. **Transformative Education for Sustainable Development in TeacherPreparation: A Case Study from**
   Manana Ratiani
   Ilia State University, Georgia

2. **Stem Sciences and Artificial Intelligence for Sustainable Development**
   Khatuna Kapanadze
   LEPL Tkibuli Municipality Gelati Public School

3. **Learning in Nature: The Hiking Club as a Model of Eco-Education**
   Mariam Romanadze
   BSU, Batumi Private School "Taoba"

4. **Using Secondary Materials for the Creation of Biological Teaching Models**
   Jilda Gobadze
   LEPL Batumi Public School No. 14

5. **Integrating Sustainable Development Goals into Science and English Language Lessons**
   Natela Baghatrishvili, Ana Gigauri
   Iakob Gogebashvili Telavi State University, LEPL Telavi Public School No. 7

6. **Don't Discard Me, Save Me**
   Nino Danelia
   Dimitri Uznadze Tbilisi Public School No. 22

7. **Educational Projects and Initiatives of the National Botanical Garden of Georgia Towards a Sustainable Future**
   Giorgi Javakhishvili
   Georgian National Botanical Garden

8. **Epoxy and Idea – Creative Entrepreneurship with Handmade Products**
   Maia Kharadze
   Kharauli Public School, Keda Municipality, Adjara

9. **Integration of Natural Science Education into Vocational education to Support Sustainable Agriculture**
   Miranda Tserodze, Erekle Kebadze
   Swiss Agricultural School "Caucasus"

10. **ESD and the Role of CLIL in Teacher Education"- Pre-Service Science Course Development**
    Tinatin Kiguradze, Ekaterine Slowinski, Marika Kapanadze, Ekaterine Shaverdashvili
    Ilia State University, Georgia

11. **Care Today, Happiness Tomorrow**
    Tinatin Lagidze
    Cervantes Gymnasium AIA-GESS

12. **Science in Action: Path to Sustainability**
    Marina Miminoshvili
    LEPL Poti Public School No. 4

13. **A Collaborative Model of School–University–Enterprise Partnership in Science Education**
    I. Tsintsadze, N. Jakeli, M. Nagervadze, R. Khukhunaishvili
    Batumi Shota Rustaveli State University

14. **Board Game "Sevenman"**
    Ana Bolkvadze, Nani Chelebadze
    LEPL Batumi Public School No. 2

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