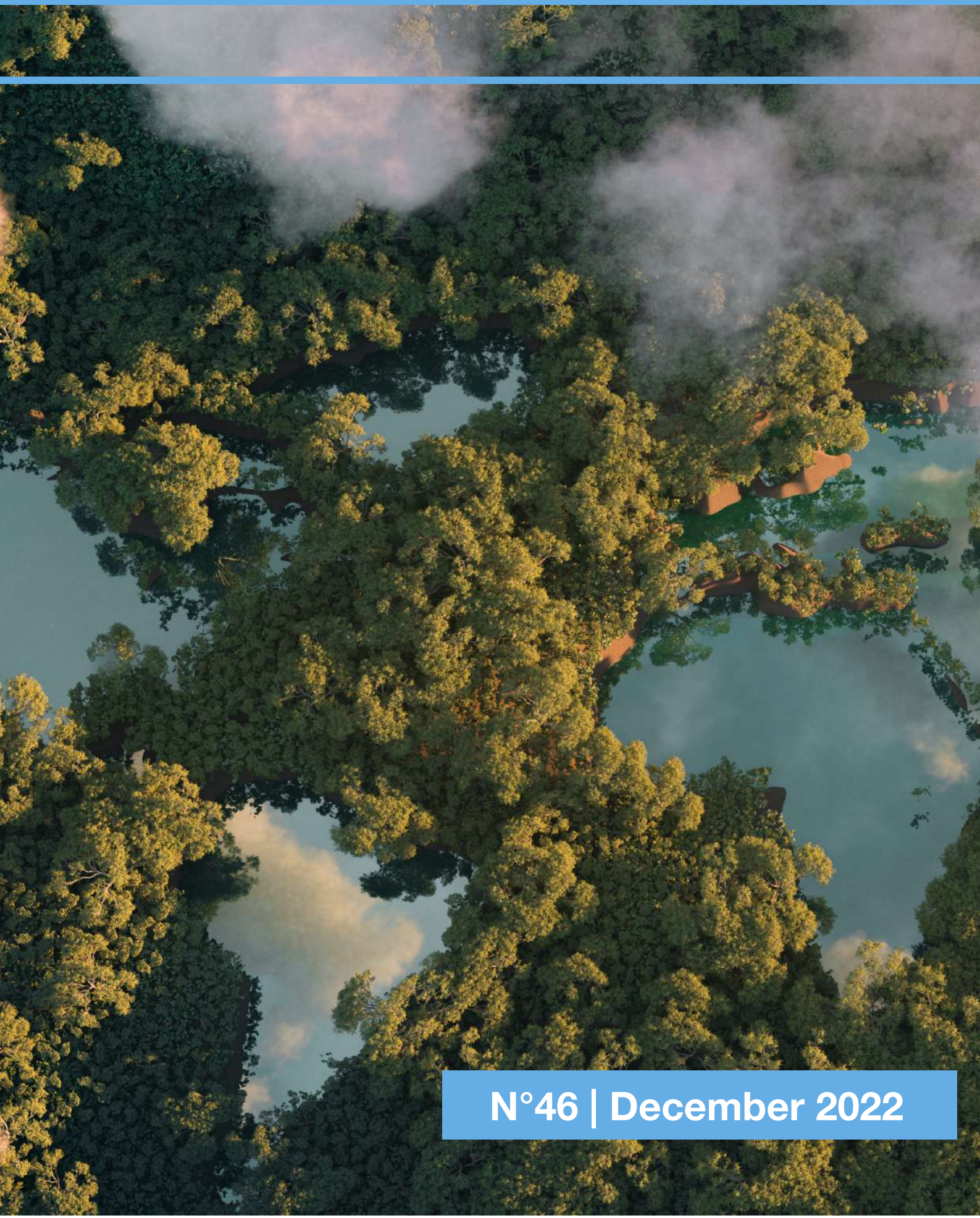
STRN Newsletter



N°46 | December 2022

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About

The STRN newsletter is published four times a year in March, June, September & December

Cover pictures: Shutterstock

Editorial

by Paris Hadfield, Merin Jacobs, Rob Raven and Mapula Tshangela

COVID-19 brought with it a window of opportunity for sustainability transitions research network (STRN) to experiment innovative ways of hosting the IST. When the IST2022 process started, we did not have a script but the ambition to provide a truly global event and, of course, lessons from the past ISTs. We were very keen and excited to experiment with a novel conference format, which accounted for i) the still existing pandemic risks, ii) the increasingly global reach of our network, and iii) sustainability considerations around reducing air travel. This led us to combine three co-host institutions in three different continents with online sessions across three different time zones and three regional in-person conference days. Through the mix of an online conference and in-person events, we sought to address both international accessibility and personal exchange.

What made this conference exceptional was the breadth of ways delegates could participate in time and space. Being able to connect virtually across time zones that are otherwise unable to access events hosted in centres like Europe was invaluable for broadening the reach of the sustainability transitions network, particularly in the Asia Pacific, Africa and America. At the same time, the in-person days in Melbourne Australia, Stellenbosch South Africa, and Washington DC US had a really special energy. People were gathering face to face, some for the first time in a long time, and it reinforced the value of formal and informal conversations for connecting and exploring ideas. These regional days also provided an opportunity to discuss local issues and reflect on different theoretical perspectives on sustainability transitions. We share more of the in-person day experiences in the main part of the newsletter.

Scheduling virtual presentations across three time zones created more complexity than standard conferences in terms of programming, as well as the resources needed to run an online conference platform around the clock. We recognise that a novel virtual format is not without glitches and limitations, and we welcome feedback from delegates to improve future conferences. COVID-19 also continues to make planning in-person events challenging, or at least disappointing for those who have to withdraw at the last minute, so the need for hybrid modes of sharing and engaging with research remains. We are also reflecting on how academics manage long-haul flights as part of their work in the context of the climate crisis.

The seamless leadership, agility, commitment, decision making and teamwork between the co-hosts was an amazing experience that we value greatly. The co-host teams spent weeks meeting virtually across different time zones jointly exploring, experimenting and learning to make IST2022 happen.

We thank each person that assisted with reviewing more than 300 quality abstracts received and chairing the conference sessions online and in-person. We wish to thank ConsultUS for their professional online conferencing services, and all the virtual and in-person keynote speakers, panels and participants for joining us for the week. Finally, thank you to the STRN steering group for trusting and supporting the IST2022 organising co-hosts to deliver a successful conference.

EIST Journal

We are happy to introduce the most recent issue of EIST published in Volume 45.

The full list of papers is also featured in the publication section of this newsletter.

Bernhard Truffer
Editor-in-Chief EIST

STRN Events

14th IST Conference, Utrecht, NL
August 30 – September 1, 2023

We are excited to launch the call for abstracts for the 14th annual International Sustainability Transitions conference (call opens Dec. 20th).

This year's conference theme is **'Responsibility and Reflexivity in Transitions'**. As the first in-person conference in 3 years, this gathering constitutes a special and important moment of reflection for our community. The full call for abstracts will be out shortly. We are looking forward to welcoming everyone to Utrecht next year!

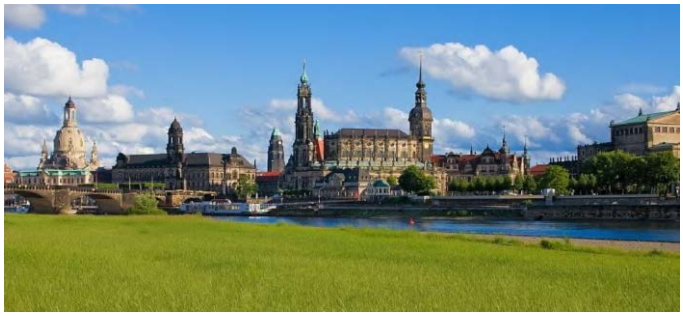
Submission system opens: December 20th, 2022
Abstract submission deadline: **March 3rd, 2023**

Website: www.ist2023.nl
Email: ist2023@uu.nl

Simona Negro, Adriaan van der Loos, Wouter Boon

8th NEST Conference, Dresden, Germany
June 30 – August 1, 2023

The conference strives to widen horizons and perspectives by creating a space in which new concepts from different disciplines and schools of thought can play



a role, while questioning the established ways of knowing and doing. The conference focuses on the exchange between early career researchers working on topics related to sustainability transition. It serves as a platform to share knowledge, network, and discuss. It strives to encourage scientific collaboration among early career researchers at an international level.

PhD candidates and early career researchers are now invited to submit proposals for suitable presentations. The call for abstracts is open until **31 January 2023**. Link to the call for abstracts

The conference will be organized by the Leibniz Institute of Ecological Urban and Regional Development (IOER) and the Dresden Leibniz Graduate School (DLGS).

Contact the organising team:
nestconference2023@gmail.com
Contact at the IOER – Doctoral candidates' representatives
Mabel Killinger, e-mail: M.Killinger@ioer.de
Subhashree Nath, e-mail: S.Nath@dlgs.ioer.de

Other Events

8th International Workshop on the Sharing Economy (IWSE), 22-23 May, Vienna, Austria

With the advent of the sharing economy came the hope that new forms of organization would emerge that offer a more sustainable alternative to the current modes of production and consumption. The peer-to-peer sharing of underutilized assets such as apartments, cars, clothes, tools or food are expected to prevent the overconsumption of limited resources, enable entrepreneurship among individuals and strengthen social ties. Indeed, in many sectors, sharing economy platforms have grown impressively. But have the expectations of the advocates of the sharing economy been fulfilled?

The 8th International Workshop on the Sharing Economy (IWSE) in Vienna, Austria, provides a forum for critical reflections on the developments in the past and an outlook on the future of the sharing economy.

Deadlines for

- submission of applications (abstracts): January 30th, 2023
- confirmation of presentations/group sessions: March 1st, 2023

Further information on the conference website: iwse.boku.ac.at

Transformations Conference 2023

The Transformations Conference 2023 will take place from 12th to 14th July 2023 in Sydney, Australia and online. This is the sixth biennial conference of the international Transformations Community and many of the themes will be of interest to sustainability transitions researchers. The main conference theme in 2023 is *transformative partnerships for a better world*. We would particularly welcome contributions from sustainability transitions researchers to the sub-themes on Transformative Innovations and Just Transformation.

Call for proposals

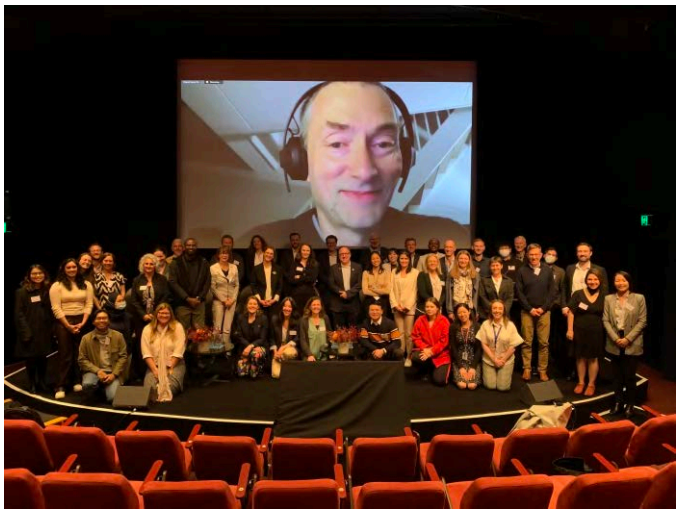
Past Events - Impressions

IST 2023: In-person Days

Melbourne
The conference theme of the in-person conference day at Monash University in Melbourne was 'actors and behaviours in sustainability transitions.'

The event was attended by about 75 participants, mostly coming from Australia, with a few international visitors, including from New Zealand and Germany. The conference opened with an inspiring opening message from Monash Vice Chancellor Prof. Margaret Gardner, who wholeheartedly embraced the necessity of improving understanding of transitional dynamics and developing new governance tools, and the role of universities in achieving transitions. After the welcome message, Prof. Sarah Pink – design anthropologist at Monash University – provided an excellent key-note on how people in their everyday lives engage with energy transitions, and screened her recently released documentary called 'Digital Energy Futures'.

From there on, the conference broke into parallel sessions. Participants re-joined at the end of the day for a plenary panel discussion moderated by Prof. Rob Raven, with Prof. Lauren Rickards, Prof. Liam Smith, Dr. Paul Upham and Prof. Sarah Pink. The panel explored challenges and opportunities for the interplay between individual and behaviour changes and system-level transitions. Overall, the day was full of buzz and participants enjoyed making new connections and revisiting old ones, and aspirations were expressed to continue to meet in future events in our region.



Stellenbosch
The in-person day was attended by 55 participants. For some this was their first in-person conference since COVID-19, and for others this was the first-time meeting colleagues in person after interacting online for almost two years. The energy was palpable and the conversations lasted late into the evening.

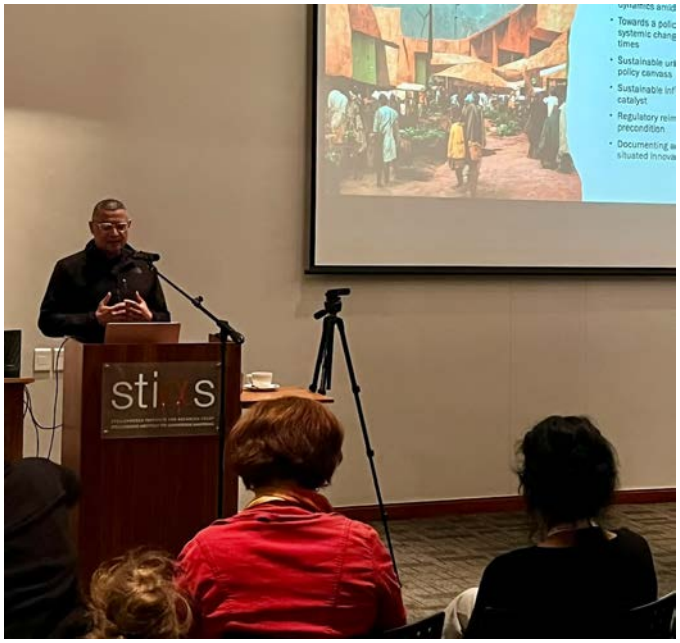
The conference was opened by Co-Director of the Centre for Sustainability Transitions (CST) at Stellenbosch University, Prof Mark Swilling, as he contextualised the *Africa Energy Transitions* day within the global energy transitions underway and the wider conference discussions. Professor Edgar Pieterse, founding director of the African Centre for Cities (ACC) at the University of Cape Town, presented the keynote address on "Rethinking African urban development in light of sustainability transitions" bringing together African urbanisation dynamics, sustainability and historical infrastructure legacies.

The day closed with a panel discussion facilitated by Dr Megan Davies from the CST. We were happy to welcome Dr. Chantal Naidoo, Founder and Executive Director of Rabia Transition Initiatives, Prof. Guy Midgley, Acting Director of the School for Climate Studies at Stellenbosch University, Prof. Maarten Hajer, Director of the Urban Futures Studios at Utrecht University and Wendy McCallum, a researcher from the CST at Stellenbosch University. The panel discussion integrated much of what was discussed during the week, and the panellists themselves brought not just their vast experience, but their heart and passion for change in the Global South too.

The Stellenbosch regional hub event was a fantastic conclusion to the conversations started at the beginning

of the week, with a meaningful focus on transitions in the Global South. The original intention of the organisers when we started engaging about the conference, was to facilitate more meaningful involvement from the Global South within this international network, and Friday was a wonderful conclusion to that hope. We are very proud that the first time that the IST conference has taken place in the Global South, it began on African soil.

The attendees connected well academically and are excited to continue engagements with the STRN community in the upcoming IST conferences and with Stellenbosch University Centre for Sustainability Transitions as a regional hub for participants within the African continent.



Washington DC

The in-person day was attended by about 20 participants, who enjoyed a very close energetic and magical engagement throughout the day building new connections with sustainability transitions scholars. We are excited by the role played by the IST2022 conference ambassador, Veronika Lorentzen, a PhD Candidate from the University of Stavanger, as she participated at the Washington DC in-person day and she virtually connected the last leg of the IST2022 Washington in-person opening with the closing of Stellenbosch in-person and earlier Merbourne in-person closing.

Veronika had this to say about the Georgetown in-person day experience: “I was happy to be a conference ambassador for the IST 2022. I liked the idea of having simultaneous days in three different places. I think it gave the conference more of a personal (hot-glove) feel. For instance, I felt a very warm welcome at Georgetown University. I’m usually a social person but in places like conferences with many unknown people, I become very introverted and I struggle to make contacts. This time it was different. Gael Giraud came to greet everyone and we had a round of coffee, treats, and a good laugh. This created a warm and welcoming atmosphere. It felt like listening to close colleagues talking about their research over lunch. I liked this mood of closeness. The conference day continued in this nice family-like-gathering manner. I liked how people were reacting to each other’s presentations: they really cared to listen, to engage, to comment, and to give feedback on each other’s talk.”

PhD course "Critical and Reflexive Perspectives on Sustainability Transitions"

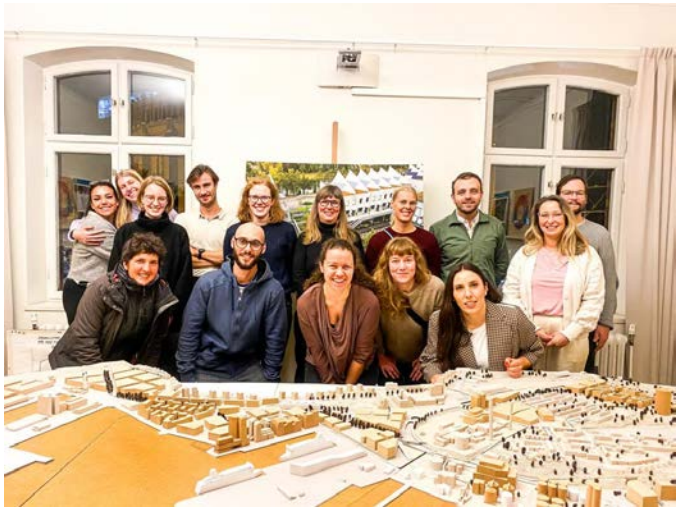
From the 5-8th of December, Emrah Karakaya and Ebru Susur invited 33 PhD candidates from all over the world to participate in the PhD course "Critical and Reflexive Perspectives on Sustainability Transitions" at KTH Royal Institute of Technology in Stockholm. Over these four days, students were equipped with the tools to identify and question basic assumptions within the sustainability transitions research domain and debated the requirements for more critical and reflexive approaches in transition studies.

Thank you to Emrah & Ebru for crafting such an insightful course and to all guest speakers, including Annika Skoglund, Bipashyee Ghosh, Joel Gehman, Mats Alvesson, Andy Stirling,
Giuseppe Feola, Cali Nuur, Frauke Urban, Aysem Mert, Anette Hallin, Petter Johansson, and Oskar Törnblom for enriching us with their perspectives. Selected impressions from both online and in-person participants follow:

"This course was fantastic, I highly recommend it. It was a great opportunity to connect with a range of like-minded scholars. I particularly enjoyed hearing from Andy Stirling about the disconnect in sustainability transitions from the struggles the field initially sought to address (i.e. poverty, colonialism etc.). Bipashyee Ghosh was another highlight, explaining how Kolkata is undergoing a reverse sustainability transition, from a heavy reliance on public transport towards private cars,

so the transitions theories are somewhat unfit to tackle these challenges. Overall, I feel much more equipped to be more critical and question underlying assumptions in my research." Grace Rodgerson - Monash University, Australia

"I found the course an excellent opportunity to have contact with a variety of scholars (within and around the ST community) dedicated to thinking critically about sustainability issues based on different theoretical perspectives and reflecting on different layers of the phenomena. This plurality was also evident in the PhD students' backgrounds and research interests. It was a great initiative, and I am sure it is a seed to strengthen bonds among the new generation of scholars to bring significant contributions to the field." Felipe Quintão - University Institute of Lisbon



"The PhD course provided a fruitful platform to open one's mind towards wider thinking around sustainability. In a rapidly expanding field such as sustainability transitions, it is fundamental to consider the critical and indeed, often invisible thinking. I say invisible, as it may be that the contested nature of concepts may be self-evident to senior scholars. However, it is crucial that I as a researcher have also familiarised myself with related challenges. It is not harmony to be sought, but constructive working environments, where new ideas emerge with roots in different soils." Marja Helena Sivonen - Finnish Environment Institute/Tampere University

"It was an honor to be able to participate in this course and attend such inspiring classes with personalities that I already knew from my readings and never imagined I would have this opportunity to have a class with them. I learned and reflected a lot on how to research sustainability transitions. It will for sure contribute to improve my PhD thesis. This reflexive and critical approach has opened a new field of reflection in my research. The resulting challenges are very relevant to the research I am developing and will allow me to better reflect on the selection of the case study, the problematic at hand, to debate the pros and cons of the approach, and highlight its limits of action. Sustainability transitions have a strong focus on mutual learning (e.g.between researchers, management, and society) and this course taught me how to be more reflective and critical of the issues at hand." Filipa Corais - University of Minho- EAAD/ Lab2PT & MIT- Portugal

Publications

PhD theses

Bjerkan, K. Y. (2022)
The contents and shaping of transition work. Lessons learned from Norwegian ports.
Norwegian University of Science and Technology, Dept. of Interdisciplinary Studies of Culture
link

As particularly potent sites for deep transition and whole-system transformations, ports could play a cardinal role in society's quest for sustainable futures. However, this calls for ports and policy alike to recognize the potential transformative effect of the transition work of ports and the need to encourage such work through transformative policy mixes.
This thesis therefore addresses the need for knowledge and understanding of the ways in which ports can drive sustainability transitions. To do so, it turns to the content and shaping of transition work in three Norwegian ports. Transition work is understood as all forms of deliberate and purposeful activities aiming to progress sustainability transitions. This understanding is based on perspectives on socio-technical stability and change expressed in the field of sustainability transitions and its theoretical lineage within science and technology studies. This conceptualization of transition work is intended to provide active narratives around applied agency, induce directionality onto agency in sustainability transitions, provide empirically applicable constructs, and lead to explicit definitions of transition work.
This conceptualization of transition work has further been applied to investigate the transition work of three Norwegian ports, which encouraged a conceptual framework that distinguishes between six types of transition work: technological work, visionary work, governance and policy work, political work, reflexive work, and relational work. The thesis also discusses how different types of transition work emerge within socio-technical configurations, which reflect transition dynamics typically expressed in the multi-level perspective.

Kok, Kristiaan P. W. (2022)
Turning the tide: Governance and politics of transdisciplinary experimentation for sustainability transitions.
Athena Institute, VU University Amsterdam.
link

In this thesis we examine the role of transdisciplinary experimentation as a mode of governance for sustainability transitions. We specifically zoom in on the politics and governance of transdisciplinary experimentation and ask the question: “How may we understand the governance and politics of transdisciplinary experimentation for sustainability transitions?” After first setting the stage in Part I, we theoretically explore different perspectives on the politics of sustainability transition governance (Part II), considering both normative and causal interpretations of politics. In Part III then, we present a tale of two systems, highlighting how R&I systems are coupled to food systems, and how transdisciplinary approaches aimed at sustainability transitions could be further stimulated. In Part IV we present four empirical studies on the EU FIT4FOOD2030 project, elaborating on the governance and politics of transdisciplinary experimentation. In the final part (Part V) we present the main findings, cross-cutting themes, future research directions and reflections, and we provide recommendations. The main contributions of this thesis, we contend, are that by combining a strong theoretical focus on the politics of sustainability transitions with our active engagement in a transition-oriented project, we were able to (1) illuminate the different ways in which multi-scale, multi-level and multi-system dynamics ‘hit the ground’ in transdisciplinary experimentation processes. This helps us to (2) articulate inherent and political challenges involved in ‘doing transitions’ in practice. This then allows us to (3) formulate governance strategies for navigating such challenges in transition-oriented projects, and to provide recommendations for researchers and policy makers.

McCrory, Gavin (2022)
The unseen in between: Unpacking, designing and evaluating sustainability-oriented labs in real world contexts.
Chalmers University of Technology
link

We live in times of compounding ecological and social change. Given the urgent nature of transformations, contemporary governance is experiencing a tension between controlling the present and nurturing capacities to transform. Amidst interest in transitions in-the-making, labs in real-world contexts have emerged as spaces that situate complex sustainability challenges.
This thesis aims to investigate how sustainability-oriented labs could be unpacked, designed and evaluated in the context of sustainability transitions and transformations. Underlaboured by critical realism, it investigates sustainability-oriented labs via a qualitative-dominant, case-based research strategy.
In paper I, we unpack 53 sustainability-oriented labs. In Paper III, we present an empirically grounded typology, arriving at six types: 1) Fix and control, 2) (Re-)Design and optimize, 3) Make and relate, 4) Educate and

engage, 5) Empower and govern and 6) Explore and shape.
Paper II presents a qualitative case-based inquiry into Challenge Lab, a challenge-driven learning environment. Paper II illuminates how students navigate sustainability challenges alongside designers. We introduce three dilemmas that are not owned by teachers or students but emerge, as contradiction, within the learning space.
Paper IV presents a comparison of evaluation practices in sustainability transition initiatives. We compare evaluation as a tool that can enhance the transformative capacity of sustainability-oriented labs.
In addition, this thesis contains a layered account of an undisciplinary doctoral journey. I do this by (1) reflecting upon research phases, (2) providing transparent accounts of positionality, (3) conceptualizing and reflecting upon undisciplinarity as a process of becoming, and (4) autoethnographically exploring my commitment to stop flying.

Van den Heiligenberg, H. A. R. M. (2022)
Habitats and harbours for sustainability experimentation in the regions of Europe. A contribution to the geographical articulation of the niche for sustainability experiments.
Utrecht University
link

The urgency of the global sustainability challenge requires a transition of the systems for, e.g., the provision of energy, food and mobility. The literature on transition studies suggests that this transition can start small, in practice-based experiments with innovations mostly in local contexts (niches). In this dissertation, the following questions are addressed:

- Which spatial context conditions enable practice-based experiments with sustainability innovations in Europe and the early diffusion of these innovations?
- In which type of city-regions are these conditions favourable?
- How can these conditions be improved?

We developed the 'habitat' concept to suggest that an experiment can be carried out in coevolution with its spatial context. The main context factors that enable experimentation are as follows: a local or regional vision, learning, a countercultural milieu, local and regional networks, regional actors and culture in society (such as openness and trust).
We developed the 'harbour' concept to indicate that a combination of spatial context factors facilitates the 'shipping' of innovations in a figurative sense. The context factors that enable this diffusion concern: local, regional and global networks, facilitating regional actors, vibrant environments (such as festivals) and culture in society (such as cultural openness, trust and a shared sustainability ambition).
Within the analysed European regions, frontrunner regions are mainly found in Northern and Western Europe, such as the regions of Noord-Holland, Utrecht and Midland & Eastern Ireland, and in other parts of Europe, such as Budapest and Catalunya. Several context conditions can be further improved by regional stakeholders.

Books

Koretsky, Z.; Stegmaier, P.; Turnheim, B.; van Lente, H.
Technologies in Decline - Socio-Technical Approaches to Discontinuation and Destabilisation
Routledge, open access
link

The central questions of this book are how technologies decline, how societies deal with technologies in decline, and how governance may be explicitly oriented towards parting with 'undesirable' technology.
Surprisingly, these questions are fairly novel. Thus far, the dominant interest in historical, economic, sociological and political studies of technology has been to understand how novelty emerges and how such processes may be supported. This innovation bias reflects how in the last centuries modern societies have embraced technology as a vehicle of progress. It is timely, however, to broaden the social study of technology and society: next to considering the rise of technologies, their fall should be addressed, too. Dealing with technologies in decline is an important challenge of our times, as socio-technical systems are increasingly part of the problems of climate change, biodiversity loss, social inequalities and geo-political tensions.
This volume presents empirical studies of technologies in decline, as well as conceptual clarifications and theoretical deepening. Technologies in Decline presents an emerging research agenda for the study of technological decline, emphasising the need for a plurality of perspectives.

Ojong, N. (2022)
Off-Grid Solar Electrification in Africa: A Critical Perspective.
Palgrave Macmillan Cham
link

This book evaluates off-grid solar electrification in Africa by examining how political, economic, institutional, and

social forces shape the adoption of off-grid solar technologies, including how issues of energy injustice are manifested at different levels and spaces. The book takes a historical, contemporary, and projective outlook using case studies from pre- and ongoing electrification communities in non-Western countries such as Ghana, Kenya, Rwanda, Senegal, Malawi, Tanzania, and Nigeria. Beyond the diverse nature of these countries in terms of their geographical location in West, East, and Southern Africa, each offers a different experience in terms of colonial history, economic and institutional infrastructure, social and cultural context, and level of adoption of off-grid solar technologies. Notably, the book contributes to the off-grid solar and energy justice scholarship in low-income non-Western contexts. It examines various approaches to energy justice and does so by engaging with Western and non-Western philosophical notions of the concept. It takes into consideration the major principles of Ubuntu philosophy with the adoption of off-grid solar technologies, hence enriching the energy justice literature. Additionally, the book interrogates the degree to which the social mission that catalysed the expansion of the off-grid solar sector is being undermined by broader structural dynamics of the capital investment upon which it is reliant. It also argues that the ascendance of off-grid solar electrification in Africa is transformative in that it enables millions of people without access to or facing uncertainties linked to centralised grid energy to have access to basic energy services.

Papers

Ayrapetyan, D., Befort, N. and Hermans, F. (2022)
The role of sustainability in the emergence and evolution of bioeconomy clusters: An application of a multiscalar framework
Journal of Cleaner Production, 376, 134306
link

Bioeconomy clusters, besides stimulating economic and innovative performance, are expected to promote sustainable regional development. Despite their growing popularity, there is still a lack of awareness about how these clusters contribute to sustainability. This paper aims at increasing our understanding of the processes through which bioeconomy clusters generate sustainability effects and promote the bioeconomy transition. We analyze the event-history of the French Bazancourt-Pomacle cluster and interpret its development as a continuous interplay among its geographical, institutional, and structural scales to capture how these dynamics eventually affect specific sustainability scales. The results of the scale analysis reveal that the actors of the biocluster maintain a certain mode of action by organizing their activities along scales related to the valorization of local natural resources, whereas improvements of sustainability appear as a posteriori result of these activities rather than an aim in itself. Our study contributes with novel insights to the literature on sustainability transitions and clusters as well as demonstrates the potential of the scale-perspective for identification and measurement of sustainability trade-offs in a way accessible to policy makers.

Buschmann, D., Koziol, K., Bausch, T. and Steurer, R. (2022)
Adaptation to climate change in small German municipalities: Sparse knowledge and weak adaptive capacities.
Natural Resources Forum 46(4): 377-392
link

Understanding local adaptation to climate change is critical for the overall success of adaptation practices in Europe and around the world. Although it becomes more urgent by the day, existing literature does not adequately touch upon the topic of climate adaptation in small municipalities. This article addresses this gap. It explores whether adaptation measures in small municipalities are overlooked in research focused on other aspects of urban environment, or whether such measures are indeed inadequate. Based on a large quantitative survey among Bavarian municipalities (n = 401), we conducted 11 qualitative case studies to answer the following two questions. First, how active are small municipalities in Bavaria, Germany, in climate change adaptation? Second, why and how do municipal adaptation frontrunners implement adaptation measures and what lessons can we learn from their experience? Our findings confirm that small municipalities rarely adapt to climate change, and when they do, their actions usually target water-related issues. Most often measures are responsive and pragmatic, instead of being preventive and transformative. The fact that the small municipality representatives that we have interviewed were not able to distinguish between adaptation and mitigation measures clearly illustrates the lack of local adaptation capacities. We conclude that national funding for municipal adaptation coordinators or networks is a promising way to improve local capacities.

Debnath, R., Bardhan, R., Shah, D. U., Mohaddes, K., Ramage, M. H., Alvarez, R. M. and Sovacool, B K. (2022)
Social media enables people-centric climate action in the hard-to-decarbonize building sector.
Nature Scientific Reports, 12, 19017, pp. 1-17
link

The building and construction sector accounts for

around 39% of global carbon dioxide emissions and remains a hard-to-abate sector. We use a data-driven analysis of global high-level climate action on emissions reduction in the building sector using 256,717 English-language tweets across a 13-year time frame (2009–2021). Using natural language processing and network analysis, we show that public sentiments and emotions on social media are reactive to these climate policy actions. Between 2009–2012, discussions around green building-led emission reduction efforts were highly influential in shaping the online public perceptions of climate action. From 2013 to 2016, communication around low-carbon construction and energy efficiency significantly influenced the online narrative. More significant interactions on net-zero transition, climate tech, circular economy, mass timber housing and climate justice in 2017–2021 shaped the online climate action discourse. We find positive sentiments are more prominent and recurrent and comprise a larger share of the social media conversation. However, we also see a rise in negative sentiment by 30–40% following popular policy events like the IPCC report launches, the Paris Agreement and the EU Green Deal. With greater online engagement and information diffusion, social and environmental justice topics emerge in the online discourse. Continuing such shifts in online climate discourse is pivotal to a more just and people-centric transition in such hard-to-decarbonise sectors.

Dijk, M. (2022)
Making the Market: The Transformation Pathway to Electric Car Mobility in the Netherlands
In: Parkhurst, G. and Clayton, W. (Ed.) Electrifying Mobility: Realising a Sustainable Future for the Car Transport and Sustainability, Vol. 15, Emerald Publishing Limited, Bingley, pp. 71-95
link

This chapter explains how electric driving has been transforming car mobility in The Netherlands since 1990, highlighting the role of a specific Dutch policy mix as direct factor, and the conditions through which this policy mix came about as indirect factors. The analysis is based on triangulation of findings from three methods: (1) discourse analysis of national newspapers and online blogs to understand the changing meanings of car mobility as well as changing stakeholder competences; (2) interview analysis with Dutch stakeholders to understand policy effects as well as their changing competences; and (3) analysis of relevant documents that provide the numbers of vehicles sold, implemented infrastructures and policy instruments. The analysis finds a gradual reconfiguration of car mobility: The hegemony of Internal Combustion Engine (ICE) mobility (1990–2008), Surge in Plug-in Hybrid Electric Vehicle (HEV) mobility (2009–2015), and Surge in full-electric mobility (2016–2020). The analysis shows that the specific Dutch policy incentives were critical to orchestrating the co-evolution of ICE-based and electric mobility towards low-carbon alternatives, that is, towards more electrification. The policy mix was adapted in three successive steps, in which inconsistencies towards e-mobility were solved, entailing three distinct reconfiguration pathways. The relatively strong policy incentives for e-mobility in The Netherlands can be explained by the absence of an established car industry as well as particular air quality challenges in cities. The conclusion includes policy recommendations for countries that seek to promote e-mobility, although further research should clarify how contextual differences require specific elements in the policy mix.

Dutt, D. (2022)
Weak states, fast transitions? Exploring the role of actors, governance capacity, and tensions in Indian energy politics.
Energy Research & Social Science, 94, 102876
link

There has been a substantial growth in the Sustainability Transitions literature in the last few years. However, most of it has come from, and has analyzed, the Global North with less attention to the Global South countries, where institutions and governance mechanisms are weaker. This paper explores the unfolding of transition dynamics through two case studies from India. It finds that because of weak governance capacity, the role of state is complex and not limited to nurturing niches, the dynamics of political conflict are not confined to niche vs. regime but happen at novel spaces like niche-regime, and the role of non-state actors like judiciary, driven by their own political vision, assumes importance. The study thus argues for more attention to the complex and multi-faceted transition politics in the Global South countries, particularly elaborating upon the role of state and its interaction with non-state actors.

Dutt, D. (2023)
Exploring multi-level interactions in electric vehicle niche evolution in India.
Transportation Research Part D: Transport and Environment, 114, 103538
link

The electric two-wheeler (E2W) niche in India has undergone substantial changes over the years due to a combination of global and local factors such as battery technology developments, consistent policy support, increasing fuel prices, and favourable consumer perception of E2Ws. As markets for new technologies grow, the nature and intensity of their interactions with the broader socio-political milieu change, which

necessitates recalibration of governance strategies for their further growth. This paper employs the Multi-level perspective (MLP) approach to study the evolution of the E2W socio-technical system and finds that due to favourable developments, the E2W market is expanding and appears to be at the cusp of a significant transition. This provides a window of opportunity and to leverage this, the paper argues that the nature and scope of the policy support needs re-orientation from focusing only on supporting niche to also including regime destabilizing instruments in the policy toolkit.

Jorgenson, S. and Stephens, J. C. (2022)
Action research for energy system transformation.
Educational Action Research, 30(4), 655-670
link

Responding to the climate crisis requires a large-scale transformation of energy systems away from fossil fuels toward a more distributed, equitable, renewable-based society. The societal benefits of this transformation which could redistribute power, literally and figuratively, go well beyond decarbonization; a renewable society could also be a healthier, more economically just society. This study conceptualizes action researchers as key drivers of these systemic change processes. We argue that transforming and democratizing energy systems should be the focal point of action researcher's efforts to address climate change. To advance this argument, the study draws on the systemic action research, energy democracy, and sustainability transitions literature and includes recommendations, examples, and practical suggestions for conducting energy-related action research. This study's findings will be useful to researchers interested in engaging the climate crisis by building transformative capacity in the context of local and regional energy systems.

Kamath, R., Elola, A. and Hermans, F. (2022)
The green-restructuring of clusters: investigating a biocluster's transition using a complex adaptive system model.
European Planning Studies, 1-26
link

Abstract - Bioclusters' promise of helping achieving sustainable bioeconomies has invoked great interest among policymakers and academia. However, bioclusters are not intrinsically sustainable. If they are to fulfil their promise, bioclusters must undergo green-restructuring. While cluster-research has elaborated on green regional development, we need more clarity on how clusters transition to normatively desired states; we need more evidence of how green-restructuring unfolds. In this study, we conduct a longitudinal analysis to demonstrate how a biocluster green-restructures through the interactions of agency, regional and industrial structures, and phenomena at (supra-)national levels. To execute this analysis, we created a novel cluster-evolution framework that treats clusters, and the regional innovation system and sectoral systems of innovation that contain the cluster, as complex adaptive systems. We applied this framework to study the greening of the Basque pulp-and paper-biocluster, over four phases between 1986 and 2019. Our analysis helped us discover patterns of agency, structural dynamics, and of agency-structure interactions and how supra-regional phenomena shaped structures and agency over the four phases. Based on our findings, we recommend policymakers encourage not only green-tech entrepreneurs, but also institutional-entrepreneurs and place-leaders who can help shape both (supra-)regional and industrial structures.

Kanerva, M. (2022)
Consumption corridors and the case of meat.
Journal of Consumer Policy
link

Consumer policy must address the unsustainability of consumption which now threatens consumer safety in the form of the climate and ecological crises. Arguably, only strong sustainable consumption governance methods can bring about changes at the scale and speed required. This article discusses one emerging policy tool within strong governance, namely consumption corridors which could bring about absolute reductions in the negative impacts of consumption in a just manner and using deliberative democracy. Consumption corridors are applied in the context of the current meat system, a common driver for the twin crises, and an issue central to achieving the sustainable development, biodiversity, and Paris climate goals. The recently developed planetary health diet offers a useful plan for the transformation of global food systems, and could be combined with sustainable consumption corridors for meat. Systems thinking identifies change in societal paradigms as most effective. To support such change, this article suggests two metaphors as discourse tools, whereby individual and societal transformation in meat consumption occurs as a journey along a continuum of different meatways. The article also suggests specific actions for bringing about meat consumption corridors, and argues that this context could also serve as a bridge for increased societal acceptance of recomposed consumption.

Kump, B. (2023)
Lewin's field theory as a lens for understanding incumbent actors' agency in sustainability transitions.
Environmental Innovation and Societal Transitions, 46, 100683
link

Understanding incumbent actors' behavior is one of the current key targets in sustainability transitions research. Scholars studying incumbents' agency have demanded the inclusion of broader social-science theories that bridge different levels (i.e., individual, group) and enable the inclusion of a multitude of actors' drivers and motives into one coherent framework. The present article suggests that Kurt Lewin's field theory, an influential theory of social and organizational change, may be suited for this purpose. From the perspective of field theory, actors are exposed to various partially conflicting 'field forces' (e.g., related to needs, expectations, or roles). The relative strength of these forces determines actors' decisions and behavior. The paper introduces key concepts of Lewin's field theory and reinterprets incumbents' responses to sustainability transitions from a field-theoretical perspective. It elaborates on potential theoretical and methodical benefits of Lewin's field theory for studying incumbents' agency and closes with a discussion of practical implications.

Libertson, F. (2022)
(No) room for time-shifting energy use: Reviewing and reconceptualizing flexibility capital.
Energy Research & Social Science, 94, 102886
link

Decarbonizing society will require a shift toward renewable electricity production. However, the temporal configuration of renewables requires that demand adapt accordingly. Introducing intermittent electricity production will thus require end users to be more flexible in their use of electricity. Flexibility capital has been promoted as a concept for analyzing material preconditions in order to understand how providing flexibility might interfere with the daily life of the users. However, this concept focuses mainly on (im)material resources, while the social and temporal factors of society that also mediate flexibility have been less emphasized. The aim of this study is thus twofold: 1) to summarize all research published thus far on flexibility capital, and 2) to reconceptualize the concept by integrating aspects of socio-temporal configuration. The result is a more nuanced concept of flexibility capital that considers the role of both (im)material resources and social and temporal factors, such as norms, conventions, shared space, others, and bodily needs. Conceptualizing flexibility capacity as capital directs attention to a number of social implications. First, it highlights how the uneven material distribution in society may amplify social inequalities within the energy sector. Secondly, it questions whether electricity uses are inherently flexible under the current socio-temporal configuration of society. Thirdly, it warns that organizing the operation of energy systems around end user flexibility renders the users a commodity instead of giving them agency. These insights contribute to the field of energy justice by showing how flexible energy use can be evaluated according to the energy justice principles.

Kivimaa, P. (2022)
Policy and political (in)coherence, security and Nordic–Baltic energy transitions.
Oxford Open Energy, 1, oiac009
link

Global challenges, such as climate change, require increasingly horizontal governance approaches, as solving such challenges is dependent on coordinating public policies between different administrative sectors. Such coordination is difficult because administrative sectors have long traditions, their own worldviews and specific objectives they seek to advance. This paper is focused on the complications of achieving coherence between energy and security policies, in a time when the energy sector decarbonization is accelerating, and major geopolitical shifts are taking place partly in connection to the energy transition. Drawing on the policy coherence literature, this paper analyses 46 expert interviews from three Nordic–Baltic European countries: Estonia, Finland and Norway. It pays attention to policy coherence between energy and security, the presence or absence of strategies, agencies and other coordinating elements for horizontal coherence, political coherence and coordination between administrations linked to the two policy domains. Based on the analysis, the countries show significant differences and interesting features for horizontal policy coherence connected to the European energy transition. Moreover, the analysis shows that, prior to 2022, energy was desecuritized in Finland and Norway, where political incoherence also led to incoherence between policy domains and in policy mixes addressing zero-carbon energy transitions and national security. In Estonia, the policy objective of national security has shaped energy policy, but coordination between the policy domains has mostly been dependent on informal interactions leading to some conflicts and tensions.

Low, S., Baum, C. M. and Sovacool, B. K. (2022)
Undone Science in Climate Interventions: Contrasting and contesting anticipatory assessments by expert networks.
Environmental Science & Policy, 137, 249-270
link

In global climate governance, anticipatory assessments map future options and pathways, in light of prospective risks and uncertainties, to inform present-day planning. Using data from 125 interviews, we ask: How are foundational experts contesting the conduct of

anticipatory assessment of carbon removal and solar geoengineering – as two emerging but controversial strategies for engaging with climate change and achieving Net Zero targets? We find that efforts at carbon removal and solar geoengineering assessment leverage and challenge systems modeling that has become dominant in mapping and communicating future climate impacts and mitigation strategies via IPCC reports. Both suites of climate intervention have become stress-tests for the capacity of modeling to assess socio-technical strategies with complex, systemic dimensions. Meanwhile, exploring societal dimensions demands new modes of disciplinary expertise, qualitative and deliberative practices, and stakeholder inclusion that modelling processes struggle to incorporate. Finally, we discuss how the patterns of expert contestation identified in our results speak to multiple fault-lines within ongoing debates on reforming global environmental assessments, and highlights key open questions to be addressed.

Numminen, S., Ruggiero, S. and Jalas, M. (2022)
Locked in flat tariffs? An analysis of electricity retailers' dynamic price offerings and attitudes to consumer engagement in demand response.
Applied Energy, 326, 120002
link

Matching electricity supply and demand is crucial for deploying renewable energy sources. Tools such as dynamic and market-based pricing help engage energy end-users in this effort and enable demand response. Moving away from a predominant focus on the technical aspects of demand response, in this article, we explore dynamic pricing offerings in the light of energy democracy and retailers' views on making electricity provision less inconspicuous. To this end, we examine the market offers of 59 Finnish electricity retailers, including their customer segmentation and understanding of the barriers to broader uptake of dynamic pricing. Our findings indicate that markets are in ferment; the electricity retailers are innovating and trialling new electricity products, but there are also significant concerns over vulnerable energy end-users. We also find evidence that a move towards more dynamic pricing is not a general trend. On the contrary, electricity retailers have diverse portfolios, and an increasing number of them promote products such as 'super-flat' tariffs, in which prices are detached from both the timing and volume of consumption. Dynamic pricing and transparency in energy balancing can contribute to increased energy literacy and energy democracy. However, current market offerings are not organised, and they are not developing in ways that would be conducive to the broad utilisation of these demand response tools among domestic end-users of electricity.

Reitz, S., Goshen, L. and Ohlhorst, D. (2022)
Trade-offs in German wind energy expansion: building bridges between different interests, values and priorities.
Energy, Sustainability and Society, 12, 39
link

To achieve climate targets, a transition to low-carbon energy production is necessary. However, conflicts between different interests, values and priorities, particularly at the community level, can constrain this transition. This paper aims to analyze lines of conflict and opportunities to build bridges between conflicting interests in the expansion of wind energy in Germany at the local level, to achieve successful implementation of wind energy projects.
Our analysis of four cases of local-level wind energy projects in Germany shows that limited local options for action reinforce the need for local actors to maximize the benefits of energy transition projects. In addition to the conflict over scarce space, the lines of conflict at the local level run primarily along the dimensions of costs and benefits, winners and losers. Real or perceived procedural and distributive injustices had the potential to fuel resistance to wind energy projects in the analyzed cases. However, wind energy projects were successfully implemented despite the presence of local opposition.
The results show that, by integrating procedural and distributive justice into the project planning and implementation and offering tailored solutions, community support for expansion of renewable energy projects can be enhanced. The paper advances the concept of societal ownership ("gesellschaftliche Trägerschaft"), which suggests the willingness of members of a community to tolerate decisions even when some conflicts related to the decision remain unresolved. Societal ownership is presented as an alternative to the concept of simple acceptance; it implies a more positive, more supportive community attitude, where members aim to address conflict as a normal aspect of decision making. Rather than sweeping alternative opinions aside, the community addresses alternative viewpoints, seeking to achieve greater procedural and distributive justice. In this way, a sense of societal ownership of a project can develop, enhancing its likelihood of success.

Sovacool, B. K. (2022)
Beyond science and policy: Typologizing and harnessing social movements for transformational social change.
Energy Research & Social Science, 94, 102857, 1-20
link

Social movements refer to collective groups of actors

banding together to achieve desirable social change through common agendas and tactics. This study examines the power of four successful historical social movements—anti-slavery (the abolition of slavery and universal labor rights), temperance (the prohibition of alcohol consumption), civil rights (racial equality and voting rights), and family planning (women's rights and reproductive choice). Each of these are global/transnational movements, and they also map onto typology of revolutionary, redemptive, reformative, and alternative movements. In each case, the study explains the agendas of these movements, the tactics they utilized, and the prominent actors involved. It finds that transformative movements do not necessarily need to be focused on transformation, and can instead target incremental reforms and/or changing the behavior of individuals. Institutionally, none of these successful social movements relied on a single actor or coalition to achieve their goals. Even though all four of these movements were successful (eventually), they took decades to centuries to reach their goals. Finally, all four movements relied on a progression or accumulation of tactics over time, and all four depended on some degree of questionable tactics. These included forcibly freeing slaves and violent slave revolts (anti-slavery) to burning and destroying pubs (temperance) and scapegoating German Americans (temperance) to giving bribes and concessions to pass civil rights reforms (civil rights) to condoning abortions (family planning). Scholars of energy transitions and social transformation may need to expand their inventory of "repertoires of contention" accordingly.

Sovacool, B. K., Baum, C. M. and Low, S. (2022)
Determining our climate future: Expert opinions about negative emissions and solar radiation management pathways.
Mitigation and Adaptation Strategies for Global Change, 27, 58, 1-50
link

Negative emissions technologies and solar radiation management techniques could contribute towards climate stability, either by removing carbon dioxide from the atmosphere and storing it permanently or reflecting sunlight away from the atmosphere. Despite concerns about them, such options are increasingly being discussed as crucial complements to traditional climate change mitigation and adaptation. Expectations around negative emissions and solar radiation management and their associated risks and costs shape public and private discussions of how society deals with the climate crisis. In this study, we rely on a large expert survey (*N*=74) to critically examine the future potential of both negative emission options (e.g., carbon dioxide removal) and solar radiation management techniques. We designed a survey process that asked a pool of prominent experts questions about (i) the necessity of adopting negative emissions or solar radiation management options, (ii) the desirability of such options when ranked against each other, (iii) estimations of future efficacy in terms of temperature reductions achieved or gigatons of carbon removed, (iv) expectations about future scaling, commercialization, and deployment targets, and (v) potential risks and barriers. Unlike other elicitation processes where experts are more positive or have high expectations about novel options, our results are more critical and cautionary. We find that some options (notably afforestation and reforestation, ecosystem restoration, and soil carbon sequestration) are envisioned frequently as necessary, desirable, feasible, and affordable, with minimal risks and barriers (compared to other options). This contrasts with other options envisaged as unnecessary risky or costly, notably ocean alkalization or fertilization, space-based reflectors, high-altitude sunshades, and albedo management via clouds. Moreover, only the options of afforestation and reforestation and soil carbon sequestration are expected to be widely deployed before 2035, which raise very real concerns about climate and energy policy in the near- to mid-term.

Sovacool, B. K., Baum, C. M. and Low, S. (2023)
Beyond climate stabilization: Exploring the perceived sociotechnical co-impacts of carbon removal and solar geoengineering.
Ecological Economics, 203, 107648, 1-18
link

The scientific literature on the co-impacts of low-carbon energy systems - positive and negative side effects - has focused intently on climate mitigation, or climate adaptation. It has not systematically examined the prospective co-impacts of carbon removal (or negative emissions) and solar geoengineering. Based on a large sample of diverse expert interviews (N = 125), and using a sociotechnical approach, in this study we identify 107 perceived co-impacts related to the deployment of carbon removal and solar geoengineering technologies. Slightly less than half (52) were identified as positive co-impacts (38 for carbon removal, 14 for solar geoengineering), whereas slightly more than half (55) were identified as negative co-impacts (31 for carbon removal, 24 for solar geoengineering). We then discuss 20 of these co-impacts in more depth, including positive co-impacts for nature-based protection, the expansion of industry, and reduction of poverty or heat stress as well as negative co-impacts for water insecurity, moral hazard, limited social acceptance and path dependence. After presenting this body of evidence, the paper then discusses and theorizes these co-impacts more deeply in terms of four areas: relationality and risk-risk trade-offs, co-deployment and coupling, intentional or unintentional implications, and expert consensus and dissensus. It concludes with

more general insights for energy and climate research, and policy.

Sovacool, B. K., Geels, F. W. and Iskandarova, M. (2022)
Industrial clusters for deep decarbonization: Net-zero megaprojects in the UK offer promise and lessons.
Science, 378(6620), 601-604
link

This paper proposes that industrial clusters offer promise for decarbonising energy-intensive industries (like steel, chemicals, oil refining), because the co-location of multiple firms improves the economic and technical feasibility of implementing options like CCS or hydrogen fuel switching. Drawing on recent UK experiences, the paper discuss implementation challenges of these multi-billion pound megaprojects, related to the systems integration of multiple novel components at relatively high speed, as well as policy responses to address these challenges.

Trencher, G. and Wesseling, J. (2022)
Roadblocks to fuel-cell electric vehicle diffusion: Evidence from Germany, Japan and California.
Transportation Research Part D: Transport and Environment, 112, 103458
link

Fuel cell electric vehicles (FCEV) are diffusing slowly, well below historical expectations and government targets. To elucidate key factors that may explain this sluggish growth, we identify barriers in three influential markets: Germany, Japan and California. Combining data from 59 interviews and secondary documents, we examine each market from four dimensions: (i) vehicle production, (ii) supporting infrastructure, (iii) vehicle demand, and (iv) institutions. Findings reveal a web of systemic and self-reinforcing barriers hampering market formation in all four dimensions. We also find that stakeholders perceive FCEV market barriers in relation to competing technologies; namely battery electric vehicles (BEVs). Faster market growth and lower hurdles for BEVs are thereby raising the relative barriers for FCEVs, further hampering the latter's deployment potential. Findings thus reveal the importance of considering interactions between different technological systems when studying diffusion. They also provide valuable hints for industry and government to confront these systemic barriers.

Ulmanen, J., Bergek, A. and Hellsmark, H. (2022)
Lost in translation: Challenges in creating new transformative innovation policy practices.
PLOS Sustainability and Transformation 1(10)
link

The purpose of this paper is to identify key challenges that national policymakers face in trying to translate transformative innovation policy (TIP) theory into policy practice. We focus on the case of the Swedish innovation agency Vinnova's attempt to translate its TIP-related innovation perspective into the policy practice of the Swedish Innovation Partnership Programme (IPP). By means of a discourse perspective, we identify two key discourses and one institution influencing Vinnova's translation process. In addition, we describe four key challenges that Vinnova faces in this translation process relating to (i) the involvement of relevant stakeholders, (ii) overcoming a dominant discourse, (iii) time constraints of an institutionalized parliamentary system, and (iv) realizing policy coordination ambitions. This study adds to previous literature in identifying dominant discourses or institutional structures as a key barrier for change. Its contribution is to show how transformative translation challenges are played out in a national-level context.

Zepa, I. (2022)
From energy islands to energy highlands? Political barriers to sustainability transitions in the Baltic region.
Energy Research & Social Science, 93, 102809
link

The European Green Deal strategy targets accelerated sustainability transitions, yet the pathways and processes thereto differ markedly across EU member-states, particularly in the energy sector. Politics and institutional contexts largely determine the transition dynamics. However, the sustainability transitions scholarship lacks concrete tools to identify such political barriers to transitions. This paper, therefore, asks: How do political barriers to sustainability transitions emerge and endure, driving differences in transition dynamics across countries? By integrating concepts from institutional economics with the sustainability transitions scholarship (the multi-level perspective), this paper introduces a theoretical framework to assess political barriers to sustainability transitions in their institutional contexts. Additionally, the paper provides empirical evidence from a new region for sustainability transition research: the electricity sectors in the Baltic states of Lithuania, Estonia, and Latvia. The comparative case study relies on 25 semi-structured interviews with senior energy policy stakeholders from the Baltic region, triangulated with content analysis of policy documents. The paper concludes that, first, political barriers to transitions emerge in their institutional contexts as they define the policy objectives (or lack thereof) that reinforce (or reduce) transition processes. Second, political barriers to sustainability transitions endure as lacking incentives,

alongside misaligned rules and norms, hinder niche development across countries. This analysis suggests policy changes for policymakers and points to future research avenues.