STRN Newsletter

N° 50 | December 2023

Newsletter 50 – December 2023

Content

About

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

Cover:
Photo credit - Tomáš Malík

Editorial

by Ingrid Johansson Mignon, Merin Raju Jakob, Tom Hawxwell & Sophie-Marie Ertelt

In this editorial, we would like to take the opportunity to briefly introduce ourselves as the new additions to the steering group (SG) and outline some focus areas we deem important for the advancement of our community. But before doing so, we would first like to thank former SG members Mapula Tshangela, Patience Mguni, Aline Scherrer and Abe Hendriks for their contributions to STRN over their term of service.

The first new member is Ingrid Johansson Mignon. Ingrid is an Associate Professor at Chalmers University of Technology, Sweden. She conducts research in the field of innovation studies, with a particular interest in large-scale diffusion of innovations, including strategies and policies to accelerate the diffusion.

Also new to the SG is Merin Raju Jacob from the Centre for Sustainability Transitions, Stellenbosch University in South Africa. Merin's research is centered around South Africa's just energy transition, the African Urban Transition, and narratives that drive transitions, combining a love of cities with the allure of the power of story.

Lastly, Tom Hawxwell and Sophie-Marie Ertelt share a member seat in the SG as co-representatives from the Network of Early-career Researchers in Sustainability Transitions (NEST). Tom is a 3rd year PhD from the Hafencity University in Hamburg, Germany. His PhD engages with the sociology of expectations and mobilities research. Sophie-Marie is a PhD at the Center for Sustainable Business at Örebro University, Sweden. Her thesis focuses on transition acceleration challenges in hard-to-abate industry sectors.

We have identified three focus areas that we believe are important for the network's advancement. First, we will seek to represent the interests of early-career researchers with a particular appreciation of the challenges faced on the journey to becoming a senior academic. Specific activities will include organizing Early Career Researcher events at upcoming IST conferences to give young scholars an easy entry point to the community and help them build their network. Together with SG colleagues and the STRN secretariat, we are also supporting the development of a new PhD

school that provides a structured platform for academic learning and peer-to-peer exchanges.

Second, we want our community to contribute more broadly to positive societal change. This goes beyond simply having more academic 'impact' towards becoming a community that is reflexive and critical about the types of impact we want to have and how to achieve them best.

Third, beyond their explanatory value, we see the frameworks and concepts in transition research as creating powerful tools that bring researchers with diverse academic, professional and cultural backgrounds together to talk about the complexities of transformative change with a common language. Nevertheless, we appreciate that this comes with challenges and therefore believe that the community must remain open to different ways of thinking, sensing and knowing.

Additionally, all four of us are engaged in developing new topics and contexts of transition research, including, for instance, multi-system interactions, fair transitions, integrating design methods into transition research and novel visioning approaches for more inclusive transitions. In conclusion, these initiatives, along with exploring new topics, are crucial in maintaining the vibrancy and reflexivity of our community. They ensure our collective efforts remain dynamic and responsive to emerging challenges and opportunities of researching ongoing transitions towards more sustainable societies.

As we take on our roles in the steering group, we are committed to supporting all current and future activities of STRN with enthusiasm and dedication. We invite all members to engage with us, share insights, and collaborate! We hope to meet many of you at an STRN event in 2024.

Finally, we would like to invite all of you to fill out the STRN Individual Members survey. This anonymous survey aims to collect your input and suggestions how to improve STRN services and strengthen our network.

EIST Journal

We are happy to introduce the most recent issue of EIST, published in Volume 49. The full list of papers is featured in the publication section of this newsletter.

Bernhard Truffer, Editor-in-chief

STRN News

15th IST Conference, Oslo
June 16th – 19th, 2024

On the call for tracks and special sessions, we received 42 track submissions and 21 special session proposals. The conference team is in the final stages of review and selection and the outcome will be communicated soon to track / session convenors.

The call for Papers will be out mid-January, with the invitation to submit papers to the selected tracks. It will also be possible to submit papers proposal that do not fit into the tracks.

Newcomer / ECR Event: 16th of June 2024
Main Conference: 17th to 19th of June 2024
Submission of Abstracts: 15th of February 2024
More info

photos credits https://visitoslo.imageshop.no//12826

Method-School, Rotterdam
July 8-12, 2024

Mark your calendars for the 2024 STRN / NEST Method School: ”Transformative Research Unlocked”, taking place from July 8th to 12 th in Rotterdam. Join us on a learning journey hosted by the Design Impact Transition (DIT) Platform and the Dutch Research Institute for Transitions (DRIFT) in collaboration with STRN and NEST. Learn about research methods for investigating sustainability transitions, explore transformative research approaches, and cultivate your role as a transformative researcher.

The program will feature lectures, interactive sessions, peer learning, and experiential workshops. It will provide a dynamic platform designed for PhD students at various research stages to unlock the potential of research for advancing sustainability transitions.

Stay tuned for more details, to be shared at the beginning of 2024 on the websites of DIT, STRN & NEST.
In the meantime, follow DIT and NEST on LinkedIn to be updated on the summer school and other projects. We hope to welcome you for an enriching and collaborative exploration of transformative research.

For questions, contact Julia de Koning at julia.dekoning@eur.nl on behalf of the organizing committee.

NEST Conference 2024

The 2024 NEST Conference will take place in Fall 2024
Further updates will be communicated soon.

STRN Survey

We seek to continuously improve how we support the STRN community.
Therefore, the STRN Steering Group has launched a survey (anonymous), which seeks feedback on the existing resources (e.g., website, mailing list, newsletter, key events) and asks **all of you** for your input and suggestions about what is needed and how we can strengthen our community.

The survey should take 5-10 minutes.
Kindly fill in the survey by **January 6th** by clicking on this link

New Projects

Circular use of wood for increased sustainability and innovation (circWOOD)

circWOOD aspires to propel both the wood and construction industries towards a comprehensive circular and environmentally sustainable transformation. The project's primary focus is to delve into various facets of wood utilization within the Norwegian economy, giving special attention to the reintegration of wood in construction projects and the incorporation of recycled wood as a fundamental raw material in the present-day wood industry. To bridge knowledge gaps related to the availability and quality of recycled wood, circWOOD will thoroughly investigate its applications, paying close attention to resource access, material flows, and environmental impacts. The research outcomes, particularly those concerning circular goods flow, handling processes, environmental implications, design considerations, and wood production, will be strategically linked to relevant markets both in Norway and internationally. circWOOD will delve into the underlying political frameworks, studying their implications and assessing the economic and environmental impact they may exert.

Website

Transition of world agriculture
ERC Advanced Grant, Lennart Olsson

A new major research project on a transition of world agriculture is being initiated at Lund University (Sweden) in collaboration with colleagues at The Land Institute (US), ISARA (France), San Diego State University (US), SLU (Sweden). PI is Lennart Olsson, email

PERENNIAL will investigate whether a transition from annual to perennial grain crops as the basis for food production is possible and identify the major opportunities and obstacles for such a “perennial revolution”. Since the Neolithic Revolution the world food system has been dominated by annual crops (cereals, legumes, and oil seeds) covering 70% of global croplands. The use of annual plants disrupts agro-ecological processes every season, resulting in soil erosion, nutrient losses, and greenhouse gas emissions from machinery and soils. The costly practices of managing annuals, including a strong dependence on herbicides and mineral fertilisers, partly explain the high indebtedness and low returns in agriculture. A shift from annual to perennial grains that are planted once and harvested for many consecutive years, could revolutionise agriculture and revitalise rural society. It could solve problems associated with annuals and increase the potential for adaptation to climate change. Advances in plant breeding have shown that a shift to perennials is possible within a few decades, but it would challenge powerful vested interests. To investigate the prospects of a perennial revolution, we will: a) conduct a systematic critique of the current political economy of agriculture, b) suggest desirable, viable, and achievable perennial alternatives to annual monocultures, and c) develop a strategy for change. We complement social science expertise with that of plant breeding, agro-ecology, soil, and plant science. Social Fields Theory is applied to study the political economy of agriculture including the politics of seeds and agrochemicals and Soil Health theory to suggest alternatives. We then incorporate ecological feedback to develop an Agricultural Treadmill Theory and apply Transition Theory to study social change. Using mixed methods, we will conduct discourse analysis, network analysis, and modelling at multiple scales including farms, river basins, and jurisdictions.

Planetary stewardship in view of earth-space sustainability
ERC Starting Grant, Xiao-Shan Yap

Human activities in outer space have seen an exponential rise in recent years, but we know far too little about how they might impact the sustainability challenges on Earth and in space. At the moment, different space actors - driven by different values - envision different stewardship approaches to solving sustainability crises on a planetary level, through varied space governance strategies as well as the exertions of influences on socio-technical, cultural, and political activities on Earth. PLANETSTEWARDS will analyse and compare the different planetary stewardship approaches (state-driven, market-driven, and community-driven) and how they impact earth-space sustainability in terms of environmental and social dimensions.
Announcement on Utrecht University Website

Upcoming Events

Shaping an ecosocial future now! Disseminating and advancing transdisciplinary research on sustainability transitions, May 23-25, 2024

The ASTRA project (funded by the European Commission) seeks to integrate transdisciplinary sustainability transition research and social work research, policies, and practices. ASTRAs primary focus is to tackle the challenge of social inclusion of young people in precariousness, people with a migration background, and vulnerable communities. At our conference at the University of Jyväskylä (JYU), Finland, we welcome transdisciplinary researchers, policy makers, NGOs, social work practitioners, and students of all disciplines to discuss the ASTRA findings and actively participate in shaping ecosocial transitions towards a more sustainable world.

The Conference programme consists of international keynote speeches, panels, and workshops focusing on topics and methods on shaping an eco-social future.

The keynote speakers are:
Gianinna Muñoz Arce, University of Chile
Dirk Holemans, Oikos and the Green European Foundation
Barzoo Eliassi, Linnaeus University, Sweden
Tiina Onkila, JYU

Please follow our conference website for more information

Session on '"Understanding low-carbon transitions in the Global South: Policy, Politics, and Decolonization", STS Graz 2024

We welcome abstracts to the session - "Understanding low-carbon transitions in the Global South: Policy, Politics, and Decolonization", which we are hosting at STS Graz Conference 2024. The session explores distinctive challenges and themes on low-carbon transitions in the Global South. The details of the session can be found here.

The conference is hybrid with the possibility of online presentations. If your work falls under the ambit of the session's theme, we encourage you to submit the abstract by 22.01.2024. The full papers need to be submitted by 07.06.2024. If you have any questions or require further information, please do not hesitate to contact us:

DwarkeshwarDutt Anita Pinheiro

Past Events

'Managing Sustainable Transitions in Agri-culture', Conference, India

The first international conference on the theme of 'Managing Sustainable Transitions in Agriculture: Newer Directions for Research and Civic Action' took place from November 16- 18 in Anand, Gujarat, India. The event was hosted by the Institute of Rural Management Anand (IRMA), in collaboration with the Indian Institute for Technology (IIT) Delhi, and the Network of Rural Agrarian Studies (NRAS). With an explicit focus on sustainable transitions possibilities within the agrarian domain in the Global South, the event was unique in its commitment to transcend conventional academic boundaries and include representation from civil society organisations and grassroots communities to share their experiences. Agri-food systems receive relatively less attention in global transition research, and the conference played a crucial role in highlighting the significance of agri-food systems in the transitions agenda.

Over a 100 people gathered to attend and 51 papers were presented across eight thematic tracks. The keynote speaker for the session was a veteran farmer, activist and Padmashree awardee Shri Bharat Bhushan Tyagi. The conference also featured four panel discussions by distinguished academics and senior development professionals on the themes of 'Managing Sustainable Transitions in Central India', 'Ensuring Gender Equality in Sustainable Transitions in Agriculture', 'Newer Directions for Research and Civic Acton for Sustainable Transitions in Agriculture' and 'Deepening and scaling Natural Farming Transitions'.

The catering for the event was handled by a women-led organisation, who served food made exclusively from locally-sourced ingredients thereby literally whetting the appetite for insightful discussions on sustainable food systems.

Participants also enjoyed a field trip to one of the oldest biodynamic farms in India.

Website

Gemini Centre Sustainability Transitions (GemST) workshop

GemST is a platform for strategic collaboration between transition scholars in SINTEF, the Norwegian University of Science and Technology, and the University of Oslo. GemST was established in 2021 to strengthen the sustainability transition study field in Norway by jointly developing research activities and improving research training and education. While in 2022 we had a tour to Brussels, and the Netherlands (DRIFT, Copernicus), in October 2023 we met for a 2-day workshop in the amazing mountain area of Rondane in central Norway. Many workshop participants were early-career researchers working with, e.g., energy justice, circular economy, transformative/mission-oriented innovation systems, and transformations in hard-to-abate sectors. The workshop focused on the development of research project proposals, research designs and methodology, a joint book project, and of course, the planning of the IST conference in Oslo in June 2024! We also tested our skills in axe throwing, puzzle solving, and tandem skiing, with varied success.

Website

Publications

PhD Theses

Ayala, D. H. F. (2023)
Urban living labs: sustainability transitions in the innovation of city systems from the perspective of the circular economy.
Universidade do Vale do Itajaí
Link

The Agenda 2030 of the United Nations recognizes cities and metropolitan areas as vital contributors to global economic growth, accounting for about 60% of the world's GDP. However, they also contribute to 70% of global carbon emissions and over 60% of resource usage. Despite cities being crucial economic drivers, they also pose significant environmental challenges. The research aims to assess how practices that characterize Urban Living Labs (ULLs) can be configured as potential instruments for sustainability transitions (ST) to city-systems innovation based on a circular economy's (CE) perspective. The research methodology is qualitative, exploratory, and cross-sectional. We conducted a systematic literature review, ethnography research, and a case study. The literature review indicated that ULLs can produce the following pathways: knowledge production, policymaking, co-creation, geographical embeddedness, urban transitions, networks of cooperation among institutions, culture change, and collaborative engagement. The practices of 17 ULLs align with circular economy principles, contributing to product development, innovation systems, knowledge production, and sustainable development. Consequently, these can ensure sustainable transitions and potentially build circular cities. Finally, the LabIC Novale case study shows that its citizen innovation program inspires and connects the community bottom-up to share knowledge and prototype solutions through societal transformation, urban governance, and transformative place-making. However, ULLs help to shift cities into a CE perspective. Through pathways and practices developed in ULLs, promoting the ST to build innovative city systems is possible. Additionally, municipalities should create public policies in different city sectors to advance city transformation and innovation.

Haddad, C. R (2023)
Transformative innovation policy evaluation: characteristics, challenges, and lessons from practice
Chalmers University of Technology.
Link

The emergence of the transformative innovation policy (TIP) framing, which aims at addressing “grand challenges,” implies new challenges for policy evaluation. While most frameworks for TIP evaluation are quite similar to those of previous science, technology, and innovation policy (STI) evaluation approaches, the thesis argues that issues such as capturing the effect of such policies, such as related to the direction of transformative change and its additionality, remains unaddressed in the literature. This PhD thesis focuses on three research questions: (RQ1) What could be the distinguishing characteristics of an “ideal type” TIP evaluation compared with previous innovation policy evaluation approaches? (RQ2) How can additionality and directionality be accounted for in TIP program evaluation? (RQ3) What are the challenges related to translating an “ideal type” TIP evaluation approach into practice?
To answer RQ1, the thesis combines insights from a systematic literature review of TIP and an analytical framework to identify the distinguishing characteristics of an “ideal type” TIP evaluation. RQ2 is addressed by a framework that combines insights from theory-based evaluation and TIP to address directionality and additionality. The thesis also looks at a set of transformative processes that evaluators should look for to assess the effects of TIP interventions. Finally, RQ3 is addressed by identifying challenges for translation based on: (i) a cross-case analysis of three Swedish innovation programs, funded by Vinnova, the Swedish Innovation Agency, and (ii) an application of the aforementioned framework to evaluate the BioInnovation Strategic Innovation Program.

Hvitsand, C. (2023)
Participatory and collaborative approaches in sustainability transitions: Niche innovations in agri-food systems
Norwegian University of Life Sciences, work at Telemark Research Institute
Link

The objective of the thesis was to explore how participatory and collaborative niche initiatives and innovations can be motivated and organized, and how they could contribute to sustainability transitions in agri-food systems. The thesis addresses the need for a holistic perspective on challenges and opportunities, considering connections across supply chains, sectors and actor types.
Organic and localized vegetable agri-food systems was the main focus in the thesis and its four papers.
Two types of initiatives were included in the thesis: The first was the local and alternative food networks of Community Supported Agriculture (CSA). This part includes one national and one cross-national study and investigates values, motivations and proximity dimensions related to participating in CSA. The second

was the application of action research framed as an "agri-food living lab" in a region in Norway. This part includes methodological insight in how a cross-cutting agri-food living lab could be established, how the co-creative innovation process took place, and studies occurring forces and tensions that took place when piloting the co-created local food network. This food system was named Green Parallel and consisted of local organic producers selling directly to professional buyers (restaurants, private and public canteens, specialty stores, chain retail) through a coordinating link.
The thesis discusses a set of issues which are core regarding how participatory and collaborative niche initiatives and innovations can be motivated, organized and sustained, and their potential contribution to sustainability transitions. Also, the thesis consists of reflections about the engaged researcher role in action research and proposes theoretical and methodological contributions.

Leväsluoto, J. (2023)
Transition Through Co-creation in Social and Healthcare Services?
Tampere University
Link

There is an urgent need to focus on the world's biggest problems that are not easy to solve. The public sector has its role in answering the grand challenges. The paradigm of New Public Governance promotes public policymaking, highlighting relationships and partnerships in complex societies and co-creation as the service model. These issues are studied in the context of social and healthcare services in Finland, where factors such as the aging population, decreased tax revenues, digitalization, and high expectations of users toward personalized services abound. Experiments in introducing co-creation have been scattered, and a transition toward the use of co-creation in service production on a wider scale has not happened.
This dissertation studies whether co-creation can truly renew public sector social and healthcare services in Finland and is based on four published peer-reviewed articles. The results show that the system can be reformed, but there is a need for systemic changes to utilize the potential of co-creation. The results indicate the need to promote learning and co-create with users, initiate long-term policy actions, and understand change as a constellation of different changes in the system.
In addition, the dissertation studies whether change toward co-creation can be promoted. Transition studies was included in the dissertation to study whether its theoretical and practical frameworks of multilevel perspective, transition management, and strategic niche management could provide tools to understand and promote change. It is argued that co-creation of Finnish social and healthcare services could be understood and promoted by the use of transition studies and provides examples of promoting double-loop learning and supporting policymakers to evaluate the impacts of change.

Nguyen, T. M. P (2023)
Institutionalising governance experiments in cities that lack a metropolitan government: Lessons learnt from 100 Resilient Cities initiative in Melbourne, Sydney, and Christchurch
The University of Melbourne
Link

This thesis investigates the institutionalisation of governance experiments in cities that lack a metropolitan government. The thesis draws upon the 100 Resilient Cities [100RC] network as the primary context of research. It employs a qualitative research methodology with the application of a multiple-case study research design, focusing on three case studies selected from the 100RC initiative: Living Melbourne (Resilient Melbourne), Resilient Sydney, and Resilient Greater Christchurch.
This thesis develops a novel analytical framework that brings together concepts and insights from research on sustainability transitions, including experiments, urban governance, and city networks.
This research finds that the institutionalisation of governance experiments occurs in cities that lack a metropolitan government by generating lasting changes within urban governance, mainly around two domains: ways of thinking and ways of organising. However, it argues that most changes generated via institutionalisation are predominantly incremental and reformistic in nature. They are rarely sufficiently transformative to bring about substantial urban sustainability transitions. Further, this research identifies key factors that influence the extent of institutionalisation, which include: (1) existing metropolitan governance conditions (with the absence of a metropolitan government), (2) internal conditions of governance experiments, and (3) city networks (albeit to a limited degree).
This research concludes that governance experiments can support the development of new approaches to urban sustainability. Nevertheless, the institutionalisation of these experiments requires considerable governance commitment, leadership, and collaborative efforts to embed these new approaches

Werner, V. (2023)
Ghosts of the Past or Facilitators of the Future?: Firm-System Interactions in the Transition to Electrified Goods Transportation
Linköping University
Link

Despite the widespread adoption of electric vehicles for passenger transport, the transition to electric trucks is lagging behind. Part of the explanation for this are the

profound system changes required to realize a competitive electrified goods transportation system. This system involves incumbent firms with significantly different resources and varying relationships to existing system structures.
This thesis aims to contribute to transition studies by mapping out how firm-system interactions unfold during an ongoing sustainability transition. Therefore, attention is placed on how dynamic transition processes are affected by firms with stakes in the emerging socio-technical system for electrified goods transportation. The thesis also emphasizes the firms' limitations in shaping the environment in which the electrified trucks will operate. The thesis contributes to the discussion about the role of incumbents in transitions in three ways. First, the thesis contributes to the discussion on incumbent firms with an "extreme" empirical case of system reconfiguration, characterized by the interactions between two socio-technical systems where incumbent firms play the role of users and producers. Second, the dissertation contributes with a conceptualization of two types of interactions between firms and systems, covering how the firm can influence the emerging system and how feedback from the emerging system travels back to the firm. Third, the thesis develops analytical tools to investigate how incumbent firms can influence changes in their environment by shaping favorable future markets and influencing problem-solution couplings during transitions.

Papers

EIST Volume 49

Lawrence Gottschamer, Jeffrey P. Walters,
The dynamics of sustainability transitions: An archetype for transformation

Niko Wojtynia, Jerry van Dijk, Marjolein Derks, Peter W.G. Groot Koerkamp, Marko P. Hekkert
Spheres of transformation: exploring personal, political and practical drivers of farmer agency and behaviour change in the Netherlands

Antonia Kaiser
Discursive struggles over pesticide legitimacy in Switzerland: A news media analysis

Chiara Iurato, Heiner Schanz
Systemic power relations of industry associations as an indicator of innovation potentials in market fields – An illustrative case

Kristin Reiß, Martina Artmann
The role of spatial and relative proximity while transforming towards an edible city – The case of the City of the Future Dresden (Germany)

Jørgen Aarhaug, Andreas Kokkvoll Tveit
How ‘within-regime’ tensions can create windows of opportunity for new mobility services

Dan Santos
Conceptualizing the democratization of innovation through transitions theory: A case study of biohacking in community science labs

Jonas Van Gaubergen, Erik Paredis, Thomas Block
‘Fit-to-transform’: An institutional perspective on the empowerment of clothing product-service systems

Jan Peuckert, Florian Kern
How user innovation communities contribute to sustainability transitions. An exploration of three online communities

Djamila Lesch, Johan Miörner, Christian Binz
The Role of Global Actors in Sustainability Transitions – Tracing the Emergence of a Novel Infrastructure Paradigm in the Sanitation Sector

Marie Fricaudet, Sophia Parker, Nishatabbas Rehmatulla
Exploring financiers' beliefs and behaviours at the outset of low-carbon transitions: A shipping case study

Bonno Pel, Julia M. Wittmayer, Flor Avelino, Derk Loorbach, Tessa de Geus
How to account for the dark sides of social innovation? Transitions directionality in renewable energy prosumerism

Sam Unsworth, Helene Ahlborg, Sofie Hellberg
Agency, directionality, location and the geographic situatedness of knowledge making: The politics of framing in innovation research on energy

Johnn Andersson, Kristina Hojcková, Björn A. Sandén
On the functional and structural scope of technological innovation systems – A literature review with conceptual suggestions

Caetano C.R. Penna, Johan Schot, W. Edward Steinmueller
Transformative investment: New rules for investing in sustainability transitions

Andersen, A. D., et al. (2023)
Faster, broader, and deeper! Suggested directions for research on net-zero transitions
Oxford Open Energy 2.
Link

The growing attention to the political goal of achieving net-zero emissions by mid-century reflects past failures to alter the trajectory of increasing greenhouse gas (GHG) emissions. As a consequence, the world now needs to decarbonize all systems and sectors at an unprecedented pace. This commentary discusses how the net-zero challenge presents transition scholarship with four enhanced research challenges that merit more attention: (1) the speed, (2) breadth and (3) depth of transitions as well as (4) tensions and interactions between these.

Andersen, A. D., et al. (2023)
Building multi-system nexuses in low-carbon transitions: Conflicts and asymmetric adjustments in Norwegian ferry electrification.
Proceedings of the National Academy of Sciences 120(47)
Link

While nexus research in sustainability science has investigated the consequences of connected systems, it has paid less attention to the processes of building nexuses which is becoming increasingly important in low-carbon transitions because these often require the creation of new connections between multiple consumption–production systems. Building on multi-system research in the sustainability transitions literature, this paper introduces a conceptual system interface perspective on nexus-building which considers four dimensions (technology, actors, institutions, and resources) that are useful for analyzing nexus-building dynamics. We apply our framework to the case of electrification of ferries in Norway which requires the building of a new interface between the electricity system and the maritime transport system. The case study shows that the system interface was initially characterized by conflicts and tensions in all dimensions, which actors then attempted to resolve through cross-system intermediation and adjustment activities. These activities were asymmetrical because of differences in external pressures, urgency, unequal power relationships, and different degrees of interest in cross-system nexus building. Because important tensions remained unresolved, ferry actors started implementing sub-optimal workaround solutions in the diffusion phase.

Bally, F., Coletti, M. (2023)
Civil society involvement in the governance of green infrastructure: An analysis of policy

recommendations
Journal of Environmental Management, Vol. 342
Link

Green Infrastructures (GI) help build and develop climate resiliency and biodiversity. Moreover, the ecosystem services (ESS) that GI generates can be a source of social and economic value. Public policies to support GIs are necessary, but they cannot be successful without the involvement of relevant stakeholders. Because GI is a rather obscure concept for most non-specialists, their contribution to sustainability is not always apparent, and this makes it difficult to mobilize resources. This paper analyzes the policy recommendations of 36 projects focused on GI governance, funded by the European Union. Using the Quadruple Helix approach, we find that GIs are perceived as a mostly governmental responsibility, with civil society and business engaged to a limited extent. We argue that non-governmental players should be more actively involved in decisions concerning GI to foster the sustainability transition.

Bridge, G. and Faigen, E. (2023)
Lithium, Brexit and Global Britain: Onshoring battery production networks in the UK
The Extractive Industries and Society 16
Link

As demand for electrical energy storage scales, production networks for lithium-ion battery manufacturing are being re-worked organisationally and geographically. The UK - like the US and EU - is seeking to onshore lithium ion battery production and build a national battery supply chain. Governmental, industrial and research actors are engaged in securing battery mineral materials and developing battery manufacturing capacity, in the context of the country's exit from the EU and a perceived 'global battery race' in which geopolitical goals shape links with new and old partners. We identify the primary global networks of lithium mining and refining, battery chemical production, technology development and finance in which the UK's battery manufacturing capacity are increasingly embedded. We foreground the role of the UK state, and how it has sought to assemble discrete capacities in automobile manufacturing, battery R&D, materials chemistry, minerals exploration, mining and green finance into a national battery sector. We mobilise a Global Production Network (GPN) perspective to highlight the cross-border geographical and organisational structures through which onshoring is taking place. We extend GPN research on the role of the state by showing how the UK's growing lithium networks intersect with a plural and differentiated state accumulation project of green industrial transformation. We outline the selective nature of this state accumulation project, highlight instances of coupling creation as the state seeks to strategically couple regional assets with firms in GPNs, and point to a convergence of industrial and innovation policy characteristic of the entrepreneurial state.

Burns, W., (2023)
Governance of Ocean-Based Carbon Dioxide Removal Research Under the United Nations Conventions on the Law of the Sea
Maine Law Review 75(3)
Link

There has been a spate of research in recent years indicating that achievement of the temperature objectives of the Paris Agreement can only be effectuated through both aggressive decarbonization of the global economy and large-scale deployment of so-called carbon dioxide removal (CDR) approaches. While much of the early focus of CDR research was on terrestrial options, such as afforestation, direct air capture, and bioenergy with carbon capture and storage, more recently, many in the scientific and policy community have increasingly focused on potential ocean-based approaches, including ocean fertilization, ocean alkalinity enhancement, macroalgae harvesting, and ocean upwelling and downwelling. However, while research on these approaches has proceeded, the regulatory process to oversee such research remains amorphous. This article seeks to establish the contours for regulation of ocean-based CDR under the United Nations Convention on the Law of the Sea (UNCLOS). It discusses the potential risks and benefits of the most prominently discussed ocean CDR options and suggests how UNCLOS□s provisions on marine scientific research might be applied to ensure effective global governance of such research.

Egli, F., Knecht, N., Sigurdsson, S., Sewerin, S. (2023)
The politics of phasing out fossil fuels: party positions and voter reactions in Norway
Climate Policy
Link

To mitigate climate change, fossil fuels need to be phased out, but political parties may fear a voter backlash when implementing the required policies. We investigate whether such backlash occurred in Norway, a multi-party democracy reliant on a large petroleum sector. Specifically, we analyse whether the loss of jobs in the petroleum industry due to the 2014 crash of the international oil price has influenced political support for the petroleum sector. Using data from party manifestos, we find that party positions on the petroleum sector remained constant over time even during an industry downturn. Pro-petroleum parties capitalized on the oil price shock by increasing their vote shares. However, the reaction remained local and confined to parties whose voters are not overwhelmingly concerned with other

subjects, such as immigration. The voter gains enjoyed by pro-petroleum parties did not arise at the expense of pro-fossil fuel phaseout parties; instead, it was parties with an ambiguous position on the issue that incurred losses. Hence, multi-party politics of fossil fuel phaseouts are complex and taking a pro-phaseout position may not be politically costly.

Finstad, J. and A. Dahl Andersen (2023)
Multi-sector technology diffusion in urgent net-zero transitions: Niche splintering in carbon capture technology
Technological Forecasting and Social Change 194
Link

Transitioning to net-zero greenhouse gas emissions by mid-century requires rapid diffusion of low-carbon technologies across numerous sectors. Multi-purpose technologies are expected to solve sustainability problems in several sectors. Given the mid-century deadline, diffusion of such technologies must happen in multiple sectors simultaneously instead of sequentially. Since different sectors have their own set of preferences, technical needs, and institutional characteristics, simultaneous interactions with several sectors increases the complexity of diffusion processes. We contribute a new perspective on the diffusion of multi-purpose technologies in the context of urgent grand challenges. Drawing on insights from the 'niche anchoring' and 'technology speciation' literatures, we present a framework that puts actors and their sense-making at the centre of the diffusion process. The framework is applied to the case of carbon capture in Norway, which has recently been applied in multiple new user sectors simultaneously. We find that diversity in needs, expectations, and technological solutions leads to increased uncertainty and 'niche splintering', which hampers rapid anchoring and diffusion of carbon capture. In addition to our framework for multi-sector technology diffusion, the paper also contributes by highlighting challenges for diffusing carbon capture to multiple sectors at the rate seen in many net-zero strategies and mitigation scenarios.

Fischer-Kowalski, M., Krausmann, F., Pichler, P. P., Schaeffer, R.K., Stadler, S. (2023)
Great transformations: Social revolutions erupted during energy transitions around the world, 1500–2013
Energy Research & Social Science
Link

Over the past 500 years, the transition to fossil fuels has been accompanied by sociopolitical upheaval, revolution, and counterrevolution in countries around the world. Previous research found that social revolutions occurred during energy transitions in a limited sample of 38 countries. This research expanded the investigation to examine the relationship between shifts in the energy base of societies and transformative sociopolitical change in 66 countries since 1500, and to address new questions about these transitions. We found that two-thirds of all 52 identified revolutions occurred during the initial phase of the transition to fossil energy use (between 0.7 and 7.2 GJ/cap/year), a "critical energy transition phase" that lasted 42 years on average. This "critical energy transition phase" can be understood as an arena where social and economic adversaries met to contest past and future relations, a contest that resulted in turmoil, violence, and transformative social change. We also assess the impact of revolutions and counterrevolutions on the speed of energy transitions, finding that revolutions might accelerate transitions and repressions might slow them down. We also find that, in our sample, colonial rule slowed the pace of energy transitions for colonized subjects. These findings are significant because similar sociopolitical developments may be associated with the current energy transition in response to catastrophic climate change, a product of the previous transition.

Gregory, J. and Geels, F.W. (2024)
Unfolding low-carbon reorientation in a declining industry: A contextual analysis of changing company strategies in UK oil refining (1990-2023)
Energy Research & Social Science, 107
Link

The oil refining decarbonisation literature makes important analyses of technical and economic dimensions of low-carbon transition pathways but pays less attention to the contexts and strategic considerations that shape the practical implementation of low-carbon technologies by refineries, including investment decisions. To address this understudied issue, this paper makes a longitudinal analysis of changing external pressures and company response strategies in the UK's refining industry from 1990, when climate change rose on socio-political agendas, to 2023. We apply the Triple Embeddedness Framework, a five-phase model of industry reorientation, to analyse the unfolding low-carbon transition process over five successive periods (1990–2000, 2000–2008, 2008–2015, 2015–2019, 2019–2023). Using information from policy documents, reports by industry associations, company annual reports (including financial reporting), academic and practitioner publications, and 24 interviews with academics and industry experts, our analysis finds that the UK's refining industry moved from inaction and incremental change in the first period, to some exploration of alternatives in the second period, and back to incremental change in the third period (after the 2008 financial crisis). In the fourth period, refineries more seriously started to explore low-carbon technologies,

which they began to deploy in the fifth period, notably carbon capture and storage (CCS) and low-carbon hydrogen. The paper analyses and explains this non-linear reorientation trajectory and elucidates why refineries have embarked on significant low-carbon reorientation despite long-term decline in the wider industry.

Hartl, R., Harms, P. & Egermann, M . (2023)
Towards transformation-oriented planning: what can sustainable urban mobility planning (SUMP) learn from transition management (TM)?
Transport Reviews
Link

The European Commission's concept of Sustainable Urban Mobility Planning (SUMP) aims to prepare transport planners for the challenge of fundamental transformations to achieve climate-neutral and sustainable cities. While the concept has been widely adopted by European cities over the last decade, it can be asked whether SUMP is able to trigger the required transformative change in mobility systems. This paper critically reflects on the SUMP concept by systematically comparing it with the theoretical governance framework of Transition Management (TM), which is explicitly designed to foster transformative change. Based on a literature review, we examine similarities and differences between these approaches regarding the planning dimensions of context, content and process. Drawing on this comparison, the paper demonstrates how SUMP could learn from TM in practice and research in four main ways: (i) utilising transition theory to better address transition features; (ii) using collaborative formats from TM while taking account of legitimacy concerns; (iii) incorporating backcasting approaches; and (iv) explicitly integrating experiments into the process cycle. The paper exemplifies how insights from transition research can stimulate the further development of procedures, methods and tools towards transformation-oriented planning.

Hess, D.J. (2023)
Conflict and uneven development in the multidecade distributed solar energy transition in the U.S.
Proceedings of the National Academy of Sciences. 120 (47)
Link

A longitudinal analysis of small-scale solar energy generation in the United States is used to demonstrate how transition studies can explain nonlinearity in multidecade changes of consumption-production systems. Nonlinearity involves uneven development of sustainability innovations with episodes of rapid growth but also periods of slow growth, stalling, or even collapse. Factors that affect the increasing feasibility and attractiveness of small-scale solar include technological improvements, declining costs, and changes in global energy markets. However, a more complete explanation of nonlinearity highlights the importance of a type of systems analysis that also includes strategic action and broader societal and policy changes. Specifically, efforts by the utilities constrained the growth of small-scale solar by weakening policy support because of the perceived threat, but the solar industry and advocates responded with countervailing action in a changing context. As the transition developed, strategic action (including goals, targets, tactics, and coalition partners) changed and became more conflictual. However, by the beginning of the 2020 decade, the development of microgrids, digital technologies, storage, and virtual power plants in combination with net-zero energy policies provided indications of potential for a reconfiguration of the relationship that could be less polarized and conflicted.

Hess, D.J. and Jordan, M. (2023)
Demunicipalization as political process: strategic action and the sale of municipal electricity utilities in the United States.
Utilities Policy 82
Link

Cases of the demunicipalization of electric utilities in the United States are analyzed to identify political processes from a strategic action perspective (goals and frames, actors, targets for decisions, and tactics). Differences between proponents and opponents are identified. For example, supporter coalitions center on mayors and focus on economic frames. Some cases have substantial conflicts over the proposed change and the decision-making process, and seven main types of tactics are identified for both opponents and proponents. Conditions that could affect the outcome are analyzed, and implications are discussed for additional comparative research and city government policy changes.

Hess, D. J. (2023)
Pipeline Conflicts, Coalitions, and Strategic Action: A Review of the Literature.
The Extractive Industries and Society. 16
Link

Research on the politics of sustainability transitions has included work on coalitions and social movements, and other research in the field has drawn attention to the sunsetting of selected industries and technologies. An issue where these two interests come together involves coalitions that oppose fossil-fuel infrastructure such as pipelines. A systematic review was conducted of the peer-reviewed, social science literature on the strategic action of coalitions and social movements involved in oil-

and-gas pipeline conflicts. The first part of the review covers four main aspects of strategy for both supporters and opponents of pipelines: goals of coalitions, targets of action, coalition composition and fragmentation, and institutional and extra-institutional tactics. Studies of the use of framing across the
different areas of strategic action are also included. The second part reviews the emerging literature on the relationship between causal conditions and outcomes. Demographic, sociotechnical, and institutional variables are discussed in relationship to the level and type of mobilization, and combinations of institutional, sociotechnical, and strategic action variables are discussed for project outcomes. For researchers interested in coalitions, social movements, and conflicts over pipelines or extractive industries in general, each section includes a discussion of emerging and potential future research topics.

Hjortsø, C.N.P.; Epprecht, B. & Hansen, T. (2023)
A Framework for Assessing the Sustainable Transition Potential of Municipal Climate Change Mitigation Plans
Journal of Environmental Planning and Management
Link

Local climate change mitigation plans can be essential in enabling sustainability transitions at the municipality level. However, existing frameworks for assessing the quality of climate plans inadequately address their potential to foster sustainability transitions. We develop an assessment framework consisting of indicators and associated questions by integrating elements of the transition management framework with essential quality dimensions of climate plans and planning processes identified through a literature review. We illustrate and validate the assessment framework by applying it to the climate plans of three medium-sized cities in Switzerland. Our findings demonstrate that the local climate change mitigation plans performed well regarding the tactical and operational indicators but were less optimal concerning strategic and reflexive indicators. Nevertheless, the transition management framework provided a useful framework contributing to a comprehensive and systemic assessment highlighting the importance of stakeholder involvement, inter-sectoral coordination, and monitoring and evaluation as a means for social learning.

Klitkou, A., Ingeborgrud, L. (2023)
Towards a broader use of wooden construction materials: intermediary organisations in the sustainability transition of the construction sector
WCTC 2023, 4535-4544.
Link

This is a study on sustainability transitions in the Norwegian construction sector, with a focus on increasing the use of wood. The construction sector is very conservative and path dependent. Existing path-dependencies and lock-mechanisms are interrelated and reinforce each other, contributing to an unsustainable development within the sector and preventing a sustainable transformation. These interacting lock-ins create social problems, such as the lack of affordable city dwellings, a high cost for energy efficiency and renovation measures, and less flexibility for adapting dwelling spaces to new needs. A crucial question is therefore how to change path-dependencies and overcome these by developing new pathways – what types of actors and efforts are required for such a change? We pay attention to the different types of intermediary organisations in the transition to a more sustainable construction sector in Norway. We investigate how such intermediaries contribute to more sustainable pathways in the wood-based construction sector.

Klitkou, A., Pluciński, P., Baranowski, M., and Otto, M.I. (2023)
Calling energy inequalities into the transition agenda
Energy Research & Social Science
Link

The presented perspective paper delivers insights into the complex problem of energy inequalities in the context of the Russian invasion of Ukraine. The war resulted in a loss of stability in Europe's energy system and increased social issues and difficulties in meeting energy transition targets. The perspective presented calls for a broader framework for analyzing energy inequalities. It delivers an attempt at such a framework through which three specific cases of energy transitions—Norway, Germany, and Poland—are investigated. These countries represent three energy regimes, different socioeconomic and energy systems, and face other challenges. Despite these differences, the outbreak of the war shows the need for a common policy agenda to avoid negative repercussions, such as social cohesion crises. Therefore, this paper argues that European solidarity, energy justice, and coherent policies are prerequisites if the goals of climate neutrality, energy stability, and a just energy system are to be achieved in each country and Europe.

Lane, R., Kronsell, A., Reynolds, D., Raven, R.P.J.M., Mannich, C. (2023)
Responsibility and innovation for low waste circular economy transitions: what roles for households? Critical Policy Studies
Link

The need for waste policy to embrace CE principles

through measures to avoid waste generation and improve recycling rates can be understood within the broader context of sustainability transitions. We analyze three Australian waste policies to understand how households are framed as framing policy actors. Using a governance rationalities framework inspired by Hajer (2005) and Dryzek's (2013) work on environmental governance, we identified four discursive structures, i.e. four different problem frames with suggested solutions, measures and responsibilities. These problem frames reveal an expanding role for government and industry in waste management, alongside a more passive role for households. While anticipating that households will undertake more sorting and will reduce the amount of waste they generate, the policies lack a coherent conceptualization of the role of households as actors in circular economy transitions in Australia. Our analysis highlights and helps to understand the discrepancy between high-level CE and zero-waste policy ambitions and their implementation in practice. We conclude with suggestions on how waste policy could benefit from deliberative approaches that engage with agency for social innovation and transformation in norms and practices at the household scale.

Markard, J., Wells, P., Yap, X.-S., van Lente, H. (2023)
Unsustainabilities: A study on SUVs and Space Tourism and a research agenda for transition studie
Energy Research & Social Science
Link

While transitions research has pursued a successful research agenda around how to improve established socio-technical systems in terms of sustainability, it has missed out, among other things, on innovations that make, or keep, societies less sustainable. In our paper, we explore two innovations in different stages of development: Sports utility vehicles (SUVs) and space tourism. SUVs entrench an existing socio-technical system and reproduce problematic practices, while space tourism might create a whole new, unsustainable system. We make three contributions. First, we introduce 'unsustainabilities' as a new term for technologies, institutions and practices that make, or keep, societies less sustainable. With this we direct attention to developments and structures that undermine ongoing sustainability transitions. Second, we distinguish unsustainabilities associated with socio-technical configurations, socio-technical systems, and meta-structures (spanning multiple systems). Third, we argue that precautionary policies will be needed in early stages of innovation, when there is still room to avoid unsustainable transitions.

McKane, R. G., Hess, D. 2023)
The impact of ridesourcing on equity and sustainability in North American cities: A systematic review of the literature.
Cities 133 (2023): 104122.
Link

Research on ridesourcing has grown exponentially in recent years. This study details the results of a systematic review of 161 publications on ridesourcing that explore environmental sustainability and equity in North American cities. We identify five main areas of research. First, ridesourcing is associated with two modal shifts: a decline of the taxi industry and a more complicated association with public transit ridership. Second, several studies have documented workers' rights and the challenges of contingent labor. Third, demographic studies show associations between ridesouring and affluent riders, and spatial analyses indicate that ridesourcing may exacerbate existing patterns of inequity in cities. Fourth, ridesourcing has dubious claims to improve environmental sustainability: it has only a small effect on vehicle ownership, but it increases emissions associated with deadheading, and pooled services do not reduce vehicle miles traveled. Fifth, ridesourcing companies also tend to oppose regulatory responses and sharing data with potential regulators. The review concludes with suggestions on areas for future research.

Meleen, T., Schwanen, T. (2023)
Organizations as users in sustainability transitions: Embedding Vehicle-to-Grid technology in the United Kingdom
Energy Research & Social Science
Link

This study explores organizations as users of innovations in sustainability transitions. Existing literature concentrates on organizations that are producers in energy-intensive sectors. And yet, transitions also greatly affect organizations as users of innovations in everyday contexts. We develop a lens on organizational embedding of technological innovations during transitions using social practice theory and neoinstitutional theory. In this view, innovation embedding involves dynamics between innovation, organization and wider context. Empirically, the study considers how Vehicle-to-Grid Electric Vehicles (V2G-EVs) can be embedded in the fleet management practices of organizations. V2G-EVs deliver electricity back to the grid, and could provide an important contribution to a future electricity grid based on intermittent renewables. The study draws on interviews with fleet sector practitioners, conducted as part of a trial project to explore the potential role and uptake of V2G-EVs in organizational fleets in the United Kingdom. The findings highlight how, in innovation embedding, developments in everyday practices and organizational environments are inherently linked. During embedding,

organizations follow different pathways. A sustainability pathway, a market-sustainability pathway and a professional-sustainability pathway are identified, and are shown to enhance and hinder embedding with and through their particular dynamics. The paper demonstrates the added value of jointly considering everyday organizational practices and wider system-level developments when studying innovation embedding during transitions.

Moilanen, F., Lukkarinen, J. P., & Matschoss, K. (2023)
Too big to succeed? Institutional inertia in low-carbon district heating experiment.
Journal of Cleaner Production
Link

The energy transitions are in an acceleration phase, where less carbon intensive technologies emerge, but their applicability is uncertain creating a need for real-life experimentation. Cities have become a focal context, where novel constellations of technologies and practices are introduced to reconfigure patterns of production and consumption. One area of urban energy governance gaining increasing attention especially in a Northern context is the low carbon transition in district heating systems that provide the majority of heating in the residential sector and has been primarily built around combustion technologies relying on fossil energy reserves. This article analyses a bidirectional low heat experiment in district heat in Finland by examining what are the dimensions of institutional inertia and how it impacts the reconfiguration of an urban energy system. Institutional inertia emerges from the technical innovation itself, land-use planning practices, the absence of formal regulations and via organisational inertia in the implementation of the experiment. We find that visions about the innovation can become constraints of the experiment, which limit learning and reshaping of innovation, thus preventing radical transformation of the district heating system and watering down the initial target of the experiment. We contribute to the conceptualisation of institutional inertia within the energy transition.

Moilanen, F., & Toikka, A (2023).
Measuring employees' perceptions of sustainability transitions at work: A novel survey with findings from Finland
Discover Sustainability, 4(1), 45
Link

Sustainability transitions have effects on working life, but there are no standardized measurement instruments for understanding employees' views on their effects. This article presents a novel survey targeted at employees to gather information on employees' perceptions of sustainability in their work. A survey was designed to gather information on all workers, regardless of the economic sector in which they work in, to broadly capture transition-relevant changes in working life. These include measuring the actions of both work organizations and employees to work in a more sustainable way. This paper presents the survey with findings from a nationally representative data collection taken in Finland. The topics include questions from work organizations' sustainability actions to employees' own sustainable actions. The results show the differences in organizations and individuals' actions in working life. Large work organizations are most active, and there are differences between sectors. Individuals' sustainable actions are more common among women and climate worried employees. The method provides evidence of employees' views and actions in sustainability transitions and improves our holistic understanding of transitions in all sectors of the economy. In addition, the results provoke new questions for both policy and research on how to acknowledge differences between social groups in transitions and support them in delivering a just sustainability transition.

Nobre, F.S.. (2022)
Cultured meat and the sustainable development goals
Trends in Food Science & Technology, 124, 140-153
Link

Background: There is a need and urgency to strengthen the analysis of the interactions between cultured meat and the Sustainable Development Goals (SDGs) to shed new light on the map of synergies and trade-offs within and between the multiple goals in the context of regional differences. Accordingly, this article seeks to answer the question: what are the interactions between cultured meat and the SDGs?
Scope and approach: The methodology comprises an integrative literature review, content analysis of the 17 SDGs and their 169 targets, and application of a seven-point scale framework that assists decision-makers in mapping the interactions' nature and strengths. The analysis advances novel propositions about the impact of cultured meat on the SDGs and well-being.
Key findings and conclusions: Cultured meat systems will effectively unleash a virtuous cycle of SDGs and well-being within and across the North-South when confronting and juxtaposing environmental, health, social, economic, and law-oriented goals. They will be more successful when engaging in institutional change to resolve tensions between the short-term (socioeconomic) objectives and the long-term (societal and planetary) outcomes needed to fuel systemic resilience and sustainable development. Culture meat comprises technological capabilities but lacks sustainable businesses to tackle multiple SDGs' grand challenges and systemically address their relationships.

This article informs policymakers with significant perspectives to foster a virtuous cycle and outlines strategic capabilities needed to responsibly deliver long-term sustainable values in the scope of cultured meat.

Noll, B., Steffen, B., & Schmidt, T. S. (2023)
The effects of local interventions on global technological change through spillovers: A modeling framework and application to the road-freight sector
Proceedings of the National Academy of Sciences, 120(42)
Link

To address global sustainability challenges, (public) policy interventions are needed to induce or accelerate technological change. While most policy interventions occur on the local level, their innovation effects can spill over to other jurisdictions, potentially having global impact. These spillovers can increase or reduce the incentive for interventions. Lacking to date are computational models that capture these spillover dynamics. Here, we devise a conceptual and methodological approach to quantify ex ante the effects of local demand-side interventions on global competition between incumbent and novel technologies. We introduce two factors that moderate global spillovers—relative size of selection environments and relative innovation potential of competing technologies. Our approach incorporates both factors in a techno-economic discrete choice model that evaluates technology competition over time through endogenized technological learning. We apply this modeling framework to the case of road freight. Different demand-pull interventions and shocks are modeled to assess spillover effects. In the case of road freight, electric vehicles experience growth in most application segments but can still be accelerated substantially through public policy intervention—spillovers occur if strong public interventions are introduced in large regions or in multiple combined regions under club policy interventions. These findings are discussed in the context of club policy interventions and a modeled geopolitical shock in China. A full sensitivity analysis of model input parameters and intervention or shock dynamics reveals high model robustness. Finally, we discuss the implications of the road-freight case study as it might inform the progress of other niche technologies in transitioning sectors.

Nykamp, H., et al. (2023)
Low-carbon electrification as a multi-system transition: a socio-technical analysis of Norwegian maritime transport, construction, and chemical sectors
Environmental Research Letters
Link

Electrification of end-use sectors is widely seen as a central decarbonisation strategy. However, the process of electrification is rarely discussed beyond electric end-use technologies such as electric vehicles or heat pumps. While electrification of end-use sectors is about new types of consumption, it also requires new technological interfaces with the electricity system. The paper provides a first conceptualisation of electrification as a multi-system interaction process, involving changes in both end-use sectors and in the electricity system. Electrification is thought to involve two core processes: (1) transitions in systems where electric niches challenge fossil energy regimes, and (2) reconfiguring patterns of multi-system interactions across production, distribution, and use of electricity. Through a case study design, we compare three sectoral cases that differ substantially in degrees and speed of electrification: ferries, construction sites and ammonia production. We explain these differences by analysing how the actors, technologies and institutions in each system shaped both the diffusion of electric end-use technologies and the interactions with the electricity distribution system. We find that the speed and ease of electrification depend on varying mixes of technological, actor, and institutional change processes. The severity and pervasiveness of grid connection challenges are arguably the most important finding. Grid connection challenges were significant in all three cases and continue to hamper electrification in two cases. Based on those findings, we conclude that grid capacity is increasingly problematic. Electricity system actors are overwhelmed with new demand, resulting in long lead times. And, they are further constrained by institutions that were designed to optimise for the efficient operation of existing assets rather than to innovate and transform electricity grids.

Ragosa, G., Watson, J., Grubb, M. (2024)
The political economy of electricity system resource adequacy and renewable energy integration: A comparative study of Britain, Italy and California
Energy Research & Social Science
Link

The need to integrate growing shares of variable renewable resources, like solar and wind, into the power system has initiated a new wave of resource adequacy policy reforms. Securing adequate resources on the system, particularly flexible and peak capacity, is indeed crucial for ensuring long-term grid reliability amid increased supply variability. While extensively explored from a techno-economic perspective, the political economy drivers and implications of these changes are frequently overlooked. Yet, power system evolution is not merely shaped by logics of techno-economic optimisation, it is also inherently political, rooted in specific liberalisation histories, political and institutional settings.

This paper contributes to the literature by conducting a comparative political economy analysis of recent resource adequacy reforms in Britain, Italy, and California. It explores how differences in the technical and political economy contexts of these jurisdictions affected their strategies for securing resource adequacy capacity and investment between 2013 and 2021. Conclusions draw on the analysis of over 134 policy documents and 53 in-depth interviews with power system stakeholders.
All jurisdictions introduced significant changes in resource adequacy policy, including explicit out-of-market mechanisms to remunerate resource adequacy capacity. The energy transition is thus reconfiguring state-market relations in the power sector, even in traditionally liberal countries. However, variation exists in the scope of reform, mechanism designs, policy trade-offs, and technological outcomes. This stems from context-specific political priorities, state-market relations, national and multi-level governance arrangements, market structures and stakeholder interests. This has important implications for power sector governance, as discussed in this paper.

Schlaile, M.P., Herwix, A., Bogner, K., & Atkins, P.W.B. (2024)
An evolutionary perspective on corporate sustainability transitions: A prosocial approach
Handbook of Climate Change Leadership in Organisations
Link

Companies can actively contribute to large-scale systemic changes towards more sustainable modes of production and consumption by engaging with their own corporate sustainability transitions. This, however, requires new forms of organisational leadership. In this chapter, we make a three-fold contribution to the question of how this might be realised. First, we apply the multi-level perspective on sustainability transitions to the corporate level and conceptualise how the relational orientation towards reference systems plays a key role when working towards sustainability at five different but interrelated levels. Second, we introduce a prosocial leadership approach that builds on and synthesises work from contextual behavioural science, evolutionary science and cooperation science (especially the work by Elinor Ostrom) into a flexible approach for facilitating cooperation across scales. Third, we highlight how such an approach may help to address some of the challenges arising in corporate sustainability transitions and present case vignettes that show how these approaches are reflected in practice.

Schneider, N., Rinscheid, A. (2024)
The (de-)construction of technology legitimacy: Contending storylines surrounding wind energy in Austria and Switzerland
Technological Forecasting and Social Change, Volume 198
Link

Why do some countries assign a major role to wind energy in decarbonizing their electricity systems, while others are much less committed to this technology? We argue that processes of (de-)legitimation, driven by discourse coalitions who strategically employ certain storylines in public debates, provide part of the answer. To illustrate our approach, we comparatively investigate public discourses surrounding wind energy in Austria and Switzerland, two countries that differ strongly in wind energy deployment. By combining a qualitative content analysis and a discourse network analysis of 808 newspaper articles published 2010–2020, we identify four distinct sets of storylines used to either delegitimize or legitimize the technology. Our study indicates that low deployment rates in Switzerland can be related to the prominence of delegitimizing storylines in the public discourse, which result in a rather low socio-political acceptance of wind energy. In Austria, by contrast, there is more consistent support for wind energy by discourse coalitions using a broad set of legitimizing storylines. By bridging the related but separate literatures of technology legitimacy and social acceptance, our study contributes to a better understanding of socio-political conflict and divergence in low-carbon technological pathways.

Serra-Coch G., Wyss R., Binder C.R. (2023)
Geographic network effects to engage people in the energy transition: The case of PV in Switzerland
Heliyon, Volume 9, Issue 7, 2023
Link

With the energy transition and CO_2 emissions reduction as a priority on the international policy agenda, governments worldwide are trying to engage the population in investing in renewable energies. In this paper, we study the role of information access and peer effects in the photovoltaics sector in the case of the Swiss canton of Vaud. Based on a representative survey of the population of two districts, Nyon and Jura-Nord Vaudois, we show that being a homeowner and knowing someone who has installed PV cells in your social group significantly increase the probability of putting up PV cells. A direct neighbourhood effect was found, meaning that if a neighbour has installed a PV cell, the probability of the inhabitants in the two case study regions installing one themselves increases significantly. Our results show that spatial proximity is an important factor in the

transmission of information between peers. Besides pure geographical distance, additional aspects such as administrative boundaries, shared language or degree of urbanisation play a role in the way the information network is presented. These insights indicate that professional experts and neighbours are important points of reference in the decision to invest in PV, and that regional networks are key for the active spreading of information on renewable technologies. Thus, we recommend using these connections to actively promote PV.

Sewerin, S., Fesenfeld, L., Schmidt, T. (2023)
The role of policy design in policy continuation and ratcheting-up of policy ambition
Policy and Society
Link

Effectively addressing grand societal challenges like climate change and environmental degradation requires policy intervention that is not only continuous but also increasing in ambition over time. However, negative feedback could lead to policies being weakened or even discontinued after a while. An important but unresolved policy question, therefore, is whether policies can be deliberately designed to survive (i.e., to "stick") and, ideally, be replaced with more ambitious ones over time (i.e., to "ratchet up"). We bridge policy feedback and policy design scholarship to derive hypotheses on the effects of two policy design features—"intensity" (i.e., a measure of policies' overall design) and "specificity" (i.e., a measure of policies' targeted focus)—on policy (dis-)continuation and ratcheting-up (-down) of ambition. Focusing on policy design, we contribute to the theorization and empirical understanding of endogenous factors behind policy change. We test our hypotheses with an event history dataset of 627 low-carbon energy policies in eight developed countries. Conducting a multilevel survival analysis, we find statistically significant evidence of more intense policies being replaced with less intense ones, i.e., more intense policies lead to ratcheting-down of ambition. We also find that more specific policies are more likely to be replaced with more intense policies, i.e., more specific policies lead to ratcheting-up of ambition. Based on these novel insights, we discuss how policy design can navigate these complex dynamics. In this sense, our approach also contributes to the discussion about the "forward-looking" potential of the policy sciences.

Sewerin, S., Cashore, B., & Howlett, M. (2022)
New pathways to paradigm change in public policy: combining insights from policy design, mix and feedback.
Policy & Politics, 50(3), 442-459.
Link

To tackle the manifold crises of our times, most notably the environmental crises we face, ambitious policy change is urgently needed to achieve the necessary radical transformation of our industrialised societies. Yet, while there is increasing demand for public policy scholarship to provide guidance on how policy should be designed to achieve such change, existing scholarship struggles to provide 'forward-looking' recommendations. Within this context, our article takes a step back to reconsider the underlying logics of policy change. We argue that focusing on policy, its effect and the subsequent politics it triggers is best achieved by combining insights from the policy design, policy mix and policy feedback literatures. This combination allows us to re-evaluate which potential pathways towards policy change exist. The main contribution of our article is its proposition of two distinct pathways towards policy change, building on a systematic understanding of policy design elements. These pathways place greater emphasis on policy change happening (1) 'bottom-up' through initial low-level design changes rather than 'top-down' through high-level ideational change, as argued in earlier scholarship, (2) through the interplay of several policies in a complex mix. In this way, these pathways provide a useful framework for systematically analysing how policy should be designed to achieve ambitious policy change and thus enable transformative societal change.

Sivonen, M. H.& Kivimaa, P. (2023)
Politics in the energy-security nexus: an epistemic governance approach to the zero-carbon energy transition in Finland, Estonia, and Norway
Environmental Sociology
Link

To reduce the energy sector's CO2 emissions, sustainability transitions are essential but may have unexpected national security consequences. We investigate policymaking around energy transitions and national security, combining sociology with sustainability transitions thinking to analyse 73 policy documents issued between 2006 and 2023 in Estonia, Finland, and Norway and investigate how zero-carbon energy and security issues have co-evolved with, strengthened, or undermined one another by analysing the rhetoric in official national strategy documents. With an epistemic governance framework, we identify the discourses that contextualise, justify, and explain policymaking in the energy–security nexus. We find that sustainable energy transitions are strengthened by connections to national security when alternative energy niches have matured but undermined for the same reason when fossil fuels are viewed as more robust sources of security. We detect policy intervention points aiming to indicate how transitions are enabled. Estonia and Finland evince strategic directions to destabilise the regime while supporting niches, whereas Norway focuses on

continued oil and gas production. Whereas all are in principle in favour of sustainability transitions, they define transitions differently: Estonia values national sovereignty, Finland preparedness and the economy, and Norway sustainable development and economic security tied to hydrocarbons.

Stephens, J. C. and M. Sokol (2023)
Financial innovation for climate justice: central banks and transformative 'creative disruption'
Climate and Development: 1-12.
Link

Global financial architectures, including central banks and their monetary policies, are critical to leveraging transformative change for climate justice. Yet, currently central banks are exacerbating rather than mitigating the climate crisis and climate injustices. By following a neoliberal policy paradigm and narrowly interpreted mandates for price stability and financial stability, central banks are focusing on stabilizing a system that is inherently unstable. This accelerates climate chaos around the world and is worsening future financial instability. Recognizing both the potential of central banks to advance climate justice and the inattention of the role of central banks in the climate crisis, this paper contributes to the emerging field of financial innovation for climate justice. First, we review what central banks are currently doing to advance and hinder climate justice. Then we explore monetary policy tools that central banks could deploy for transformative climate justice. We then make the case for 'creative disruption' in monetary policy which requires expanding the narrow mandate of central banks and new kinds of global coordination. This call for intentional creative disruption changes policy assumptions regarding financial stability and climate politics and reconceptualizes how to achieve transformative systemic change to move toward a more equitable, just, healthy, sustainable future.

Suzuki, M., Jewell, J., Cherp, A. (2023)
Have climate policies accelerated energy transitions? Historical evolution of electricity mix in the G7 and the EU compared to net-zero targets
Energy Research & Social Science
Link

Climate policies are often assumed to have significant impacts on the nature and speed of energy transitions. To investigate this hypothesis, we develop an approach to categorise, trace, and compare energy transitions across countries and time periods. We apply this approach to analyse electricity transitions in the G7 and the EU between 1960 and 2022, specifically examining whether and how climate policies altered the transitions beyond historical trends. Additionally, we conduct a feasibility analysis of the required transition in these countries by 2035 to keep the global temperature increase below 1.5°C. We find that climate policies have so far had limited impacts: while they may have influenced the choice of deployed technologies and the type of transitions, they have not accelerated the growth of low-carbon technologies or hastened the decline of fossil fuels. Instead, electricity transitions in the G7 and the EU have strongly correlated with the changes in electricity demand throughout the last six decades. In contrast, meeting the 1.5°C target requires unprecedented supply-centred transitions by 2035 where all G7 countries and the EU must expand low-carbon electricity five times faster and reduce fossil fuels two times faster on average compared to the rates in 2015–2020. This highlights the insufficiency of incremental changes and the need for a radically stronger effort to meet the climate target.

Tadesse, M. E. & Obeng, J. K. (2023)
An ecosocial work model for social work education in Africa
African Journal of Social Work. 13(2): 57-69.
Link

There is a growing call for social work to contribute to the international movement towards sustainability to address the interconnected multiple ecological, social, and economic
crises created by the global capitalist hegemony. This call is important for African social work given vulnerable people in Africa are primary victims of unsustainability. In this paper, we propose a model of an ecosocial work course for African undergraduate social work education. This proposal is based on our earlier review of the Bachelor of Social Work curricula of 12 universities in four African countries to determine the extent to which ecosocial content were addressed. Our review indicated the absence of an ecosocial approach in the curricula. To fill this gap, we then designed a model of an ecosocial work course based on our international experience in social work, our ongoing studies on sustainability, and relevant literature regarding Africa. We hope this model will be adopted by social work programmes in different African universities and used to shape social work students who will deal with the interconnected multiple crises in their practice. We also hope that this proposal will help African social work play a crucial role in the sustainable development of the continent.

Tadesse, M.E., & Erdem, E.. (2023)
Post-Capitalist Imaginaries of Finance: A Diverse Economies Perspective on Equubs Within the Ethiopian Diaspora in Germany.
Rethinking Marxism. 35(2)
Link

The essay presents an exploratory study of the equub, a

form of community-based finance that is well-established in the Ethiopian diaspora in Germany. Equubs render visible the financial expertise developed in the majority world and its circulation in diasporic space. As such, equubs exemplify the power of People of African Descent in Germany to organize against financial exclusion. The essay draws on the theory of diverse economies and its method of reading for difference to analyze the characteristics of the equub as a nonmarket financial institution, showing its praxis of building community economies and its linkages to the diverse economy at large. Processes of decommo-dification, collective governance, and ethical decision making around financial needs politicize finance, making the equub an interesting case of a postcapitalist- finance imaginary.

Tadesse, M. E., & Elsen, S. (2023)
The Social Solidarity Economy and the Hull-House
Tradition of Social Work: Keys for Unlocking the Potential of Social Work for Sustainable Social Development.
Social Sciences. 12(3): 189.
Link

Social work (SW) is criticized for its (i) inconsistent ontology, epistemology, and methodology and (ii) co-dependency with the capitalist hegemony, which is the main cause of multiple crises that primarily affect the most vulnerable. Addressing these issues is of paramount importance if SW is to achieve its core mandate of promoting social change, social development, social cohesion, and the empowerment and liberation of people. The purpose of this paper is to assert that SW can address these issues by learning from the (i) Settlement House Movement (SHM), especially the Hull-House tradition of SW; and (ii) current endeavors of the Social Solidarity Economy (SSE). We were led to this assertion because we noticed in our research, in the area of SSE of vulnerable groups and SW, remarkable similarities and potentials of these two approaches to help transform SW. Our argument is based on data and insight gained from (i) a narrative literature review on the history of SW and the nature of SSE; and (ii) a systematic scoping review of the SSE of People of African Descent (PAD) in Europe. In this paper, we elaborate on our key arguments and provide examples and recommendations.

Van der Loos, A., Frenken, K., Hekkert, M., & Negro, S. O. (2023)
On the resilience of innovation systems
Industry and Innovation
Link

Mission-oriented innovation policies address urgent societal challenges, often through rapid technological upscaling. However, upscaling may endanger the resilience of an innovation system by limiting variety. A resilient innovation system is ambitious in scaling up while intelligently fostering variety. To assess resilience, a country's technology portfolio needs to be contextualised against global trends. We introduce contextualised variety to uncover threats, windows of opportunity and poorly allocated resources and evaluate the maturing Dutch offshore renewable energy innovation system based on 236 R&D projects 12,000 industry contracts and 34 interviews. Our results indicate that the Netherlands invests in variety for its installation sector, bolstering resilience, while it neglects its foundations sector, indicating a threat. The Netherlands further supports a non-existent traditional wind turbine sector, suggesting poor resource allocation. However, it backs disruptive wind turbines, a window of opportunity contingent on upon concerted innovation policy. This framework demonstrates how to evaluate the resilience of any innovation system.

Yuana, S.L., Sengers, F., Boon, W., Hajer, M., Raven, R.P.J.M., Ghosh, B. (2023)
Pluralizing urban future: a multicriteria mapping analysis of online taxies in Indonesia
Futures. 154, 103260
Link

The exploration of urban future storylines of transformative change is subject to socio-political processes rather than a mere, objective envisioning of the desirable city. Approaches in urban imagination and planning processes should thus consider plural perspectives across a range of actors and stakeholders beyond the usual suspects of experts and professionals. This paper mobilizes the case of the emergence of online taxis in Indonesia to embrace a more inclusive approach to the assessment of urban mobility futures by employing multi-criteria mapping (MCM) analysis and combining it with an open dialog on future storylines. We answer the question of what insights can be derived from diversifying future storylines in the online taxi industry in Indonesia? From applying a more inclusive approach in constructing future imaginaries we derive four insights: 1) criteria to appraise the future are never purely technological; 2) there is a difference in perceptions of time horizons among actors when imagining futures; 3) perceptions of time horizons are shaped by actor backgrounds and social interactions; and 4) the MCM method contributed to helping individuals to focus and explore their future storylines.