

4EU+ FLAGSHIP “ENVIRONMENTAL TRANSITIONS”

Collegio futuro

Class 2026

Interdisciplinary doctoral colloquium

Program overview

January - February 2026

4eu+

1 CORE

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COLLEGIO FUTURO

A college for designers of a sustainable European future

Collegio futuro is aimed at doctoral and advanced master's students from all research disciplines who seek to expand their knowledge beyond their own research area.

The goal of the training is to

- strengthen students' competencies in **interdisciplinary communication** and project elaboration,
- empower students to **transfer their knowledge** and expertise to different contexts,
- promote **critical and system thinking**,
- **raise awareness** for the challenges of socio-economic transformation,
- encourage **communication of scientific findings to civil society**.

The Collegio futuro Edition 2026 brings together for the first time doctoral students from all eight 4EU+ member universities, thus taking the project to another level and developing Collegio futuro into a collaboration hub for doctoral students in the flagship “Environmental transitions” within the project 1CORE—One **C**omprehensive **R**esearch-Intensive **E**uropean University.

The aim of the initiative 1CORE is to create an integrated, transnational European university that seamlessly connects its eight member institutions across Europe, gives new impetus to international academic collaboration, and promotes the growth of universities in the areas of education, research, innovation, and outreach.

[Program webpage](#)

SCHEDULE

PREPARATORY SESSIONS (online)

[Session I](#): **14 January 2026**, 13:00 – 17:00 CET

[Session II](#): **20 January 2026**, 13:00 – 15:30 (CET)

[Session III](#): **27 January 2026**, 9:30 - 10:30 (CET)

28 January 2026 (in groups)

WINTER SCHOOL (on campus in Heidelberg)

02 – 06 February 2026

INTRODUCTION

Fighting climate change, biodiversity loss, and environmental pollution: Conflicts and Synergies of Different Land Use Options



The triple planetary crisis (biodiversity loss, climate change, pollution) substantially interacts with land use. On one hand, land use practices, including land use change, are a major driver of these crises, while on the other, climate change, contamination of water bodies and soils, and the extinction or reduction of species themselves have negative repercussions on land use. For example, deforestation for agriculture contributes to climate change and biodiversity loss, and these, in turn, can lead to further land degradation and conflict over resources. Further, land use conflicts emerge from overlapping demands for land: renewable energy infrastructure and a bioeconomy that is based on biomass need a lot of land; so does the goal to drastically increase spaces for biodiversity protection and to provide terrestrial and maritime areas for climate change adaptation and production of organic and sustainable food. Additionally, land use is inextricably bound to social relations, and conflicts around land uses reflect and reproduce existing tensions and asymmetries within and across societies, from the local to the global level. At the same time, different land use requirements and needs can also lead to synergies and create innovative prospects for a sustainable future, such as agrivoltaics.

The upcoming edition of *Collegio futuro* sheds light on the topic of competing and contested land use change from different disciplinary perspectives. During the training, participants will both gain in-depth knowledge about the relations between crises dynamics and land use change and discuss possible synergies between different and competing demands for terrestrial and maritime spaces in a heating world.

PREPARATORY SESSIONS

Online in Zoom (link will be provided in the run-up to the event)

We kindly ask that you join the session 5 to 10 minutes before the beginning to make sure that the connection is working well. Please use your full name when logging in to Zoom.

SESSION I

Introduction into Collegio futuro and winter school workshops

14 January 2026, 13:00 – 17:00 CET

Supervisors will briefly present the problem they want to tackle, give hints how to prepare for the winter school and suggest which information would be useful to search for.

13:00 – 13:15 Introduction into the course

Dr. Tanja Peskan-Berghöfer & Prof. Thomas Rausch, Heidelberg University

- Overview
- What is expected from participants
- Information about blog and publication of the output

13:15 – 16:45 Short introductory lessons, one for each of the workshops
(25 min lecture + 20 min discussion)

13:15 – 14:00 Workshop I: *Jun. Prof. Rosa Lehmann, Heidelberg University*

14:00 – 14:45 Workshop II: *Prof. Matthias Kowasch, Sorbonne University*

Break 30 min

15:15 – 16:00 Workshop III: *Prof. Marco Parolini, University of Milan*

16:00 - 16:45 Workshop IV: *Prof. Jan Frouz, Charles University (Prague)*

16:45 – 17:00 Wrap-up

SESSION II

International policymaking & policy brief as a communication tool

20 January 2026, 13:00 – 15:30 (CET)

Prof. Ladislav Miko (Ministry of the Environment of the Czech Republic & Charles University in Prague)

Prof. Miko will provide a behind-the-scenes look at Meetings of the Conference of the Parties on Biodiversity (COP Biodiversity) and shed light on the challenges of nature conservation regarding land use. Furthermore, he will introduce the policy brief as a communication tool and give practical advice on how to captivate policymakers and achieve a significant impact.

SESSION III

Communication training & Warm-up for the winter school

Prof. Dr. Thomas Rausch & Dr. Tanja Peskan-Berghöfer

Part I

27 January 2026, 9:30 – 10:30 (CET)

Introduction to science communication and interdisciplinary work

Part II

28 January 2026

Brief communication training and initial exchange on the workshop topic.

Group I: 11:30 – 12:30 CET (Energy transition: socio-spatial tensions)

Group II: 14:00 – 15:00 CET (Energy transition: critical raw materials)

Group III: 15:15 – 16:15 CET (Soil pollution in times of climate change)

Group IV: 16:30 – 17:30 CET (Nature conservation and resource struggle)

The working groups will be formed according to the participants' preferences for parallel workshops given during the application process. The participants will have a chance to introduce themselves, get to know each other, and tell their peers about their expertise and how they prepared for the winter school.

WINTER SCHOOL

02 – 06 February 2026

VENUE

Marsilius Arkaden (Marsilius Kolleg)

Im Neuenheimer Feld 130.1 (ground floor), 69120 Heidelberg

[Google map](#)

OVERVIEW

The Winter school will start on Monday (02 Feb) at 9:30 am and end on Friday (06 Feb) at approximately 2 pm. It will consist of the following modules:

- Keynote lectures (supervisors and practitioners)
- Interdisciplinary workshops
- The presentation of the policy brief draft and discussion (Friday, 06 Feb)

The winter school will open with a **joint keynote lecture** by the supervisors, followed by an open discussion involving all participants. This session will set the stage for the program and highlight the main challenges to be addressed. **Lecture and workshop with the invited guests - practitioners, Ms. Claudia Steindl and Mr. Niko Zindel** (social enterprise [Heidenspass](#), Graz) will add additional perspectives. On Tuesday (03 Feb), the *Heidenspass* team will conduct an “upcycling” workshop, where participants will get hands-on experience with the process of the materials being reused and discuss the sustainable use of resources. Moreover, they will discuss where the materials come from, the impact they have on nature, how they can be re- or up cycled, and which pitfalls are related to the process.

Most of the winter school will take place in the form of **four parallel workshops**, each guided by a specific question. These workshops will enable participants to explore specific challenges in depth, engage in interdisciplinary dialogue, connect insights from their respective fields, and collaboratively develop a concept for a policy brief. A preparatory online session held prior to the winter school will introduce participants to the policy brief format.

The following topics will be tackled:

Workshop I: **Energy transition: socio-spatial tensions**

Workshop II: **Energy transition: critical raw materials**

Workshop III: **Soil pollution in times of climate change – new risks for ecosystems and human health**

Workshop IV: **Nature conservation and resource struggle**

On the final day (Friday, 06 Feb), each group will deliver a **15-minute presentation on the policy brief concept**, followed by a discussion on the topic, allowing participants to identify potential pitfalls and gather additional feedback. The winter school will close with an open discussion with all participants to explore connections and synergies among the challenges discussed within the single workshops.

WINTER SCHOOL WORKSHOPS

Workshop I

Energy transition - socio-spatial tensions

Renewable energies require far more land than fossil fuels, which is why tensions surrounding land use are increasingly being observed in connection with renewable energies such as wind and solar power. The group will take an interdisciplinary approach (political ecology/human geography and environmental geology/engineering geology) to examine socio-spatial processes, changes, risks, problems, and perspectives relating to land and renewable energies. We will discuss case studies on infrastructure for electricity generation and green hydrogen production and biomass cultivation for agrofuels and focus on land relations and use, contextual factors and geographical locations, and ground conditions (including groundwater) to explain problems around project implementation and future perspectives of energy transitions. We give insights into research on risk assessment prior to project implementation and during the operation phase and the social tensions related to renewables.

Supervision:

Jun. Prof. Rosa Lehmann, Heidelberg University
Asst. Prof. Anna Bąkowska, University of Warsaw

Workshop II

Energy transition: critical raw materials

With the EU Green Deal to combat climate change and to achieve carbon neutrality by 2050, there is an increasing demand for raw materials such as lithium, cobalt, copper and nickel, essential for developing renewable and low-carbon technologies (wind turbines, solar panels, electric vehicles, etc.). Several of such minerals have been classified as “critical”, considering a supply risk due to the high demand. Moreover, European countries produce a negligible amount of critical raw materials (CRM), they are thus depending on the import from other countries, especially China. To secure a reliable supply chain, and to enhance local mineral extraction, the EU has adopted the CRM Act in 2023 (European Commission, 2023; Kowasch et al., 2024). This workshop aims at investigating the territorial transformations of new CRM projects in Europe. We ask if the “green transition” is rather an add-on of different energy resources (carbon, oil and renewable energies), so that a real transition is unlikely to happen, as suggested by Fressoz (2024). With a focus on political ecology approaches and environmental justice, we also question social-environmental impacts, challenges and opportunities for local populations in mining affected areas.

Supervision:

Prof. Matthias Kowasch, Sorbonne University

References:

European Commission (2023). Critical Raw Materials Act.
Fressoz, J.-B. (2024). Sans transition – Une nouvelle histoire de l'énergie. Éditions du Seuil, Paris.
Kowasch, M., Batterbury, S.P.J., Baumann, C. et al. Not in my backyard? Prospects, problems and perceptions of lithium extraction in Austria. *Energ Sustain Soc* 15, 21 (2025).

Workshop III

Soil pollution in times of climate change - new risks for ecosystems and human health

The study of soil contamination within the context of climate change is crucial for understanding the processes that regulate the health of terrestrial ecosystems. Rising temperatures linked with altered precipitation patterns and changes in soil use can affect the fate of contaminants adsorbed or trapped in the soil, such as trace elements, persistent organic compounds and different emerging contaminants, thereby changing their bioavailability. These processes can negatively affect the quality of the soil and water, as well as the biodiversity. Moreover, climate change can modify biogeochemical cycles, potentially amplifying or mitigating the effects of pollutants towards organisms. For these reasons, understanding the fate of pollutants in a climate change context is crucial for assessing environmental risks and developing effective management and/or mitigation strategies to protect terrestrial ecosystems and human health.

Supervision:

Prof. Marco Parolini, University of Milan

Prof. Luigi Orsi, University of Milan

Workshop IV

Nature conservation and resource struggle

Mankind uses more and more resources of our planet. Some estimate that up to 80% of ice-free land has been in some form transformed by human activities, yet still there is increasing demand for land to increase food production and to build infrastructure. Because of intensive use, some parts of land have been degraded, which shrinks available land even more. Therefore, less land remains available for nature to support diversity and natural processes, which in turn may compromise delivery of ecosystem services natural ecosystems provide to humanity. Many people believe that this situation is not sustainable, and we need to provide more land for nature by land restoration. This is even reflected by several policies, such as the EU nature restoration law or the ongoing United Nations decade of ecosystem restoration. In this Collegio futuro workshop, we will search for solutions to the conflict between the need for land for nature restoration and resource use by human communities. We will explore variation in land use and degradation patterns across various communities, which vary in socioeconomic and environmental conditions, and we will search for tailored solutions to the conflict between human use of land and nature.

Supervision:

Prof. Jan Frouz, Charles University/Prague

Prof. Ladislav Miko, Ministry of the Environment of the Czech Republic & Charles University/Prague

WINTER SCHOOL PROGRAM

| Mon, 02 Feb | Tue, 03 Feb | Wed, 04 Feb | Thu, 05 Feb | Fri, 06 Feb |
|---|---|---|---|---|
| <i>A big picture</i> | | <i>Specifying a challenge</i> | | <i>Developing a concept</i> |
| | | | | <i>Reporting</i> |
| | 09:00 -15:30 Sufficiency in practice: “Upcycling workshop” conducted by <i>Heidenspass, Graz</i> (Team building) | 09:00 – 18:00 Group work (parallel workshops) | 09:00 – 18:00 Group work (parallel workshops) | 09:00 - 09:45 Workshop I 09:45 - 10:30 Workshop II |
| 09:30 <i>Registration & welcome coffee</i> | <i>10:30 Coffee break</i> | <i>10:30 Coffee break</i> | <i>10:30 Coffee break</i> | <i>10:30 Coffee break</i> |
| 10:00 Welcome address 10:05 Keynote and discussion | <i>“Upcycling workshop” continued</i> 11:00 – 12:30 Parallel session for supervisors: <i>Collegio futuro – further steps</i> | <i>Group work continued</i> | <i>Group work continued</i> | 11:00 - 11:45 Workshop III 11:45 - 12:30 Workshop IV 12:30 Closing |
| <i>12:30 Lunch</i> | <i>12:30 Lunch</i> | <i>12:30 Lunch</i> | <i>12:30 Lunch</i> | <i>13:00 Lunch</i> |
| 13:30 – 18:00 Group work (parallel workshops) | <i>“Upcycling workshop” continued</i> | <i>Group work continued</i> | <i>Group work continued</i> | <i>Farewell, end of Winter school</i> |
| <i>15:30 Coffee break</i> | <i>15:30 Coffee break</i> | <i>15:30 Coffee break</i> | <i>15:30 Coffee break</i> | |
| <i>Group work continued</i> | 16:00 -18:00 Group work (parallel workshops) | <i>Group work continued</i> | <i>Group work continued</i> | |
| | | | <i>18:00 Pizza-Evening</i> | |

HOW TO PREPARE FOR WINTER SCHOOL

In preparatory online sessions, participants will gain insights into the Collegio futuro winter school workshops and an introduction to science communication and policy brief writing. We strongly recommend attending these sessions for a good start to the winter school.

Apart of that, the most important thing is your mind-set. The success of this winter school is largely in YOUR hands. Let your curiosity and initiative drive you, be open to new questions and topics, and engage actively in the many opportunities for interdisciplinary discussion.

AFTER WINTER SCHOOL

In the follow-up to the winter school the participants will briefly finalize a policy brief. They are free to set time for the collaborative work in a way that suits them best.

The final output may be adjusted according to the suggestions coming from peers and supervisors during the final school session. The group members must agree on who will implement the changes first. The draft must then be distributed to everyone, and everyone must approve it before the final version is submitted to the Collegio futuro coordinator **by February 28, 2026.**

Once the policy brief has been submitted, the Letters of Attendance can be issued.

The final outcomes will be published on the Collegio futuro website – [Collegio futuro blog](#).

SPEAKERS

INVITED GUESTS

Prof. Ladislav Miko, Ph.D.

Ministry of the Environment of the Czech Republic & Charles University in Prague



Ladislav Miko is a Czech soil biologist, ecologist and environmentalist, specialised in soil ecology and biology of soil mites (over 70 scientific papers, author or co-author of several books and documentary films, many popular publications). He is teaching ecology, environmental sciences and restoration ecology at Charles University in Prague. He also taught Restoration Ecology for 12 years at the University of Antwerp and lectured at a number of other European universities.

In 1989, he participated in Velvet Revolution and after political change entered into politics in Czechoslovakia and later in the Czech Republic. He was serving as Deputy Minister (2003 to 2005) and Minister (2009) of Environment of the Czech Government.

Since 2005 he was appointed as Director for Biodiversity at DG Environment, from 2011 to 2017 as Deputy Director General and Acting Director General of DG Health and Food Safety of European Commission. From 2018 to 2021 he was appointed as Head of EC Representation of Slovakia.

From March 2022 was seconded to Czech Government and pending Czech Presidency to European Council, where he works as Advisor to Minister of Environment and special envoy of Czech Government for international negotiations Biodiversity and Ecosystem Services.

Social enterprise *Heidenspäss*, Graz, Austria

Heidenspäss is a non-profit organization, founded in 2005, based in Graz, Austria, designing products and furniture from reclaimed materials, while offering young people who find themselves in difficult life situations, unbureaucratic employment and supporting them in their further search for education and vocational training.



Guest lecturers and “upcycling workshop” advisors

Claudia Steindl was born in New York, raised in Austria, studied art & crafts and graphic design, worked as a designer and art director in Vienna, Ljubljana and Graz for 20 years before joining the heidenspäss-team 2,5 years ago. Additional education in creative training, art therapist, life and social coach and in psycho-socially oriented health education. 3 children.

Niko Zindel originally is from Kiel, Northern Germany. Professional boatbuilder and naval architect, studied in Bremen, Amsterdam and Nantes, worked as a boatbuilder in Hamburg and restorer of wooden furniture in Graz before coming on board of the heidenspäss-ship 1,5 years ago. Active in several non-profit organisations based in Graz.

COLLEGIO FUTURO CREATORS AND SUPERVISORS

Workshop I:

Asst. Prof. Anna Bąkowska, Ph.D.

University of Warsaw



Anna Bąkowska holds a PhD in Earth Sciences and a master's degree in engineering Geology. She is an assistant professor in the Department of Engineering Geology and Geomechanics at the Faculty of Geology, University of Warsaw. For several years, she also worked in the Department of Environmental Protection and Natural Resources at the same university. Her research interests lie in the broad field of applied geology — from characterizing the natural environment for engineering purposes, through addressing engineering and environmental challenges arising from the interaction between geological conditions and human activity, to assessing natural hazards and their impact on engineering structures.

Jun. Prof. Rosa Lehmann, Ph.D.

Heidelberg University



Rosa Lehmann studied Cultural Anthropology and Political Science at Freiburg University, where she received her Ph.D. in Political Science in 2018. Since April 2021, she is HCIAS Junior Professor of “Innovation and Sustainability in Ibero-America” at the Heidelberg Center for Ibero-American Studies (HCIAS) in conjunction with the Faculty of Chemistry and Earth Sciences/Department of Geography and the Heidelberg Center for the Environment (HCE). Prior to her position at the HCIAS, Rosa Lehmann was a Postdoctoral Research Fellow in the junior research group “Bioeconomy and Social Inequalities” at the University of Jena from 2016 to 2021, funded by the Federal Ministry of Education and Research (BMBF). Rosa Lehmann works across the fields of political ecology and energy studies, and studies socioenvironmental change, extractivism, contested energy transitions, the making of new energy spaces and struggles around just socioecological transformations in urban and rural contexts with a regional focus on Chile, Mexico, and Germany.

Workshop II:

Prof. Matthias Kowasch, Ph.D.

Sorbonne University



Matthias Kowasch, (full) professor of Geography at Sorbonne University, Paris (France) and at the Research Unit “*Médiations – Sciences de lieux, sciences des liens*”. He holds a German-French PhD in Geography from the universities of Heidelberg and Montpellier III. His research focus on mining governance, political ecology, critical-emancipatory education for sustainable development, ecological “transition”, and Indigenous knowledge, with a geographical focus on Western Europe and South Pacific Islands, in particular New Caledonia and Vanuatu.

Workshop III:

Prof. Marco Parolini, Ph.D.

University of Milan



Marco Parolini obtained his master's degree (cum laude) in Analysis and Management of Natural Environments at the University of Milan, where he also received his Ph.D. in Biological Science in 2010. Since 2020, he is Associate Professor of Ecology at the Department of Environmental Science and Policy of the University of Milan. His research activity is mainly focused on ecotoxicology, whereby his interests are focused on the monitoring of the presence, the distribution, the fate and the toxicity of both legacy and emerging contaminants in environmental matrices from terrestrial and aquatic ecosystems.

Prof. Luigi Orsi, Ph.D.

University of Milan



Luigi Orsi serves as an Associate Professor at the University of Milan's Department of Environmental Science and Policy, where he lectures on Environmental Accounting and Management. He earned his PhD in Corporate Finance and Management from the same university. His scientific pursuits lie in innovation and green technology management, focusing primarily on patent intelligence and strategic alliances. More recently, his work has expanded to encompass sustainable supply chain studies.

Workshop IV:

Prof. Mgr. Ing. Jan Frouz, CSc.

Charles University, Prague



Jan Frouz is a (full) professor and director of the Environment Center at the Charles University in Prague. He has a broad expertise in many areas of ecology, including terrestrial and aquatic systems, as well as soil science and environmental science. His particular interest lies in soil ecology and the sustainable use of natural resources, where he also examines the interactions between human society and the environment. Jan is very well-experienced in science communication with the industry and civil society.

Scientific program supervision:

Prof. Dr. Thomas Rausch

Heidelberg University



Thomas Rausch is a senior professor at Heidelberg University. As a molecular plant physiologist, most of his professional career focused on deciphering molecular mechanisms used by plants to defend against biotic and abiotic stress. From 2010-2013 he served as prorector for research, and was from 2014-2020 co-director of the Marsilius Kolleg, Heidelberg's Center for Advanced Study. In 2021, he became managing director of the Heidelberg Center for the Environment (HCE), an interdisciplinary incubator for environmental research, funded by Heidelberg's Excellence Strategy and addressing complex challenges such as climate change, biodiversity loss or environmental justice. Together with the social scientist Rosa Lehmann, he shares the scientific supervision of Heidelberg's activities within the 4EU+ flagship "Environmental Transitions". Besides his institutional activities,

Thomas Rausch continues to co-supervise research projects on how crop plants respond to climate-change-related environmental challenges.

Coordinator:

Dr. Tanja Peskan-Berghöfer

Heidelberg University



Tanja is a plant molecular biologist by training and has been doing research at LMU in Munich, at FSU in Jena, and since 2009 at Heidelberg University. She has been focusing on mechanisms underlying plant adaptation to the environment, specifically in relation to the role of beneficial microbes in plant response to drought. Since 2019, she is managing and co-creating the training programs for PhD students in the fields of bioeconomy and sustainable development at Heidelberg University. In 2021, she joined the Heidelberg Center for the Environment (HCE) and the 4EU+ University Alliance as a local coordinator of the Alliance Flagship *Environmental Transitions* and as a coordinator of the Alliance training program *Collegio futuro*.

ACKNOWLEDGEMENTS

We are deeply grateful to all our external partners and colleagues from the 4EU+ partner universities for their participation, commitment, and administrative support of the Collegio futuro program.

In addition, we would like to extend our gratitude to colleagues at the *Heidelberg Center for the Environment* and *Marsilius Kolleg* for their assistance during the on-site events.



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