

Newsletter No. 18



BIOdiversity and Economics for CONservation

BIOECON Network Highlight

XXIII ANNUAL BIOECON CONFERENCE
"Biodiversity, Finance and Economy"
September 4–6, 2022
University of Exeter, United Kingdom

Conference announcement

Latest Job Offers

Centre for Environnemental Economics in Montpellier (cee-me.fr):

-Tenure-Track Junior Professor Chair: Preservation policies, biodiversity and economic development: synergies and antagonisms. At the French National Institute for Agricultural Research (INRAE). Deadline for submission: 14th June.

National University of Singapore (NUS):

-Assistant Professor/Associate Professor/Professor for Conservation Science and Sustainability. At National University of Singapore (NUS), Department of Biological Sciences (DBS). Deadline for submission: 19th June.

Foreword

Dear colleagues and friends from the BIOECON network,

we are very much looking forward to the upcoming annual BIOECON conference in Exeter. Ben Groom and his team are preparing a super interesting program. More about this in this newsletter. Please do not forget to submit your paper. Deadline is 23rd May 2022!

The newsletter also informs about a whole series of new publications from the network, as well as new developments in some of the BIOECON partner institutions. Enjoy the newsletter!

Best regards,

Martin, Maria and Fabian



University of Exeter, where BIOECON XXIII will take place 4th-6th of September 2022

BIOECON News & Recent Initiatives

You find the BIOECON News in the boxes around: Upcoming conference, Latest Job Openings, New Projects, and Recent Publications. The BIOECON network is active as always, and we are sure that this is only part of the ongoing activities. Please regularly send us your updates to keep the network informed.

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BIOECON 2022

The XXIII ANNUAL BIOECON CONFERENCE will focus on *"Biodiversity, Finance and Economy"*. It will take place September 4–6, 2022 at the University of Exeter, United Kingdom. The conference will be hosted by the LEEP Institute, Department of Economics, University of Exeter Business School and is endorsed by the European Association of Environmental and Resource Economists (EAERE) and the Centre Euro-Mediterraneo sui Cambiamenti Climatici (CMCC).

BIOECON XXIII will be of interest to both researchers and policymakers working on issues associated with finance and economics and their impact on biodiversity. Associated with the conference, a special issue of Ecological Economics on the biodiversity and finance nexus will be organised to which papers from the BIOECON programme will be encouraged to submit.

Complete papers may be submitted for presentation within the BIOECON Conference and only complete papers will be considered by the Scientific Programme Committee. Electronic copies should be sent to bioecon@bioecon-network.org no later than **Monday 23rd May 2022**. In addition to the full paper, please include Abstract, JEL Codes and Keywords with your submission.

Acceptance of papers will be notified by email by **Monday 6th June 2022**.

Keynote presentations will be delivered by Dr Rachael Garrett (ETH Zurich) and Dr Eyal Frank (University of Chicago).



Dr Rachael Garrett (ETH) and Dr Eyal Frank (University of Chicago), keynote speakers at BIOECON XXIII, 2022

News from the team of Stefanie Engel at Osnabruck University

New project – PARTICIPATORY VISION-BUILDING FOR COLLECTIVE ACTION IN NATURAL RESOURCE MANAGEMENT

Funding agency: German Research Council (DFG). Duration: 01.05.2022 – 30.04.2024.

This project proposes to investigate the extent to which, and the mechanisms by which, participatory vision-building (PVB) interventions can promote collective action in social dilemma situations. We will develop and implement a framed economic field experiment with farmers in the context of an agriculturally-used water system to (i) analyze the causal effects of PVB on collective action, and assess (ii) the possible mechanisms underlying these effects.

Project completed – BEHAVIORAL ECONOMICS OF ENVIRONMENTAL POLICY

At the end of 2021, this large project, funded by the Alexander von Humboldt-Foundation in the framework of the Alexander von Humboldt-Professorship endowed by the German Federal Ministry of Education and Research, was completed. It resulted in 81 publications in peer-reviewed journals and book chapters, 17 further academic papers that are now in the review process in peer-reviewed journals, and 22 published working papers, policy reports and policy articles. Eight PhD theses were completed as part of the project, 21 workshops, conferences and public lecture series were (co-)organized by the team, and 181 presentations given at conferences, workshops and colloquia.

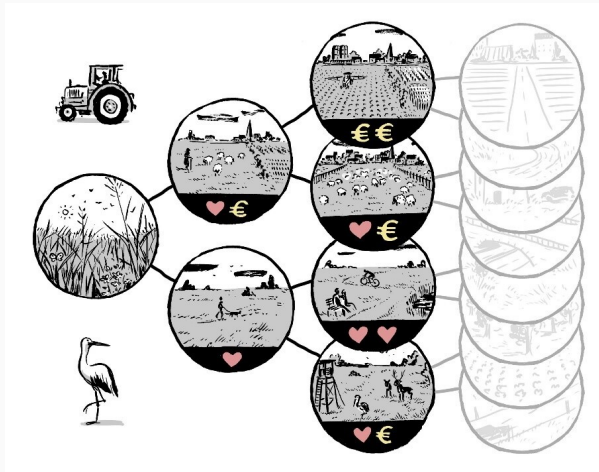
Prof. Shechter and Dr. Raviv are part of an active consortium, named: AWESOME – water-food-energy, funded by PRIMA:

The main objective of AWESOME (managing Water, Ecosystems and food across sectors and Scales in the South Mediterranean) is developing a decision-analytic platform based on a multi-level, integrated WEF model to better understand multi-sectoral WEF tradeoffs and to capitalize on potential synergies, also exploring the interdependencies and feedbacks across a hierarchy of spatial scales, from the macroeconomic development of the Mediterranean region and national scale, to regional planning at river basin scale, down to the single farm. The platform will allow simulating the impacts of alternative WEF planning portfolios composed of regional policies, river-basin strategic planning options, and innovative technological solutions demonstrated at the local scale, to generate shared economic, environmental, and societal benefits.



Towards a comprehensive valuation of natural capital in Germany: Methods and approaches to deal with limited information and uncertainty (ValuGaps)

New project by German Centre for Integrative Biodiversity Research (iDiv – Jasper Meja, Martin Quaas, Aletta Bonn) Halle-Jena-Leipzig, University of Freiburg (Stefan Baumgärtner), University of Hamburg (Moritz Drupp), Freie Universität Berlin (Britta Tietjen), the German Environment Agency (UBA) and the Federal Agency for Nature Conservation (BfN).



Biodiversity and natural capital contribute fundamentally to human well-being. So far, decision making in Germany only partly takes these values into account. One major reason are large information gaps and uncertainties. The few existing original valuation studies have not been systematically selected, consider only a subset of values, and treat ecological-economic dynamics and uncertainties only implicitly. ValuGaps responds to the need for comprehensive, reliable, and scalable values of natural capital and biodiversity for societal decision-making, as experienced by public authorities in Germany, especially the German Environment Agency (UBA) and the German Federal Agency for Nature Conservation (BfN). ValuGaps considers multi-dimensional economic, relational, and health values and asks the following questions:

1. Where do societal decision-makers and stakeholders face the largest information gaps and uncertainties with respect to different values of biodiversity and natural capital?
2. How to scale, transfer, and bridge different types of values across (i) space and time, (ii) groups of beneficiaries, (iii) types of ecosystems and (iv) purposes of valuation in a practical, scientifically and normatively sound way?

ValuGaps will develop the interdisciplinary scientific basis for comprehensively taking into account natural capital values in policy making, accounting and planning. The approach will be exemplified and tested for grasslands and urban green as prime case studies.

Reichman University (IDC Herzliya) latest activities

1. Ecosystem services index for rivers and streams rehabilitation under climate change scenarios and Nature based Solutions

The Mediterranean has been defined as a climate change hot spot because its climate has been highly responsive to global climate. During the last seven decades, the average temperature in Israel has increased by 1.4°C. In the future, the average temperature in Israel is expected to rise even further alongside declining precipitation and increased frequency of extreme events of heavy rain, heatwaves, and wildfires. Torrential rain results in soil erosion and flooding with a high cost to land, property, and human life. Further, low precipitation threatens rainfed ecosystems, freshwater ecosystems, and freshwater availability, especially in an arid and semi-arid region such as Israel. In particular, a decline in rainfall and heavy rain adversely affects Mediterranean-type streams and rivers characterized by an annual cycle of flooding and drying during the year. Despite the numerous ecosystem services they provide, anthropogenic use has degraded them. In recent years, rehabilitation plans have been promoted with growing awareness of their importance in flood control, climate regulations, and cultural services to human well-being. Some rehabilitation actions include restoring meandering and floodplain, pollution removal, riverbanks, and riparian area rehabilitation. Others focus on nature-based solutions or engineering solutions to cope with soil erosion and flooding. This research aims to evaluate rehabilitation plans by developing the Riverine Ecosystem Services Index (RESI), a unique and simple-to-apply tool to help decision-makers better assess and prioritize sustainable rehabilitation plans under climate change projections. To our best knowledge, this riverine index is the first that integrates ecological functioning with the ecosystem services approach.

2. WEFE Nexus

Climate change, population growth, depletion of natural resources and biodiversity loss lead to worldwide social instabilities. Projected forecasts for the Mediterranean region are particularly worrisome, envisaging higher temperatures, severe water shortages, and a decline in agricultural yields – all of which would likely have negative impact on the well-being of the population and environment, which might have undesirable consequences (e.g., migration). Israel and Europe alike are facing the huge challenges of providing a sustainable future to their citizens. The management of the WEFE (Water-Energy-Food-Ecosystems) resources, which is traditionally conducted in each sector separately, needs to be revised and integrated, taking into account the multiple interrelations between them to ensure sustainable development. This implies that, across the various sectors of the economy, resources have to be allocated and managed in a fair and efficient way. Recognizing and modeling the interrelation between the sectors within economic analyses of policies and infrastructure plans is a challenge. In response to this challenge, the Israel-WEFE project, in collaboration with the EU Joint Research Center (JRC), intends to (a) portray the Israeli WEFE nexus and economically quantify policies and infrastructure plans, while accounting for the WEFE interrelations; (b) provide a methodology for evaluating the interrelations between the sectors under different demographic, climatic, economic and geopolitical conditions; (c) provide the Israeli policymakers with various environmental and social scenarios for the next 30 years, and possible planning-routes for future sustainable use of water, energy and associated natural resources. The project builds on a trans-disciplinary combination of expertise and modeling tools developed by the involved investigators across the domains of water, energy, agriculture and ecosystem services.

3. REST-COAST - Large scale RESToration of COASTal ecosystems through rivers to sea connectivity

REST-COAST aims to demonstrate the feasibility of upscaled restoration for threatened low-lying coastal systems and their ecosystem services to provide a biodiversity-rich and low-carbon solution to disaster risk reduction. The large scale demonstration will promote a “restoration revolution” (Box 1) focused on vulnerable coastal archetypes (deltas, estuaries and lagoons) with natural hazards that affect less favoured communities. The demonstration will analyse how upscaling ecosystem restoration is currently hampered by a range of technical, economic, financial and social barriers, compounded by some important scientific/managerial gaps. REST-COAST seeks to overcome these barriers and realize the potential for upscaling restoration with a focus on BDV and ecosystem services ESS to achieve risk reduction (RR) and Carbon storage (CS) transforming present socio-economic and biophysical approaches for protecting and restoring our coasts.

Recent BIOECON Publications

Drechsler, Martin and Wätzold, Frank and Grimm, Volker. The hitchhiker’s guide to generic ecological-economic modelling of land-use-based biodiversity conservation policies. *Ecological Modelling*, 465:109861, 2022

The paper presents an integrated, consistent guide through all the steps of generic ecological-economic modelling, such as formulation of the research question, development of the conceptual model, model parametrisation and analysis, and interpretation of model results.

Groom, Ben and Palmer, Charles and Sileci, Lorenzo. Carbon emissions reductions from indonesia’s moratorium on forest concessions are cost-effective yet contribute little to paris pledges. *Proceedings of the National Academy of Sciences of the United States of America*, 119(5), 2022

- *We undertake a microeconomic evaluation of a globally significant REDD+ initiative, Indonesia’s moratorium on forest concessions, in which a payment has been awarded.*
- *At the agreed US dollar 5/tCO₂-eq, the value of our estimated cumulative carbon emissions far exceeds the proposed payment from the donor, Norway.*
- *Although cost-effective, the emissions reductions only contribute 3 to 4 percent of Indonesia’s Nationally Determined Contribution.*

Gerling, Charlotte and Drechsler, Martin and Keuler, Klaus and Leins, Johannes A. and Radtke, Kai and Schulz, Björn and Sturm, Astrid and Wätzold, Frank. Climate–ecological–economic modelling for the cost-effective spatiotemporal allocation of conservation measures in cultural landscapes facing climate change. *Q Open*, 2(1), 2022

The paper demonstrates how to develop an integrated modelling procedure that combines economic, ecological and climate data and models to design cost-effective spatio-temporally differentiated conservation measures for a species affected by climate change for the periods of 2020-2039 and 2060-2079.

Koessler, Ann-Kathrin and Engel, Stefanie. Policies as information carriers: How environmental policies may change beliefs and consequent behavior. *International Review of Environmental and Resource Economics*, 15(1-2):1–31, 2021

We discuss how policy interventions not only alter the legal and financial frameworks in which an individual is operating, but can also lead to changes in relevant beliefs. Based on a systematic review relevant research from behavioral economics and psychology, we argue that such belief changes in how an individual perceives herself, relevant others, the regulator and/or the activity in question can lead to behavioral changes that were neither intended nor expected when the policy was designed. Policy design options to avoid undesirable effects are also highlighted.

Koessler, Ann-Kathrin and Ortiz-Riomalo, Juan Felipe and Janke, Mathias and Engel, Stefanie. Structuring communication effectively—the causal effects of communication elements on cooperation in social dilemmas. *Environmental and Resource Economics*, 79(4):683–712, 2021

We identify four cooperation-enhancing elements of communication: (i) problem awareness, (ii) identification of strategies, (iii) agreement, and (iv) ratification. Based on a laboratory experiment with 560 participants, we find that the intervention facilitating agreement on a common strategy (combination of (ii) and (iii)) is particularly powerful in boosting cooperation. And if this is combined with interventions promoting problem awareness and ratification, similar cooperation levels as in settings with free-form communication can be reached.

Lliso, Bosco and Arias-Arévalo, Paola and Maca-Millán, Stefany and Engel, Stefanie and Pascual, Unai. Motivational crowding effects in payments for ecosystem services: Exploring the role of instrumental and relational values. *People and Nature*, 4(2):312–329, 2022

Based on a framed field experiment with farmers from three distinct communities in Colombia (Indigenous, Afro-Colombian and Campesino), we find that PES schemes that are framed in a way that harmonizes with locally salient human–nature relational models and associated values are more likely to cause motivational crowding-in, and thus encourage higher rates of environmental conservation, even after payments are discontinued.

Lliso, Bosco and Pascual, Unai and Engel, Stefanie. On the role of social equity in payments for ecosystem services in latin america: A practitioner perspective. *Ecological Economics*, 182:106928, 2021

Based on a large survey of PES practitioners, we find that dealing with concerns on social equity actually promotes the environmental effectiveness of PES.

Ortiz-Riomalo, Juan Felipe and Koessler, Ann-Kathrin and Engel, Stefanie. Inducing perspective-taking for prosocial behaviour in natural resource management. *Journal of Environmental Economics and Management*, 110:102513, 2021

Based on a framed lab-in-the-field experiment with Peruvian farmers, we find that a participatory intervention that induces perspective-taking with relevant others promotes prosocial behaviour. The effect is likely to be produced by the activation of other-regarding preferences.

Peled, Yoav and Zemah-Shamir, Shiri and Israel, Alvaro and Shechter, Mordechai and Ofir, Eyal and Gal, Gideon. Incorporating insurance value into ecosystem services assessments: Mitigation of ecosystem users' welfare uncertainty through biological control. *Ecosystem Services*, 46:101192, 2020

Based on a framed field experiment with farmers from three distinct communities in Colombia (Indigenous, Afro-Colombian and Campesino), we find that PES schemes that are framed in a way that harmonizes with locally salient human–nature relational models and associated values are more likely to cause motivational crowding-in, and thus encourage higher rates of environmental conservation, even after payments are discontinued.

Raviv, Orna and Tchetchik, Anat and Lotan, Alon and Izhaki, Ido and Zemah Shamir, Shiri. Direct and indirect valuation of air-quality regulation service as reflected in the preferences towards distinct types of landscape in a biosphere reserve. *Ecological Economics*, 180:106835, 2021

Zemah-Shamir, Shiri and Zemah-Shamir, Ziv and Tchetchik, Anat and Haim, Abraham and Tchernov, Dan and Israel, Álvaro. Cultivating marine macroalgae in co2-enriched seawater: A bio-economic approach. *Aquaculture*, 544:737042, 2021