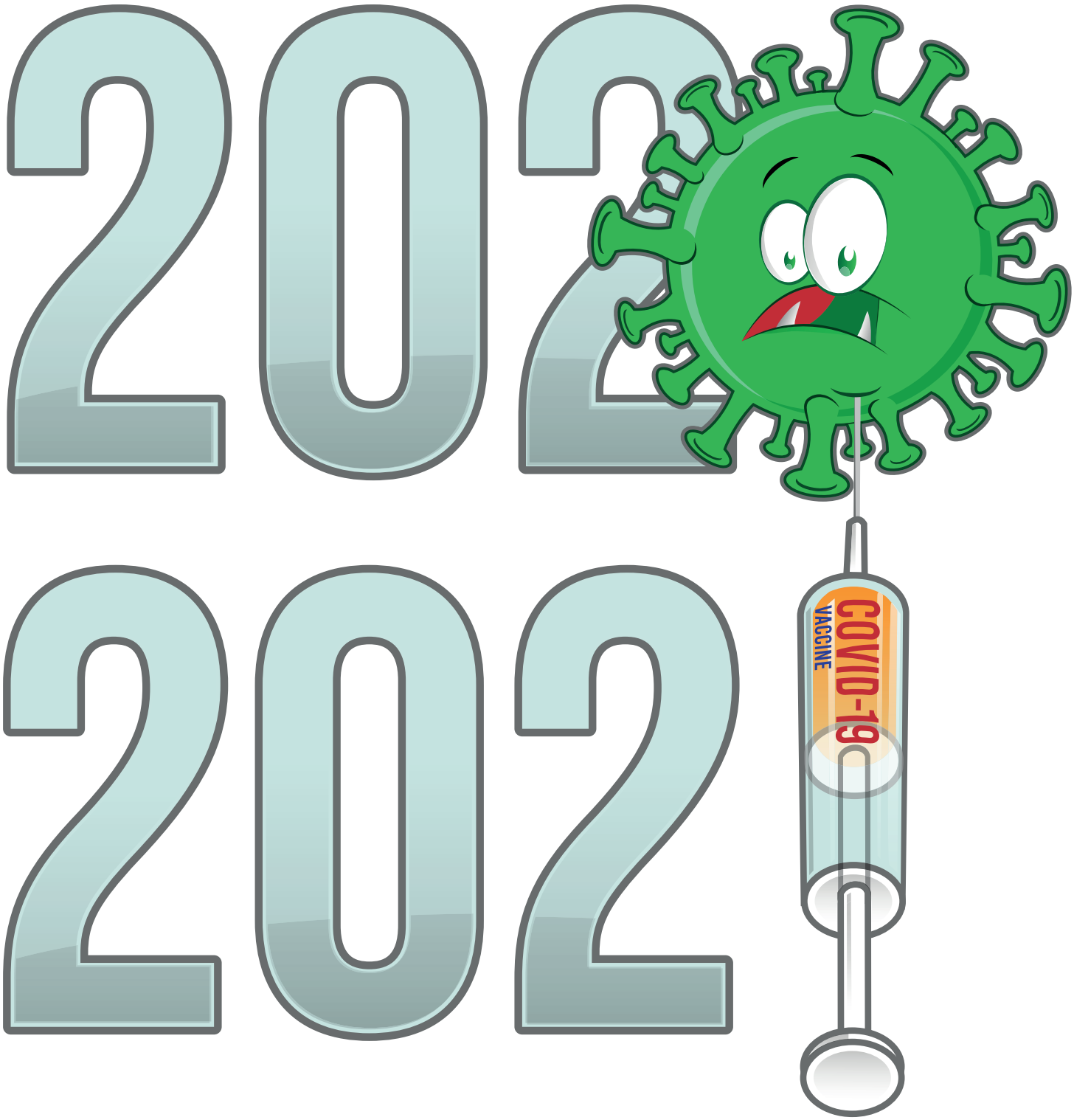
STRN Newsletter



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Content

Special

About

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

Cover picture: Shutterstock

Editorial

by Jochen Markard, ZHAW & ETH Zurich

This year's first STRN newsletter started with Covid-19, and – as the pandemic still holds us in a firm grip – it seems only fitting to also end the year on this topic.

Like for many of you, my work-life changed fundamentally. I miss the office, seeing my colleagues on a daily basis, the coffee breaks, the informal chats and debates, and, of course, the conferences. IST 2020 was a great experience and a special event, but still, I missed meeting you in person. Don't get me wrong, I am not complaining. I am well aware that working from home is a luxury many people don't have and that all of these issues are small compared to our health and the health of others.

Fortunately, for 2021, there is hope on the horizon. Hope that the worst of the pandemic might be over soon. That we can get back to "normal", meet again without fear, for example at IST in Karlsruhe!

At the same time and as much as we might like to get back to the old normal: it was not sustainable. Our travels, the many things we think we need, what we eat, the waste we produce: We leave too big a footprint. As Corona has disrupted our routines and habits, there is also a chance to reflect and improve. The idea to "build back better" has gained quite some traction and it is in this sense that the Covid-19 crisis also represents an opportunity to build more sustainable systems, thereby connecting with the core theme of our network.

IST 2020, our new webinar series, and the many other online events have demonstrated that new and also more sustainable forms of knowledge exchange are possible and have their perks. Perhaps, online or hybrid conferences will become the new normal. Perhaps, students will be able to attend courses at different universities at the same time. Perhaps knowledge becomes even more widely accessible. Such changes can definitely open new doors for a field as new, diverse and dispersed as ours. At the same time, they may fundamentally transform the educational system.

Speaking of change: I still recall the papers I read many years ago for my thesis. While often understanding very little, there was this strong feeling of respect and admiration for research published in a journal. This must be serious, flawless and reliable. If I did not understand it, that was my fault and I just had to try harder.

Well, yes, of course, that was naive. But, in a sense, the world was also a little simpler back then. The news was the news, regardless of the channel. The number of papers to read was huge but not insurmountable. And both, news and papers, were subject to a quality check, a standard. A quality check that – by and large – could be trusted. This made life simpler because it lowered the 'search costs'.

As the media world is changing, so is the system of academic publishing. Many standards are breaking up, and some for good. Open access journals exert pressure on established publishers and publishing practices (e.g. to reduce or share profits or to make review processes more transparent).

At the same time, the ideal of open access is under threat itself: by a business model that links profit considerations to every paper that enters the pipeline. The more and the faster papers get published, the higher the profit. Or, in reverse, who pays gets published. This development has the potential to undermine the credibility of research and it plays into the hands of those who seek to undermine the legitimacy of research in the first place. Think of 'alternative facts'.

This newsletter includes a special section with an interesting (unselected!) variety of viewpoints on where and how to publish. The views shed light on the many shades of grey and on conflicting interests: from the pressure to publish and the indicator driven logic of the academic system to actual editorial practices.

Where to draw the line is not an easy task – whether we search an outlet for our research or (try to) manage this network. While I understand the skepticism against 'policing,' I don't see how we can do research without standards. Of course, we need to discuss these standards, time and again. And I hope that this newsletter will be a helpful contribution in this regard.

This newsletter also gives an overview of the Thematic Groups within STRN. Two new groups have formed this year and it is great to see the enthusiasm and commitment behind these initiatives.

Let me conclude by wishing you all the best for the Christmas season and a healthy, happy and sustainable new year!

EIST Journal

As you probably have seen, Elsevier now applies the so-called “article-based publishing” (ABP) format to EIST. Hence, EIST volumes 36 and 37 also follow this format.

Volume 36 is now complete and can be found here.

Next to 22 regular articles it includes two special issues/ sections, on “Zooming in and out: On local transition governance” (3 papers, guest editors: J. Köhler, J. Wittmayer, E. Dütschke and N. Laws) and on “Intermediary actors in accelerating socio-technical transitions” (9 papers, guest editors: P. Kivimaa, A. Bergek, K. Matschoss and H. van Lente).

Volume 37 is still in progress. It can be found here.
It includes a policy brief, two survey articles, 21 regular articles and a book review.

For a complete list of special issues see this link.

As always, we look forward to receive your submissions and comments. Please don’t forget to read, and if relevant cite, EIST.

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STRN Events

Upcoming Events

6th NEST Conference 2021, April 8-9

The 6th NEST Conference is taking place in Sofia, Bulgaria! Let's expand transition mindsets to diverse pathways for sustainability not only in terms of geographical scope but also enabling actors, measures, institutions, approaches and much more. This conference aims to dig deeper into the ways transitions and the research around them emerge and evolve over time and space.

In line with the new location, the conference theme is "Sustainability Transition Pathways" to explore different approaches to the field. The NEST conference welcomes early-career researchers (Ph.D. students and postdoctoral researchers) of various backgrounds with diverse and innovative ideas. The two-day conference offers a unique platform to discuss work-in-progress and exchange feedback among peers. Engaging workshops provide hands-on experiences with practitioners and

senior researchers to link research and practice. The conference also includes keynote lectures by well known transition research scholars to convey latest knowledge from the field.

We invite abstracts that focus on - but are not limited to - the myriad pathways of sustainability transitions. Please send your abstract (max. 400 words) and a short professional biography (100-150 words) here.

Deadline for applications: **December 15th, 2020**.
Find the call for papers here.

We will send out notifications of acceptance by mid-January 2021. We look forward to receiving your abstract!

Please use the hashtag #6thNEST in your public communication about the conference. For additional information or to find impressions of previous NEST conferences visit the NEST blog.

NEST webinar series

The NEST webinar series launched this spring has continued through the last months of 2020 with presentations by Flor Avelino, Niki Frantzeskaki, Lars Coenen and Lea Fünfschilling. These are available to watch on our Youtube channel.

For 2021, we are excited to announce the following sessions:

- 26 January: Bruno Turnheim on Destabilisation
- 18 February: Derk Loorbach on Transition Management
- 23 March: Paula Kivimaa on Intermediaries

In our webinar series, we aim to give early career researchers the opportunity to learn about core concepts in the field, and facilitate the dialogue between them and

senior researchers. We also work towards creating a curated resource of our webinar recordings and other recorded lectures or presentations. If you have recordings of lectures or talks on transition studies you would be willing to share, we would very much appreciate you getting in touch with Abe Hendriks. Invitations for future webinars will be sent through the STRN mailing list.

12th IST conference, October 5-8, 2021

The 12th International Sustainability Transitions Conference will take place in Karlsruhe, Germany, with the theme 'Mainstreaming sustainability transitions: from research towards impact'.

It is planned as a hybrid event with people meeting online and in person (subject to change according to the pandemic situation). The conference will be hosted by the Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe.

For more details and the call for papers, please visit the conference website.
Please direct any questions to ist2021@isi.fraunhofer.de.

IST - Important dates:

January 15, 2021: Abstract submission system opens

March 15, 2021: Abstract submission deadline

May 15, 2021: Communication of decisions; Early bird registration opens

June 10, 2021: Early bird registration deadline

July 1, 2021: Presenter registration deadline

August 1, 2021: Full paper submission deadline, Global South scholarship application deadline, Best paper award application deadline

September 10, 2021: Regular registration deadline

October 5, 2021: Late afternoon session for newcomers to sustainability transitions

The local organizing committee is very much looking forward to welcoming you at IST 2021!

Past Events

Conference Ambassadors @ IST2020

This year's IST conference did break new ground. Not only that it was a fully digital event, but also Conference Ambassadors were introduced as one new feature.

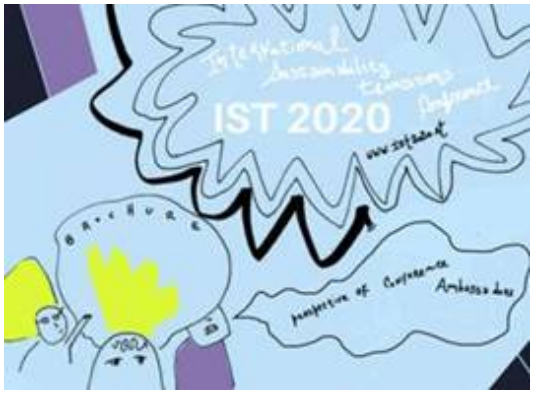
Conference Ambassadors' main role was to harvest key take-aways and report on the various parallel sessions. Moreover, they offered valuable inputs from the perspective of young researchers and their generation and functioned as "ice-breakers" in online discussions, thus contributing greatly to the success of the virtual event.

The team consisted of 13 master's students and graduates from a broad range of disciplines including geography, urban planning, ecological economics and socio-economics.

Overall, the Conference Ambassadors produced 12 reports on key sessions of the conference, three visual recordings of the keynote speeches and two videos with interviews of IST2020 participants about their experiences with the conference. Last but not least, they authored and illustrated a **brochure** that introduces international sustainability transitions research form their perspective as newcomers to the STRN community.

Their great work is available for download from the IST2020 conference website as well as from the Website of the Research Institute for Urban Management and Governance at WU.

IST2020, held from 18-21 August 2020, was co-organized by the Austrian Institute for Technology (AIT), the Research Institute for Urban Management and Governance and the Institute for Law and Governance (both WU Vienna) in association with the Sustainability Transitions Research Network (STRN).



Other News

Mission oriented policy observatory (MIPO)

Last spring, the innovation studies, transitions and governance groups within the Copernicus Institute of Sustainable Development (Utrecht University) joined forces to establish the Mission-oriented Innovation Policy Observatory (MIPO).

Our objective is to create a better understanding of how missions can be effective in mobilizing innovation capacities for addressing societal challenges. Instead of regarding missions as an approach only to R&D and industrial policies, we believe they can be relevant also for driving transitions. At the same time, missions might also be very counterproductive in this respect, which is precisely why we gather scholars and policy makers (e.g. in regular workshops and webinars) to study the opportunities and limitations of missions.

Earlier this month we also published the results of one particular research project, aimed at providing a first assessment of the Dutch 'Mission-oriented Topsector and Innovation Policy'. This report is online at our MIPO website. Conceptually it is based on the aforementioned two articles.

One of our ongoing activities is developing a conceptual paper that puts the notion of missions more explicitly in the context of transformative innovation policy and transition studies. We're also conducting a comparative empirical study on these issues, commissioned by the JRC.

For further information contact: Matthijs Jansen

Call for Papers: Markets in sustainability transitions, Special Issue in EIST

The goal of the proposed special issue is to stimulate a broader research and theorizing of markets in sustainability transition studies. Contributions to the special issue can use a wide range of research approaches including historical and contemporary research designs, drawing on qualitative and quantitative data to investigate relationships between market structures and evolutionary processes. Mixed methods research is encouraged, and contributors can analyse market evolution on different levels and at different scales (from local to global). We expect that the special issue will present results from empirical studies in a variety of sectors such as agriculture, transport, energy, retail, food, materials, health, and finance.

Conceptual papers that present clear theoretical contributions are also welcome. Research papers can zoom in on individual markets or present comparative studies of markets in different geographical and socio-political settings. They can investigate interactions and interrelationships between actors in the formation of individual markets, or examine value chains, value systems and value networks as market constituents. Studies of markets in emerging circular and biobased systems and economies are welcome, and so are studies of consumer markets as well as business-to-business markets.

Contributions to the special issue are expected to combine basic ideas from transition studies in terms of normative directionality, multi-dimensionality and co-evolution, multi-actor and long-term processes, stability and change, open-endedness and uncertainty, and values, contestation and disagreement (Köhler et al., 2019), with theories and concepts from established research traditions such as evolutionary and ecological economics, economic sociology, and business administration and marketing (Boon et al., 2020). The intention with this cross-fertilization is to generate novel insights, clearer conceptualizations, and an elaborated understanding of markets in sustainability transition studies.

Submission deadline: 15 April 2021.
For more information or the full CfP please contact Wouter Boon, Thomas Magnusson or Sampsa Hyysalo.

Sustainability Transitions Brazil discusses transitions research directions in the XXII ENGEMA

Sustainability Transitions Brazil met on November 23 for a virtual dialogue session at the International Conference on Business Management and Environment (XXII ENGEMA), organised by Sao Paulo University (USP) School of Business, Economics and Accounting. Adriana Marotti, Jose Carlos Lazaro and Rafael Carvalho Machado conducted the session that presented the transitions perspective to more than one hundred attendees.

Among the questions discussed were how Brazilian and Global South contexts matter on transition studies, COVID-19 and inequality implications for transitions research agenda, priority sociotechnical systems for policy making and innovation in Brazil, and theoretical approaches that may contribute to sustainability transition studies. Sustainability Transitions Brazil members also took the opportunity to introduce STRN to those not familiar with transition studies, as well as an overview of initiatives such as NEST, Transitions in Global South and Geography of Transitions (GeoST). The discussion is available (in Portuguese) under this link. More information: Adriana Marotti or Sustainability Transitions Brazil.

New projects

Net Zero Precincts: an interdisciplinary approach to decarbonising cities

This 4-year Australian Research Council (ARC) funded project aims to help cities and urban regions reach net zero emissions by taking the precinct as an optimal scale for urban transition. This project expects to co-create a new approach grounded in transition management and design anthropology. This will be tested in an action-oriented case study in the Monash Technology Precinct through three Living Lab experiments across energy, mobility and buildings. Expected outcomes include a validated approach for net zero transitions that delivers to the real-life experiences of the precinct community of business, government, knowledge institutes and civil society. This should provide significant benefits to industry seeking to enhance community engagement for accelerating urban transitions. The project is coordinated by the Monash Sustainable Development Institute.

For more information please contact Rob Raven or Darren Sharp.

Taking one step forward in circular plastics transition: C-PlaNeT Project

Circular Plastics Network for Training (C-PlaNeT) is a project funded by the EU in the framework of the H2020 Marie Skłodowska-Curie Actions. The consortium of European universities, research institutions, and companies work together to provide a holistic and interdisciplinary scientific approach to the current challenge of making plastics more circular.

15 Early Stage Researchers (ESRs) explore a sustainable future for plastics considering the whole lifecycle and role of multiple actors. While most ESRs work from a standpoint of technology development, several researchers take an explicit transitions research perspective. In particular, ESR 5 focuses on the role of businesses in the circular plastics transition, while ESR 13 investigates politics and governance in a circular plastics economy.

The C-PlaNeT project kicked-off in September 2020. Contact Nur Gizem Yalcin (ESR13) or Fernando Lit (ESR5) for more information.

Beyond experimentation: how processes and places shape built environments

This 3-year ARC funded proposal aims to investigate the influence of processes and place when experimenting with alternative urban infrastructure systems. Focusing on the urban water and energy sectors, this project expects to generate new cross-sector knowledge regarding the transition dynamics associated with delivering sustainable urban futures. By understanding the enabling conditions that support experimentation and innovation, anticipated outcomes of this project include improved institutional strategies and enhanced policy and program interventions. This work expects to positively impact the value and associated outcomes of government and private investment in future innovation dedicated to advancing sustainable, flexible built environments.

For more information please contact Megan Farrelly or Rob Raven.

Thematic groups

In 2020, two new thematic groups were launched in the network. One on sustainable agriculture and agri-food provision and one on the geography of transitions. We took this as an opportunity for all existing groups to briefly (re-)introduce themselves.

Geography of Sustainability Transitions (GeoST)

The aim of this new STRN thematic group is to develop an open forum for theoretically informed debates on the spaces, places and scales at which sustainability transitions unfold. It will foster dialogue between and across disciplines in order to develop spatial perspectives on sustainability transitions.

Over the past ten years, it has become increasingly evident, that a more elaborate geographical perspective on transition dynamics is needed. Many of today's grand challenges transcend the boundaries of specific cities, regions, or nations as translocal/ transnational spatial relationships and multi-scalar factors play a significant role in shaping transition dynamics and possibilities. At the same time, places differ in their structural preconditions and the capacity to engage in experimenting with radically new socio-technical configurations. Where and how transitions unfold, accordingly depends on change dynamics that co-evolve between (and have impacts on) various places around the world in spatially highly complex and uneven ways.

Developing a theoretically more elaborate GeoST perspective thus has the potential to substantially improve the field's foundational concepts, while also advancing the societal impact and policy relevance of

transitions research. The group will foster dialogue on emerging research streams comprising (but not limited to):

1) Developing a multi-scalar take on key transition concepts like technological innovation systems, niche experimentation, or socio-technical regimes
2) Understanding the context-specific structural conditions and dynamics that enable/constrain 'green' path development in cities, regions, and countries
3) Elucidating the place-making politics and processes accompanying, as well as the spatially unequal impacts, of sustainability transitions
4) Understanding how transition and green innovation dynamics co-evolve between developed, emerging and developing economies

We aim at creating an open and inclusive forum of exchange that enables the transitions community to benefit from salient theoretical and empirical debates in closely related fields. The GeoST thematic group will facilitate scholarly exchange through scientific activities, e.g. at international conferences and in focused workshops and webinars, but in the mid-term would also seek to promote GeoST thinking among practitioners and especially with civil society groups and policy-makers.

As a first step, a webinar series was organized that featured a structured debate between transition scholars and geographers on salient theoretical interfaces. This first step will be used to develop an online meeting venue for scholars in this global research community, and for discussing the priorities for further development of the network.

We welcome anyone interested in contributing to the group. Please contact christian.binz@eawag.ch. For the time being, Christian Binz, Bernhard Truffer, Lars Coenen, Jim Murphy, Gesa Pflitsch, Johan Miörner, and Toon Meelen will manage the group's activities, but we plan to continuously broaden and diversify the leadership team.

Future activities:

- Establish an online platform: Website, social media, mailing list, etc.
- Organize special sessions at international conferences, i.e. IST 2021, GCEG 2021
- Create a working paper series on the geography of innovation and transitions
- Craft joint papers, special issues, edited volumes etc. in geography and transition outlets
- Organize workshops and a follow-up webinar and creating synergies with closely related STRN thematic groups (i.e. on urban transitions and transitions in the Global South)

Transitions of Agro-food systems

At the recent online 2020 IST Conference, a dialogue session showed the common interest for more permanent exchange on the studies of transitions and system innovations towards sustainable agriculture and sustainable agri-food systems. The session underlined the importance of engaging the STRN community to improve field-work, theory development and comparative analysis within societal domains like food, water, energy, waste, biodiversity.

Why?
A new thematic group seeks to support and congregate scholars that are involved in theoretical and applied studies of 'transitions in the making' within agricultural production (food, feed, fibres, fuel) and agri-food provision systems from 'farm to fork'. These systems currently present major sustainability challenges in terms of climate change, biodiversity loss and environmental protection and health. We strive for an open-ended approach that leaves open the political, social and inclusive conception of sustainability objectives is an epistemological characteristic of the scope of this thematic group.

What?
Agro-food systems feature a number of characteristics that may mark the onset of transitions, i.e. there are a wide range of initiatives (in practice as well as research) tinkering with new ways of sustainable farming paying attention to soil fertility, biodiversity, ecological aspects, new agri-food practices and supply chain management from farm to fork. Various initiatives address a wide range of issues, including circularity, territorial welfare and new food provision systems, reconnection of cities and rural areas, bio-based economy and exploring the potential of digital technologies to render 'smarter', more resilient and sustainable systems. This raises important issues concerning how to destabilise and rebuild an existing system, to develop ways-out and embark on a new course.

What for?
Defining the research agenda to study and analyse such changes occurring at multiple scales will require a reflexive understanding of shifts in knowledge regimes and design practices.

This thematic group seeks to lay the foundations for such an endeavour, in terms of analysis, governance and participatory research frameworks. We will support new initiatives within STRN, based on existing experiences from the European SISA group (System Innovation for Sustainable Agriculture).

Next steps
The next step is to organise an online discussion with interested STRN members in January 2021 to set up and frame a proposal for a Session during the 2021 STRN Conference.

Meanwhile, we will make an inventory of ideas, results, experiential reports in a Wiki-like repository to be shared between members with a public visibility on scope and main information to be delivered by the community. The group will also work towards publishing special issues or foundational collective papers.

Everyone interested is welcome to contribute to the new thematic group. Please contact Marc Barbier (INRA, UMR LISIS & IFRIS) and Boelie Elzen (Wageningen University and Research)

Thematic Group Methodologies

This group has developed from the previous interest group on modelling, formed by Fjalar de Haan, Georg Holtz and Jonathan Köhler. The modelling group has produced reviews on the advantages and potential areas of application of numerical simulation models for sustainability transitions research, together with reviews of modelling approaches and the literature so far on modelling transitions. The group has also coordinated methods tracks at the IST conferences, including discussions of how modelling can contribute to participatory processes in transitions analysis and management.

In cooperation with the NEST group, we ran a PhD school on methods for transitions research in spring 2019 at Fraunhofer ISI in Karlsruhe. This covered methodological issues in the structure and science of knowledge for transitions research, qualitative analysis, numerical simulation and transitions management approaches. The school was very successful and a follow-up is planned for spring 2021. It will be led by Lea Fünfschilling and there will be a focus on policy research.

The methods group is also contributing to the development of IST2021, with a methods conference track and discussion sessions.

Further plans include the development of the PhD school into an annual event, as well as organising further online events such as webinars and conference sessions. Another proposal is to use the materials developed for transitions methods teaching and communication, such as presentations and a bibliography, to create an online library resource on transitions methods. Such a repository could be hosted on the STRN website. This resource would be curated, such that it is kept up to date as the field develops.

For further information contact Jonathan Köhler.

Urban Transitions and Transformations

Urban areas play a crucial but tricky part in both causing and trying to address the unsustainability of our societies. They already house than 50% of the world's population, consume vast amounts of resources and are critical for economic growth and innovation. They are also changing in the face of global environmental change, intentionally or reactively adapting to climate change, and rebuilding in the face of disasters.

The current pandemic is a stark reminder that cities mediate and reshape the experience and the responses to crisis and change. It underscored that rapid, decentralised actions play an essential role in responding crises and that the entrenched inequalities and injustices in cities magnify their impacts. It remains to be seen how the recovery will play out, and in which ways it will interfere or support ongoing efforts to rekindle urban infrastructures.

It is therefore vital to consider the prospects of urban transitions and transformations - be it in reconfiguring specific systems of the provision in cities, or bringing sustainability to the processes of urbanisation.

In times like these, inflecting urban governance and urban planning with transitions thinking may create openings for the more transformative, action-oriented approaches to these issues. There is a growing appetite for profound change in cities, for which our community is well-positioned to contribute.

Join our thematic group if you are interested in convening cutting-edge research debates, creating opportunities for connecting researchers and practitioners, and supporting the development of more robust theories and approaches to examine and enable urban transitions and transformations.

- Join our mailing list at urban-transitions-strn+subscribe(at)groups.io
- Please write to us at urban.transitions.strn(at)gmail.com for contributing to the organisation of the thematic group, or for initiating specific activities in this domain (e.g. special issues, dialogue sessions, consortia).

Transitions in the Global South

This thematic group is driven by an increasing interest in creating a space for knowledge exchange among researchers about challenges and opportunities of sustainability transitions in countries that are geographically locally in the Global South and are often associated with lower economic development, high inequality, poverty and people experiencing severe consequences of climate change. “Global South” is therefore a category as much geographical as it is contextual. Transitions in the Global South is an emerging network of scholars dedicated to investigating these issues from an interdisciplinary perspective, particularly using a systemic approach to address sustainability.

Our group was created by enthusiastic scholars who came together at the IST conference in Brighton in 2015 and felt the need to have sustained debates about developing and emerging economies’ transition trajectories. Over the past 5 years, the group has grown as scholars and students organised and participated in numerous activities and felt their voices heard. Our key activity along the years has been to organise dialogue sessions and dedicated tracks in the annual IST conferences where scholars working on Global South issues and challenges get to meet each other, share knowledge and co-produce research.

We also organised two webinar series. Between October 2017 and June 2018, Mara van Welie and Pauline Cherunya organised four webinars, by inviting sustainability transitions scholars to discuss topics such as informality, multi-scalar linkages, idealised energy futures and global diffusion of transformative innovations.

This year, in the midst of the pandemic, a second webinar series focused on the topic of “Covid-19 and transitions in the Global South”. We had seven monthly webinars between June and December. For each of the webinars we selected a Global south related topic (following previous research agenda setting dialogues) and invited three speakers from the Global South to speak on that topic. Topics included rising inequality, changing social practices, local experimentation and many more. The webinars were well attended by 25-100 people. The recordings of the webinars are available in the Transitions in the Global South Youtube channel.

The webinar series was co-hosted by a number of enthusiastic scholars - Bipashyee Ghosh, Katharina Schiller, Adriana Mello, Rafael Carvalho Machado, Suci Lestari Yuana, Maria Casal and Mark Purdon.
In the next months, we are planning to edit a special issue in a journal based in the Global South - REGE Revista de Gestão (open access, free of APC, indexed by Web of Science journal published by the University of São Paulo - Brazil). We will soon circulate a call for papers (deadline 31st March 2021) through our emailing list and social media.

Our mailing list has more than 300 members and we have 100 subcribers on Youtube and more than 600 on Twitter. We also have a Slack space we use for organisational purposes.

Our journey has just begun. Please reach out to our dedicated and enthusiastic group of volunteers if you want to support our group (e.g. organising a regional networking event or seminar). If there is anything you feel you can do to help the network grow and keep up the knowledge exchange, please don't hesitate to drop us an email at transitions.globalsouth@gmail.com.

Bipashyee, Katharina, Adriana, Mei, Rafael
On behalf of (an even bigger!) Transitions in the Global South core organising team

Viewpoints on publishing

Following earlier analyses and resources on predatory publishing (35th STRN Newsletter) and a recent debate in the mailing list, we had an open call for short opinions on the issue. We received 7 contributions which are listed below. Together, they provide remarkable insights from a range of different perspectives, highlighting the complexity of the topic, the trade-offs we face and the many shades of grey. For further reading, you might also want to look into Hall and Martin, 2019.
Thanks to all who contributed!

Contribution by Evelien de Hoop

A few weeks ago, I circulated a call for papers on the STRN mailing list for a special issue to be published in MDPI journal sustainability, with the title "Sustainability perspectives on health care: exploring the contours of a novel field". The current collection of perspectives on "predatory publishing" resulted from the debate that emerged after I circulated this call. However, in my opinion the debate should not so much be on "predatory publishing". There is little left to debate when we use this framing, for who would want to publish in a predatory journal? Instead, I suggest to discuss our publication strategies: where do we publish, why and with what effects?

As researcher, I try to produce knowledge that has the potential to contribute towards more sustainable, healthy, inclusive and equitable futures. Informed by this ambition, my work never quite fits conventional empirical, theoretical and disciplinary boundaries. My transdisciplinary methodologies are sometimes far from mainstream, although my work is – of course – always based on a strong empirical foundation. In the special issue with which this debate within STRN started, my colleagues, Jacqueline Broerse and Tjerk Jan Schuitmaker, and I aim to bring a wide diversity of papers into a novel conversation. These papers have their 'natural' homes in an equally wide diversity of journals.

Getting such research and collections published requires careful and reflexive navigation of today's complex publication landscape. Incumbent journals and the academic communities that control the quality of the work these journals publish can be highly restrictive when it comes to delineating what constitutes 'good science, relevant to the journal'. Such restrictions do not go well with the characteristics of my work that I highlighted above. Additionally, we also see that that such journals are rarely open towards research that was produced by scholars trained and working at institutes outside (predominantly global North-based) elite universities based on the argument that such work falls outside the scope of 'good science'. Indeed, 'good science' tends to be delineated by editorial boards that can be considered rather homogeneous, predominantly if not solely populated by successful scholars from these elite universities. Needless to say, this has severe implications for the richness of our debates.

If you were to check my publication record, you would see publications in a broad array of established journals – the result of a challenging journey, undertaken in order to increase the chances that my work gets taken seriously by the incumbent research community as well. I also have one paper in MDPI journal Sustainability. In this particular instance, I received relevant and in-depth comments that were of better quality than I received on some of my papers that I published in conventional journals.

To conclude, in my view, new entrants to the world of academic publishing like Sustainability provide a much-needed platform for more diverse scholarly expressions that are essential when we are interested in understanding and fostering sustainability transformations. Yet, I am by no means a fan of the mode of operating of journals like Sustainability. This is not only the case for new publishers and their journals, but also for a range of journals published by Elsevier and others. I would therefore be looking forward to a conversation on the simultaneous safeguarding of both integrity and diversity across the academic publishing landscape.

Experience with the MDPI journal 'Sustainability' by Lea Fuenfschilling

We were approached by Sustainability in one of their mass emails to put together a special issue. After discussing with my colleagues at the department, we decided that we wanted to give this open access format a try, considering that, after all, none of us is particularly happy with the business model of current academic publishing.

Our condition for participation was that we will keep full editorial control over the time line, the review process as well as acceptance of papers to our special issue. The editors at Sustainability agreed and so we opened the special issue "Innovation for Sustainable Development—Systemic Perspectives".

Unfortunately, it did not take long and we started to be bombarded with emails to send papers into review that had supposedly been submitted to our issue (but that we did not consider to be relevant). Furthermore, the journal sent papers into review without our knowledge. We immediately intervened with the editorial staff at the journal and they promised that it was just an unfortunate mistake. However, they kept sending us reminders about making editorial decisions on papers we had never seen and also accepted papers for our special issue that we had not reviewed. In addition, the review process was rushed and lacked all kinds of quality.

We intervened a couple more times, without anything happening. At last, we made the decision to withdraw the special issue entirely. The journal accepted this decision. However, to this day, the special issue can be found online, with our names, and two random papers accepted that we have never seen. After several additional attempts to get the journal to take the special issue down, we gave up.

Contribution by Jay Gregg

I appreciate the data-driven discussion of MDPI journals such as *Sustainability* and *Energies* in newsletter #35 and wish to supplement it with my own personal experience. I have published in *Sustainability* and *Energies*, and I served as a guest editor to *Sustainability* between 2018-2020.

I think we have to acknowledge that the MDPI journals have many attractive features, particularly for researchers who are new to a field: they cover broad topics and welcome new interdisciplinary research, they are open to authors new to the field, they are open access, and they have a decent SJR and impact factors (both Q2 and over 2.5, respectively). The other benefit is that the process is fast – authors can see their work in print a month or two after the original submission.

Then there are many special issues that seem tailored to our research. As editors, we are encouraged to develop special issues and invite our networks, and we can have our publishing fees waved for our own paper for doing so. This is likely why we see so many offers for special issues.

My concern though, is that these pressures and incentives might be creating a monster. The MDPI business model of fast turnaround, network-targeted special issues, and high page charges ends up putting the squeeze on the review and revision process – for editors, authors, and reviewers.

As editor, I was asked to judge the suitability for review of approximately one manuscript per week (and expected to complete my assessment that day, or forward it to another editor). Reviewers are not given much time either, typically a couple of weeks. Revisions are typically due within two weeks. After the revision was submitted, I was expected to make a final decision, again, typically within the day.

I believe there are many high-quality papers in these journals. Yet, at the same time, the MDPI business model and the incentive structures surrounding it may adversely affect the overall quality of research in our field, and ultimately undermine it. Therefore, I decided to resign my editor role for *Sustainability* and I am increasingly wary about submitting to MDPI journals.

Contribution by Koen Frenken

With the advent of online publishing in the 2000s, the cost structure of scientific publishing changed drastically. Now, printing and distribution costs have become very low. This has not only lowered the entry cost of new publishers, but it also lifted the natural restriction on the number of papers per issue which provided a strong rationale for gatekeeping by legacy journals. At the same time, several repositories became available on the Internet with published papers and pre-prints, making these accessible to readers without subscription. Partly due to this, the subscription model is now slowly substituted by the open access model, often with article processing charges.

In this turbulent context, many new journals have been introduced, both by incumbent publishers and new entrants (Siler, 2020a). The field of sustainability studies is no exception. Some of these journals are considered predatory by one part of the academic community, pointing to high volumes of papers, low review standards and misleading soliciting. Indeed, as revenues of such journals rely solely on article processing charges, they may be tempted to follow a market logic of quantity over the professional logic of quality. Another part welcomes the many new open-access journals as it provides more opportunities for scholars in less-favored, peripheral positions as well as for new topics that are less readily accepted in other journals. What is more, the fast turn-around of papers helps the quick diffusion of results and insights, while their relatively low article processing charges promote inclusiveness.

In this light, labelling particular journals as predatory assumes a binary world with 'good' and 'bad'. An alternative view is to acknowledge that there is a large 'grey area' of journals whose practices can be questioned, if only because most journals show little transparency about peer reviews, editorial policies and accept/reject decisions anyway. To illustrate this point, Siler (2020a, 2020b) analyzed 11,450 journals on the Cabells Journal Blacklist in terms of the varying degrees of predatory activity ranging from fake metrics and false addresses to sloppy copyediting and poor webpages. The results show a clear continuum rather than a bi-modal distribution, questioning the binary opposition used by those who label (or some would say, stigmatize) journals as predatory.

A further analysis of the economics underlying article processing charges shows that the authors fees are closely and positively related to quality indicators of journals. An analysis by Siler and Frenken (2020) of 12,127 Open Access journals showed that journals with status endowments (JIF, DOAJ Seal), articles written in English and published in wealthier regions are also relatively costlier. The recent announcement of Nature to charge 9,500 euro for open access is illustrative in this respect (Brainard, 2020). This suggests that while open access journals have opened up the publishing system

allowing many more papers to be published, the hierarchy of journals will most likely remain intact, as high-status journals can sustain their high rejection rates with high open access fees, further boosting the extreme profit margins of incumbent publishers.

In all, one can conclude that the logics of scientific publishing are changing in complex ways, with economic logics becoming stronger and the types of journals becoming more diverse. Binary classifications of journals in 'good' and 'bad' may hide the heterogeneity of journal practices and complex author motives, and may also reinforce established hierarchies in the scientific community. At the same time, we should be aware of various forms of predatory practices, by new and incumbent publishers alike, and continue to foster a critical debate among us.

Ethics in publishing: Predatory journals and article processing charges
by Roberto Dell'anno, Rocco Caferra, Andrea Morone and Piergiuseppe Morone

We have recently undertaken an experiment comparing the reaction of journals that charge fees for article processing (APC journals) and those that do not (No APC). We submitted a "bogus manuscript" (manuscript with intentional and evident mistakes and flaws), aiming to see if journals' business models might undermine the validity of the review process. Results showed that "No APC" publishers tend to select rigorous and competent editors because they are more likely to make the journals' resources bear fruit: the best articles attract more citations, which increase journal Impact Factor (IF) and, in parallel, publishers' revenues through more library subscriptions and sponsors.

For APC journals this virtuous circle is broken as publishers tend to accept any submission because more publications mean higher revenues. It occurs because the APC model, by transferring the role of funding the publications from the end-users (i.e., the scientific community) to the producers (authors), discourages the need to look for good quality manuscripts because the publisher's aim (increasing revenues through fees) and the author's aim (increasing bibliometric score by publishing on indexed journals) are achieved simultaneously, without the evaluation of the end-users (i.e., readers).

The experiment was conducted among Business and Economics journals (classified as such by the Italian Research Quality Assessment exercise 2011–2014) and included a treatment group of 34 APC journals and a control group similar in size and journals' characteristics. Results show that the academic publishing world is multifaceted: 41% of the APC journals accepted the bogus manuscript (8 without revisions, while for 6 manuscripts where revisions were required, the resubmitted "revised version" was identical to the original one, and the editor accepted it), 59% (20 out of 34) rejected it either immediately (21% desk rejections) or after a review process (38%). From this we conclude that not all the APC journals are predatory, having put in place a proper peer review process. At the same time, there is a rather considerable presence of journals with very questionable editorial practices.

The main conclusion drawn is that the APC business model in its current form is inappropriate to ensure high quality scientific publishing. Accordingly, more efforts are needed to improve the quality of APC journals, disconnecting them from predatory practices. A feasible solution may build upon the following three principles: ***transparency*** (referee process should be publicly shared among the scientific community after publication); ***reasonable review process timing*** (avoiding unbearable pressures on reviewers to complete their work in absurd time-spams); ***reasonable publication fees*** (calculated based on the actual production costs).

References:

Dell'Anno, Roberto, Caferra, Rocco, Morone, Andrea, 2020. "A Trojan Horse" in the peer-review process of fee-charging economic journals," *Journal of Informetrics*, Elsevier, vol. 14(3). Download preprint pdf

Bohannon, J. (2013). Who's Afraid of Peer Review? Science, 342(6154), 60–65. link

Severin, A., Strinzel, M., Egger, M., Domingo, M., & Barros, T. (2020). Who reviews for predatory journals? A study on reviewer characteristics. link
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Sorokowski, P., Emanuel, K., Agnieszka, S., & Katarzyna, P. (2017). Predatory journals recruit fake editor. Nature News. Mar 22. link

Predators and Prey in Academic Publishing
by Peter Wells

In 2019, Elsevier revenues grew 3.9% to £2,637m (£2,538m in 2018), with underlying growth at constant currency at 2%. Underlying adjusted operating profit (before interest payments and tax) increased by 3% to £982m (i.e. an astonishing 37%). In 2019 six new subscription journals and 100 full Open Access journals were launched by Elsevier (weblink). Many of the established Elsevier journals for which the STRN membership write have adopted the 'pay for open access' model. Fee rates vary widely, which suggests that actual production cost has little to do with it. So, in what sense is Elsevier different to MDPI when we are conniving at our own exploitation?

Predatory publishing is as much a symptom as a cause. We have collectively succumbed to empty quantification and spurious ranking systems powered by journal digitisation and the proliferation of metrics in the name of

institutional glory, recruitment, promotion, and research assessment, notwithstanding the DORA initiative (https://sfdora.org/).

One cause of journal proliferation is the growth in higher education institutions worldwide, estimated at 30,586 in 2020 (link). Many of these, and the academics they employ, seek to follow the performance standards of the few (less than 500) research-intensive universities. Unrealistic institutional expectations plus a burgeoning cadre of global researchers means established journals having a painfully high rejection rate, and an explosion in total journal outlets.

There are no easy solutions. The principle of academic freedom should extend to decisions over where to (try to) publish. However, we need to be brave in exploring solutions that are equitable, inclusive, and that respect diversity yet retain scientific quality. The current publisher – journal – author – reader relationship is failing. We may not agree on who the predator is, but in the current context we are nearly all prey.

MDPI is just a symptom for the larger problems
by Thomas Brudermann

The criticism for publishers like MDPI makes the larger problems in academia apparent. When publication output determines the rankings of institutions, and career prospects of researchers, a high demand for publication opportunities is a logical consequence.

MDPI does a good job when it comes to speed and efficiency of the peer-review and production processes, and their business model clearly meets the demand of researchers who need to complete their PhD, provide proof of dissemination to a funding agency, or simply want to extend their publication record before applying for their next job, scholarship or grant.

It is problematic for scientific quality that the final decision for or against publication is made by journal managers (with incentives to increase article numbers), and not by academic editors free from economic constraints. However, academic editors of "renowned" publishers do make questionable decisions too. Two recent examples (out of many) shall illustrate this point: (1) Energy Policy in their section "research articles" published a chaotic pamphlet that featured several irritating statements and also claimed that "the best way to deal climate change effects [..] is to burn more fossil fuels" (Teklu 2018, p. 413); while an inquiry to one of the editors received a reply, the paper was not retracted. (2) Journal of Cleaner Production published a paper based on the assessment of one single and anonymous "decision maker" (Khan 2019).

On several occasions I have rejected papers for fundamental methodological flaws, only to see them published unchanged in a different ISI-ranked journal later. While criticizing MDPI for their publication standards and procedures is justified, such one-sided criticism also misses the core problems of the current publication bubble, which rewards publishing ad nauseam, and dis-incentivizes diligent review and editorial work, or other academic duties.

Ghostwriting as a practice
by Subbarao V. Seethamsetty

A Ghostwriter is a person who writes a published piece on behalf of the "named author". Creative and elegant writing skills are often purchased for pithy advertisements, sales pitches, presentations, and personal memoirs of celebrities. This activity is perfectly legal.

When academic and medical publications are involved the issues take on deeper societal ramifications. In academic scholarship, there is a presumption of original ideas, thought leadership and authorship based on which many sections of society make long term decisions such as funding allocations for research and choices of fields of study to pursue by young graduate students.

A breach of trust and misrepresentation with ghost-writing in academic scholarship weakens an important pillar of society. There are individuals as well as large organizations offering full-service contracts guaranteeing desirable results and outcomes for the ghostwriting services to academics including writing PhD thesis for well-heeled graduate students. The protection to society against this growing problem is still the integrity and the will of the academic institutions to adhere to stringent standards and to ensure original academic scholarship.

With scientific publications in the field of medicine and pharmacology, the implications to society are deeper and involve the health and safety of large swaths of humanity. Pharmaceutical industry, with large financials stakes involved, is prone to aggressively use the legally sanctioned practice of ghostwriting. A troubling trend is to have articles ghostwritten to reflect favorable interpretation of clinical data and then "attribute" the authorship to a paid consenting and credentialed doctor / academic scientist. This practice sullies the academic world, and the immediate recourse is still the integrity of the individual academic despite the pressing need for grants and research funding.

The audience and the network of STRN scholars are best positioned to guide the changes needed for sustainability of deep scientific publications to remain trusted.

Publications

PhD theses

Braunreiter, L. (2020)
Swiss Federal Institute of Technology Zurich (ETH)
Contested Futures: How Scenarios and Expectations Shape the Energy Transition.
link

Despite their often-assumed key function in supporting long-term decisions in the energy sector, empirical evidence on how and by whom energy scenarios are used is rare. This dissertation addresses this gap by assessing how energy system actors such as fossil fuel companies, utilities and researchers interact with energy scenarios. Additionally, two papers explore the publics' energy system expectations and their compatibility with scenario projections. Thereby, this dissertation provides insights on the interdependency of formal and informal conceptualisations of the energy future shaping the energy transition.

Developed and promoted by actors with contrasting interests, energy scenarios compete to shape the perceived feasibility and desirability of particular transition pathways. Yet, research tends to focus on scenarios' analytical capacity to project techno-economic energy system characteristics, often neglecting the social embeddedness, power asymmetries and performative intent shaping scenario use contexts and thus energy transitions as a whole.

Holmén, J (2020)
Chalmers University of Technology, Gothenburg, Sweden
Navigating Sustainability Transformations: Backcasting, transdisciplinarity and social learning.
link

Complex and persistent sustainability challenges necessitate transformations into futures that are fundamentally different to what was before. Such change processes cannot be planned in traditional ways; they require reflexive modes of governing where we collectively learn how to navigate uncharted terrain while exploring it.

The aim of this thesis is to contribute knowledge on how sustainability transformations can be navigated in practice. Such efforts are essentially transdisciplinary where actors across sectors, perspectives and disciplines are brought together around a complex issue, question or challenge of concern in context. Efforts to navigate sustainability transformations in practice are far from straightforward; they require adequate conditions including methodological support to become meaningful as well as impactful.

This thesis builds upon a backcasting from principles methodology to support engagement with complex sustainability challenges and transformations. It is underlaboured with critical realism and a systems-based approach, viewing deliberate and purposeful attempts to navigate transformations as processes of transformative social learning. Further, the thesis puts key attention to issues of Education for Sustainable Development.

The main contributions of this thesis are: (1) a positioning of a principles-based purposeful, systemic, transformative and reflexive praxis with an associated and further developed backcasting from principles methodology; (2) studies into a concrete curriculum model with transformational sustainability ambitions, Challenge Lab, and; (3) an exploration of the necessity and potential value of comparing processes, effects and impacts from transformative, transdisciplinary and reflexive governance initiatives across contexts to better establish what works, for whom and why.

Moosavi, S. M. (2020)
National Research Institute for Science Policy, Iran
Technological transition governance in Iran, case study: Technological areas of wind and solar energy.

Two main steps of this research are:
- Explain the transition pathways in renewable energy in Iran based on the MLP,
- Explain the governance dimensions (policy, politics and polity) of this technological transition.

In this thesis, the process of development of renewable energy in Iran, based on niches, regime and landscape levels is described. And then, the stages of transition of renewable energy in Iran are described in four stages: "pre-development", "familiarity", "demonstration" and "take off". In this study, it is cleared that, firstly, Iran is already at the beginning of the transition process and at the "take-off" stage. Then, it became clear that in these four stages, the transition pathways in second and third stages is "transformation (layering) pathway" and in the fourth stage is changing from "transformation pathway" to the "technological substitution Pathway".

Furthermore, the dimensions of transition governance (policy, politics, and polity) are then assessed. At first, the organizational and financial power of state actors (establishment of SATBA) increased. Then, with the implementation of some policies like (FIT), the private sector became large and their financial and natural power increased. This empowerment led to the exercise of innovative and transformative power of market sector. In other words, investment in this sector

increased and so the rate of construction of renewable power plants increased. In addition, there was an improvement in polity dimension of governance (such as transparency and etc.), which provided the space for the exercise of the power of different actors (state, market and civil society).

Ribeiro, B. (2020)
The University of Auckland
Sustainability Transitions in New Zealand: Mainstreaming Alternative Food Values
link

The purpose of this research is to examine the penetration of sustainable foods into mainstream retailing in New Zealand. The research draws on notions of sustainability transitions, which it frames as a movement rather than a destination, and as a relational problem shaped by exogenous and endogenous forces. The research explores the convergence of transition theory and convention theory.

The empirical work comprises a mix of extended semi-formal interviews with those involved in the production and distribution of three indicative product-case studies of 'sustainable' foods sold at supermarkets, documentary analysis of the companies involved and focus group sessions with consumers of such foods. These data sources provide a platform for analysing how transactions take place in fields of contested values as sustainable products enter mainstream market channels. In mainstream urban food provisioning, supermarkets remain the problematic space where the values and interests of consumers and upstream suppliers of foods collide. A cross-case analysis of two supermarket chains, grounded on distinct levels of ethical commitments and mainstream penetration, reveals two underlying mechanisms that underpin both business models. The focus group sessions explore how mainstream consumers built meanings and understandings of sustainable foods in their micro-level of performances and negotiations.

Price and efficiency remain prominent but challenged by more nuanced values embedded in diverse lifestyle choices. The thesis argues that concerns with transitions need to pay greater attention to the spaces in which values collide, which it theorises as consumption junctions. It suggests that focusing attention on the various sites of transaction and mediation of values in consumption junctions offers opportunities to enable sustainability transitions. In particular, it argues for the potential of experimental initiatives as a basis for encouraging the penetration of alternative food values into mainstream retailing. The thesis argues for the centrality of place in the articulation of different values and orders of worth in sustainability transitions, suggesting that bringing convention theory into dialogue with transitions thinking provides an opportunity to capture the significance of place as a configuration of relational agency.

Hötte K. (2020)
Bielefeld University
Facilitation of change: Macroeconomic studies of technology transitions.
link

This thesis searches an economic explanation for the sluggishness of technological change and strategies how to facilitate the transition to low-carbon technologies.

Based on a theory of technological capabilities and learning, the thesis begins with an analysis of diffusion barriers. Using the agent-based macroeconomic model Eurace@unibi-eco, it is shown that the accumulation of technology-specific knowledge is a source of path dependence. Technological uncertainty can be macroeconomically costly if learning and R&D resources are wasted for a technology type that is obsolete in the long run. I demonstrate that the effectiveness of diffusion policies is dependent on the type and strength of diffusion barriers.

In the next part, it is analyzed how the transferability of technological knowledge across technology types affects adoption decisions of firms. I introduce the microfoundations of technological learning. In a simulation experiment, it is shown that the transferability may have ambiguous effects. A high transferability accelerates the diffusion initially but comes with the cost of technological uncertainty and retarded specialization.

Finally, these theoretical concepts are embedded in a general characterization of competing technologies. This characterization reflects the properties of technology in a socio-technical landscape and the relative maturity of an emergent entrant. I show how the characteristics of technologies can explain the shape of emerging transition pathways and discuss empirical examples. Policy may change the external conditions of the technology race. In an experiment, it is shown that the performance of different policies depends on the properties of competing technologies.

Schmid, N. (2020)
Swiss Federal Institute of Technology Zurich (ETH)
The politics of technological change – case studies from the energy sector.
link

A fast and deep transition to low-carbon technologies – particularly renewable energy and efficiency technologies – is the main lever to address climate change. This

transition needs to be further accelerated and deepened through public policies. In light of various trade-offs and competing policy goals, implementing and designing these policies is an intrinsically political endeavor. A growing body of literature at the intersection of public policy, political science, and innovation studies covers these aspects of energy politics.

Yet, energy politics not only influence technological change through public policy – technological change can also, in turn, influence politics. A better understanding of this inverse effect of technological change on politics is necessary to formulate politically feasible and effective energy policy. How exactly such low-carbon technological change affects what aspects of politics still remains a black box. In an exploratory approach, this dissertation attempts to address this research gap with the following overarching question: How does low-carbon technological change affect energy politics?

To answer this question, this cumulative dissertation is built on a heuristic framework: On an abstract level, it argues that technological change can affect politics through both its expanding and (re)distributional capacity. It further proposes that politics can be disaggregated into the categories of interests, ideas, and institutions, on the level of both elite and mass politics. In a theory-building approach, the four individual papers in this dissertation cover various elements of this heuristic framework and leverage a plurality of qualitative and quantitative methods, theoretical approaches, and individual case studies.

Smith, G. (2020)
Chalmers University of Technology, Gothenburg, Sweden
Making Mobility-as-a-Service: Towards Governance Principles and Pathways
link

Conceptualizing Mobility-as-a-Service (MaaS) developments as an innovation process that might contribute to a sustainability transition, this thesis sets out to improve the understanding of how public sector actors can facilitate action in the early phases and steer the innovation trajectory towards addressing long-term sustainability goals.

Five cases of MaaS developments in Sweden, Finland, and Australia are analyzed based on participatory observation and stakeholder interviews. Drawing on the findings from these case studies, the thesis proposes principles and pathways for MaaS governance. The principles advocate a broad set of activities to address all the institutional factors that impede MaaS developments. In contrast to the observed governance approaches, this includes activities aimed at strengthening mobility services and active mobility, and at weakening the private car regime. The pathways describe four roles public sector actors can take in MaaS developments – MaaS Promoter, MaaS Partner, MaaS Enabler, and Laissez-Faire – and illustrate how the method(s) of intervention can be adjusted between innovation phases.

In terms of theoretical contributions, this thesis illustrates that the public sector can play important hands-off and/or hands-on roles in the emerging use system as well as in the systems for development and diffusion of an innovation. The thesis also questions the effectiveness of small, exclusive transition arenas and provides empirical backing to the proposition that public sector actors are often disproportionately focused on nurturing niche innovations compared to phasing out prevalent regimes. All in all, it calls for more nuanced, relational, and multi-dimensional understandings of public sector roles in sustainability transitions.

Books

Selin, H. and Selin, N. E. (2020)
Mercury Stories: Understanding Sustainability through a Volatile Element.
Cambridge, MA: MIT Press
link

Mercury Stories examines sustainability transitions through the empirical case of human interactions with mercury over 8.000 years, drawing lessons and advancing theory about how to analyze sustainability issues. Lessons for the sustainability transitions community and related theoretical approaches are highlighted specifically in the book. Mercury is a fascinating case for thinking critically about larger issues of human well-being and sustainability. The book outlines a novel Human-Technical-Environmental (HTE) framework together with a matrix-based approach that can be practically applied to the analysis of many critical sustainability issues. The HTE Framework and the matrix-based approach draws on perspectives and knowledge from the natural sciences, the social sciences, and engineering. Yet, it is designed in such a way that it does not distinctly privilege one field over others. The interdisciplinary nature of the HTE Framework and the matrix-based approach can be of interest to a wide range of researchers from different areas and disciplines who share an interest in thinking about and advancing sustainability, especially transitions researchers. The book's website contains multimedia research and teaching resources). This includes information about using the HTE Framework on another topic than mercury (which is detailed in the book). The first two chapters of the book are freely available for download on this web site.

Hirsch, S. L. (2020)
Anticipating Future Environments: Climate Change, Adaptive Restoration, and the Columbia River Basin.
Seattle, WA: University of Washington Press
link

Drought. Wildfire. Extreme flooding. How does climate change affect the daily work of scientists? Ecological restoration is often premised on the idea of returning a region to an earlier, healthier state. Yet the effects of climate change undercut that premise and challenge the ways scientists can work, destabilizing the idea of "normalcy" and revealing the politics that shape what scientists can do. How can the practice of ecological restoration shift to anticipate an increasingly dynamic future? And how does a scientific field itself adapt to climate change? Restoration efforts in the Columbia River Basin—a vast and diverse landscape experiencing warming waters, less snowpack, and greater fluctuations in precipitation—may offer answers to some of these questions. Shana Hirsch tells the story of restoration science in the basin, surveying its past and detailing the work of today's salmon habitat restoration efforts. Her analysis offers critical insight into scientific practices, emerging approaches and ways of thinking, the incorporation of future climate change scenarios into planning, and the ultimate transformation—or adaptation—of the science of ecological restoration. For scientists and environmental managers around the globe, *Anticipating Future Environments* will shed light on how to more effectively cope with climate change.

Bahn-Walkowiak, B., Magrini, C., Berg, H., Gözet, B., Beck-O'Brien, M., Arjomandi, T., Doranova, A., Gallou, M. Le, Gionfra, S., Graf, V., Kong, M. A., Jordan, N., Miedziński, M. and Bleischwitz, R. (2020)
Eco-Innovation and Digitalisation. Case studies, environmental and policy lessons from EU Member States for the EU Green Deal and the Circular Economy. EIO Biennial report.
European Commission: Brussels
link

Papers

Bohnsack, R., Ciulli, R. and Kolk, A. (2020)
The role of business models in firm internationalization: An exploration of European electricity firms in the context of the energy transition.
Journal of International Business Studies
link

The global energy transition presents a challenge for almost all industries, but some face specific difficulties particularly important from an international business perspective. We study a set of European firms that used to operate in a highly regulated context with (partial) state ownership, until government-directed market liberalization started to allow further competition and internationalization. Existing firms were prompted to adapt their business models to these changes, with new ventures entering the market to reap opportunities with novel energy-related technologies and business models. Linking insights from strategic management to the international business literature, we conceptualize business model-related advantages, and explore their role in the internationalization of the firms in our sample. We also uncover barriers to internationalization in (potential) host countries, considering the location-boundedness of business models, and discuss implications for firms' international expansion by presenting a new framework.

Boulet, M., Hoek, A. and Raven, R.P.J.M. (2020)
Towards a multi-level framework of household food waste and consumer behaviour: untangling spaghetti soup.
Appetite, 156(104856)
link

Changing the everyday food-related behaviours of consumers is a critical part of tackling the global food waste challenge. Comprehensive frameworks of household food waste and consumer behavior are needed to guide the development of targeted interventions and future research agendas. This study systematically reviews food waste and behaviour studies from developed nations to provide an overview of the current research field. It uses a multi-level perspective to organise the various factors influencing food-related behaviour and proposes a new, multi-level, framework of consumer behaviour and household food waste. A novel addition to the field, the framework gathers factors at micro (individual), meso (household), and macro (external to the household) levels and argues that behaviour and food waste emerge from their interactions. Our review also reveals a research domain with disciplinary and methodological 'bald spots' and an over-emphasis on individual level factors. A multi-level research agenda focusing on under-explored factors and interactions between factors across levels is presented, and consideration given to multi-level interventions that support consumer behaviour change to reduce household food waste.

Brömmelstroet, M. te, Nikolaeva, A., Nello-Deakin, S., Waes, A. van, Farla, J., Popkema, M., Wesemael, P. van, Liu, G., Raven, R.P.J.M., For, F. De and Bruno, M. (2020)
Research cycling innovations. The contested nature of understanding and shaping smart cycling futures.
Transport Research Interdisciplinary Perspectives. 8, 100247
link

With this commentary, we share our reflections at the end of a five-year interdisciplinary research project

(from 2016 to 2020) on cycling innovations in living labs across the Netherlands. The commentary is the product of a collective writing effort of the researchers. It combines reflections on both the content of our research project (cycling through the lens of innovations) from various disciplinary perspectives – including socio-technical transitions, mobilities, urban design, transport planning and history – and reflections on the transdisciplinary approach (living labs) underpinning our research. We hope that our reflections can benefit other researchers concerned with similar topics and approaches.

Edomah, N., Bazilian, M. and Sovacool, B. K. (2020)
Sociotechnical typologies for national energy transitions.
Environmental Research Letters 15(10), 111001, pp. 1-8
link

The energy landscape is changing dramatically. It is populated by many different and discrete energy transitions happening simultaneously across different sectors, with dynamically different drivers, and across varying locations. This Perspective proposes a new three-part categorization to help better understand the myriad sociotechnical changes being witnessed, which cut across user and market behaviour as well as institutions and technologies. We express energy transitions in three categories: Interim energy transitions, shaped by policies without necessarily public acceptance, mostly within non-democratic regimes. Deliberate energy transitions, driven by citizen-driven change without supporting policies. Transformative energy transitions stem from a combination of policy and citizen-driven change. The degree of permanence of these three transition types depends on the real and perceived benefits to energy users, sustained adoption of technology, and the regulatory regime.

Elkjær, L. G., Horst, M. and Nyborg, S. (2021)
Identities, innovation, and governance: A systematic review of co-creation in wind energy transitions.
Energy Research & Social Science, 71
link

The concepts co-creation and co-production increasingly find their way into research on renewable energy development. As an innovation paradigm 'co-creation' is believed to produce more legitimate and inclusive innovation processes, however, in the context of energy transitions there is still no consistent understanding of what the concept means and implies. This paper investigates the links between co-creation and wind energy development to explore the (potential) role of co-creation for research and practice. We do that through an exploratory systematic review of 51 papers that refer to co-creation and co-production in relation to wind energy development. The review identifies three different understandings of co-creation in the literature, namely co-production of identities and representations, co-creation of innovation in socio-technical systems, and co-creation as participatory governance. The three perspectives capture how co-creation comes about and how it shapes relations between actors present in the sociotechnical assemblages of wind energy development. We show how the use of the concept of co-creation suggests new roles for citizens as co-creators and co-producers of electricity and planning decisions. We subsequently discuss what these roles suggest for the understanding of participation in renewable energy development and transitions more broadly.

Fazey, I., Schäpke, N., Caniglia, G., Hodgson, A., Kendrick, I., Lyon, C., ... and Young, H. (2020)
Transforming knowledge systems for life on Earth: Visions of future systems and how to get there.
Energy Research & Social Science 70(101724)
link

Formalised knowledge systems, including universities and research institutes, are important for contemporary societies. They are, however, also arguably failing humanity when their impact is measured against the level of progress being made in stimulating the societal changes needed to address challenges like climate change. In this research we used a novel futures-oriented and participatory approach that asked what future envisioned knowledge systems might need to look like and how we might get there. Findings suggest that envisioned future systems will need to be much more collaborative, open, diverse, egalitarian, and able to work with values and systemic issues. They will also need to go beyond producing knowledge about our world to generating wisdom about how to act within it. To get to envisioned systems we will need to rapidly scale methodological innovations, connect innovators, and creatively accelerate learning about working with intractable challenges. We will also need to create new funding schemes, a global knowledge commons, and challenge deeply held assumptions. To genuinely be a creative force in supporting longevity of human and non-human life on our planet, the shift in knowledge systems will probably need to be at the scale of the enlightenment and speed of the scientific and technological revolution accompanying the second World War. This will require bold and strategic action from governments, scientists, civic society and sustained transformational intent.

Gürsan, C. and De Gooyert, V. (2020)
The systemic impact of a transition fuel: Does natural gas help or hinder the energy transition?
Renewable and Sustainable Energy Reviews, 110552(1364-0321)
link
In the Paris Agreement, many nations set ambitious

global goals to stabilize and reduce carbon emissions to mitigate climate change. A large share of these emissions is caused by electricity production. Scientists have been debating the viability of using natural gas as a transition fuel while renewable energies mature technologically and economically. Although natural gas might help the energy transition by reducing emissions compared to coal, there are other long-term implications of investing in natural gas which can work against reaching climate goals. One concern is that investments in natural gas might crowd out investments in renewable alternatives.
This research reviews the literature on the role of natural gas in reducing carbon emissions to mitigate climate change and to bridge between coal and renewable technologies. We advance the debate by laying out how various positive and negative effects of natural gas interrelate. Our research warns that natural gas' negative delayed and global effects can easily outweigh the positive immediate and local effects unless precautions are taken.
Existing studies agree that natural gas helps avoid greenhouse gas emissions in the short term, while unintended long term effects might also hinder the transition into renewables. Our review helps to inform the policy-making process by reviewing the systemic effects of using natural gas as a transition fuel and suggests policy actions to avoid the negative long term consequences.

Herrfahrdt-Pähle, E., Schlüter, M., Olsson, P., Folke, C., Gelcich, S. and Pahl-Wostl, C. (2020)
Sustainability transformations: socio-political shocks as opportunities for governance transitions.
Global Environmental Change 63
link

This paper analyses the potential of rapid, large-scale socio-political change as a window of opportunity for transformative change of natural resources governance. We hypothesize that shocks at higher levels of social organization may open up opportunities for transformation of social-ecological systems into new pathways of development. However, opportunities need to be carefully navigated otherwise transformations may stall or lead the social-ecological system in undesirable directions. We investigate (i) under which circumstances socio-political change has been used by actors as a window of opportunity for initiating transformation towards sustainable natural resource governance, (ii) how the different levels of the systems (landscape, regime and niche) interact to pave the way for initiating such transformations and (iii) which key features (cognitive, structural and agency-related) get mobilized for transformation. This is achieved through analyzing natural resource governance regimes of countries that have been subject to rapid, large-scale political change: South Africa, Uzbekistan and Chile. In South Africa the political and economic change of the end of the apartheid regime resulted in a transformation of the water governance regime while in Uzbekistan after the breakdown of the Soviet Union change both at the economic and political scales and within the water governance regime remained superficial. In Chile the democratization process after the Pinochet era was used to transform the governance of coastal fisheries. The paper concludes with important insight on key capacities needed to navigate transformation towards sustainability. The study also contributes to a more nuanced view on the relationship between collapse and renewal.

Hirsch, S. (2020)
Governing technological zones, making national renewable energy futures.
Futures 124, Special issue: linking strategy, long term perspectives and policy domains in governance
link

This article examines linkages between strategies and imagined futures by focusing on one, often neglected facet of governance: science and innovation policy. Using the case of renewable energy imaginaries in Scotland, the article explores how strategies are used to create technological zones and knowledge infrastructures. In creating strategies for low-carbon futures, Scottish nationalists draw on imaginaries of an energy-independent nation in order to enable specific futures. By incorporating these imaginaries into strategic planning documents, nationalists exploit a powerful narrative from which to manifest energy futures. Further, through creating technological zones and knowledge infrastructures, the Scottish Government can work to actualize these futures even though its political power is limited. While it can be tempting to view strategies as a series of steps that implement policies in order to progress toward a desired future, this case demonstrates the nuanced ways in which energy futures and imaginaries of nationhood can be made tractable through science and innovation strategy, illustrating the dynamics through which these sociotechnical strategies enable specific futures and communities. The speed and scale of Scotland's energy transition also raises questions about what might be possible in terms of transitioning other sectors or collectives that are constrained in their political power.

Hoogstraaten, M. J., Boon, W. P. C. and Frenken, K. (2020)
How product development partnerships support hybrid collaborations dealing with global health challenges.
Global Transitions 2(190-201)
link

Product Development Partnerships (PDPs) are organizations that target economically-deprived markets, aiming to develop a product by integrating

contributions of diverse partners. They have gained importance in the global health arena by targeting and developing drugs for neglected tropical diseases. Their projects are difficult to manage given the multiplicity of roles, objectives and institutional logics of the partners that participate in the collaboration. We explore activities and strategies that platform PDPs – PDPs that orchestrate hybrid project networks – employ to stimulate collaboration between heterogeneous actors. Based on the analysis of two platform PDP projects targeting poverty-related diseases, we propose a framework outlining two innovation collaboration models. With this we support the better understanding of PDPs, which are gaining momentum to facilitate socio-technical transitions across the globe to tackle poverty-related diseases.

Jenkins, K., Sovacool, B. K., Błachowicz, A. and Lauer, A. (2020)
Politicising the Just Transition: Linking global climate policy, Nationally Determined Contributions and targeted research agendas.
Geoforum 115(138-142)
link

During the 2018 COP24 meeting in Poland, the Just Transition received particular emphasis, with the adoption of the "Solidarity and Just Transitions Silesia Declaration". It represented commitments to take seriously the impact of climate change and climate change policy on workers and surrounding communities. To date, however, UNFCCC historical contexts and commitments have rarely been recognised in the academic literature. This paper reviews the link of the Just Transition to UNFCCC processes and labour unions before critically considering the current academic treatment of the agenda and in particular, the under emphasis of Nationally Determined Contributions. It then presents a series of research recommendations centred on a concern for how best to use this political background to leverage tangible impact.

Kanger, L. (2021)
Rethinking the Multi-level Perspective for energy transitions: From regime life-cycle to explanatory typology of transition pathways.
Energy Research & Social Science, 71(101829)
link

The mounting challenge of climate change requires large-scale transitions in energy, mobility and agro-food systems underpinning industrial societies. An influential framework for the study of energy transitions is the Multi-level Perspective which has been applied to a broad range of new topics and questions over the last decades. One of the recent key themes is the timing, duration and acceleration of transitions. This paper aims to contribute to this discussion by offering a reformulation of MLP's 'global' model which explains socio-technical system shifts through interacting processes on niche, regime and landscape levels. Through a close inspection of MLP's seminal works coupled with selected insights from other literatures the paper develops two conceptualizations: 1) a regime life-cycle model of transitions; 2) a 'property space' based approach to transition pathways. These formulations enable to establish a common analytical core of various frameworks focused on systems change, open up new research questions, generate new hypotheses, construct an explanatory typology of transition pathways and provide practical methodological guidance for case selection in further research on energy and mobility transitions.

Kanger, L. and Sillak, S. (2020)
Emergence, consolidation and dominance of meta-regimes: Exploring the historical evolution of mass production (1765–1972) from the Deep Transitions perspective.
Technology in Society 63(101393)
link

Grand environmental and societal challenges have drawn increasing attention to system innovation and socio-technical transitions. A recent Deep Transitions framework has provided a comprehensive theory of the co-evolutionary patterns of multiple socio-technical systems over the last 250 years. However, so far the framework has not been subjected to systematic empirical exploration. In this paper we address this gap by exploring the co-evolutionary model linking niche-level dynamics, transitions in single systems and 'great surges of development', as conceptualized by Schot and Kanger (2018) [1]. For this purpose, we conduct a case study on the historical evolution of mass production in the Transatlantic region from 1765 to 1972. Instead of focusing on dominant technologies or common practices the development of mass production is understood as the emergence of a meta-regime, i.e. a set of mutually aligned rules guiding production activities in multiple socio-technical systems. The results broadly confirm the overall model but also enable to extend the Deep Transitions framework by uncovering new mechanisms and patterns in the variation, diffusion and contestation of meta-regimes.

Kanger, L., Sovacool, B. K. and Noorkõiv, M. (2020)
Six policy intervention points for sustainability transitions: A conceptual framework and a systematic literature review.
Research Policy 49(7), 104072
link

Recent literature has turned considerable attention to the role of policy mixes in shaping socio-technical systems towards sustainability. However, the identification of relevant policy intervention points has

remained a relatively neglected topic. This is a potentially significant oversight given that such intervention points constitute a mid-step between means (particular policy instruments) and overall goals (change in the directionality of socio-technical systems). By complementing existing work on policy mixes with additional insights from transitions literature, this paper formulates a conceptual framework of six policy intervention points for transformative systems change. The coding scheme developed on the basis of this framework is used to review current literature on policy mixes in sustainability transitions. It is shown that the latter has so far primarily focused on niche-regime dynamics while largely neglecting the broader context of these interactions. We argue that adopting a wider perspective on intervention points can aid future work on policy mixes by enabling the identification of root causes and critical problems of ongoing transitions, and to spot gaps in existing policy activities. The case of the Estonian energy system is used to briefly illustrate these possibilities. Methodologically, we demonstrate the value of combining theory-based concept-formation with a systematic literature review, enabling not only a provision of a summary of existing literature but also highlighting systematic gaps in that literature.

Kester, J., Sovacool, B. K., Noel, L. D. and Rubens, G. Z. D. (2020)
Novel or normal: Electric vehicles and the dialectic transition of Nordic automobility.
Energy Research & Social Science 69(101642), pp. 1-12
link

Over the last decade or more, the automobility literature has sought to observe and affect the dynamic tenacity of passenger vehicles. This paper takes up a recent call to actually study how private electric vehicles (EVs) are changing automobility. For this, it identifies four qualitative categories of automobility: general vehicle use, the car in daily life, vehicle symbolism and the effects of electrification. We study how these categories are affected by electric vehicles based on original data we gathered during a large empirical research project in the five Nordic countries, consisting of 227 expert interviews, 8 focus groups and 4322 randomized survey respondents. We find a paradoxical relationship between EVs and automobility. Some aspects embed and strengthen car-based mobility and the current automobility regime, as EVs essentially offer a substitution technology. In other contexts, however, EVs challenge, threaten, and open up questions about automobility and germinate an awareness that it cannot continue as is. We conclude by arguing that the moment transport policy acknowledges this dualism and smartly links up to other developments in transport, like automation and connectivity, policy efforts can be designed to minimize drawbacks and emphasize strengths.

Lam, D. P. M., B. Martín-López, A. I. Horcea-Milcu, and D. J. Lang. (2020)
A leverage points perspective on social networks to understand sustainability transformations: evidence from Southern Transylvania.
Sustainability Science. Springer Japan
link

Sustainability transformations research increasingly recognizes the importance of local actors and their networks to foster fundamental societal change. Local actors have different types of relations between each other (e.g., sharing material resources, giving advice) through which they jointly intervene in different system characteristics. We conducted social network analyses of 32 non-governmental organizations (NGOs) who drive initiatives to foster sustainability in Southern Transylvania, Romania. In so doing, we applied a leverage points perspective by differentiating between relations according to the system characteristic they address, such as the parameters, feedbacks, design and intent of the system. Additionally, we tested for differences of centrality metrics (i.e., weighted degree, betweenness, eigenvector) from NGOs that conduct different actions (i.e., amplification processes) to increase the impact of their sustainability initiatives. Our results reveal several NGOs that have central positions in their networks for intervening in both shallower (i.e., parameters and feedbacks) and deeper (i.e., design and intent of a system) system characteristics. We also identified NGOs that are only central for intervening in specific system characteristics. In addition, we found that specific groups of amplification processes (i.e., amplifying within and out) are associated with the NGOs' positions in the parameters, feedbacks, and design networks. We conclude that the leverage points perspective in social network analysis has the potential to identify key actors and shed light on the attributes of local actors for intervening in shallower and deeper system characteristics to foster sustainability transformations.

Malhotra A. and Schmidt T.S. (2020)
Accelerating Low-Carbon Innovation.
Joule 4(11)
link

Accelerating innovation in low-carbon technologies is fundamental in order to achieve global climate targets. However, only few technologies are currently on track to meet these targets. Here, we review and synthesize the innovation literature to develop a technology typology that helps explain systematic differences in technologies' experience rates. Based on the typology, we derive implications for policy makers and climate and energy modelers. More specifically, we argue that the Paris Agreement's focus on the national green industrial policy only suits innovation in certain types of technologies, and thus, should be complemented by top-down measures to coordinate research,

development, demonstration, deployment, and regulations across countries.

Matschoss, K. and Repo, P. (2020)
Forward-looking network analysis of ongoing sustainability transitions.
Technological Forecasting and Social Change, 161(120288)
link

Experimentation with novel technologies mobilises resources and constructs expectations for systemic transition, yet there is limited research that examines large numbers of energy experiments. Our approach explores an idea of a patchwork of niches and contributes to transitions literature by looking beyond individual experiments. The analysis in this article identifies four clusters of sustainable energy networks (i.e. patchworks of niches), highlighting the roles of urban prosumption, rural production, small towns as integrators, and electric transport in the technological change in the Finnish energy system. The recognition of interconnections between technologies, settings and uses envisages the future scope of patchworks of regimes, and thereby provides an empirically founded, forward-looking knowledge base for political planning and development of social learning. The network analysis of the experiments was executed using Gephi visualisation and exploration software with a specific focus on energy technologies, energy sources, sites, forms of energy use and locality. A large Finnish database on sustainable energy experiments was used to identify and network connections between the core characteristics of such experiments.

McCrory, G., Schäpke, N., Holmén, J. and Holmberg, J. (2020)
Sustainability-oriented labs in real-world contexts: An exploratory review.
Journal of Cleaner Production, 123202
link

There are growing claims that meaningfully engaging with complex sustainability challenges requires change of a systemic nature. In governing transitions to sustainability, laboratories in real world contexts are growing in presence and promise as a collection of situated, multi-stakeholder approaches. Yet, they span an array of contexts, conceptualisations and cases, making it difficult to find and relate labs across disciplines. Moreover, it is unclear how these labs vary in their approaches to sustainability, the importance of which has been voiced by the sustainability transitions community. In addressing these concerns, we adopted the broad research question: How can sustainability-oriented labs in real-world contexts be understood? We systematically reviewed 53 labs from disparate fields of research that broadly share a focus on sustainability. Through a mixed-methods analysis, we present three levels of results. Firstly, we provide an overview of the diversity in distribution, thematic focus and setup of labs. Secondly, we trace 7 different research communities where sustainability-oriented labs have been conceptualized (Living, Urban Living, Real-world, Evolutionary Learning, Urban Transition, Change and Transformation labs). Thirdly, we identify three key dimensions of labs, space, process and organisation, enabling a structured understanding of lab approaches towards sustainability. We then situate our results within salient transitions research areas, namely transition geographies, governance and innovation. In concluding, we point towards fruitful avenues for future research, capable of 1) unpacking lab approaches to sustainability as a dynamic normative property, and 2) providing a basis for complementary case-based comparison.

Meelen, T., Doody, B. and Schwanen, T. (2020)
Vehicle-to-Grid in the UK fleet market: An analysis of upscaling potential in a changing environment.
Journal of Cleaner Production 125203
link

Vehicle fleets are considered an important context for the deployment of innovations such as electric vehicles and vehicle-to-grid (V2G) technology. Fleet vehicles constitute a significant share of vehicle registrations, yet little research has been conducted into how the make-up of the changing fleet market could influence upscaling of innovations. This paper presents an in-depth study of the fleet market in the United Kingdom and assesses synergies between V2G and vehicle fleets by analysing socio-technical trends. The approach taken allows for analysing the role of users and markets in upscaling socio-technical transitions. The paper provides a system-level account of the fleet market, and shows how changing user characteristics, the rise of telematics, Low Emission Zones and changes to business operations and labour relations present specific drivers and challenges for V2G. It is concluded that user-related changes in the market environment are highly influential in shaping the upscaling trajectory of sustainable innovations such as V2G.

Naims, H. (2020)
Economic aspirations connected to innovations in carbon capture and utilization value chains.
Journal of Industrial Ecology 24(5), 1126-1139
link

International authorities are increasingly recognizing that utilizing the carbon dioxide (CO2) emissions from various industries can assist strategies for mitigating climate change. In developing novel carbon capture and utilization (CCU) technologies they aspire to contribute to circular economy targets and reduce consumption of fossil-based raw materials. However, the potential economic effects of CCU on industrial value chains

remain unclear. Hence, this study investigates the economic expectations placed on those actors currently conducting research and development (R&D) in CCU. The aspired levels of economic performance are identified through a systematic literature review of 19 policy advice reports and 15 scientific papers. Qualitative directed content analysis is conducted, based on a R&D input–output–outcome system. First, we identify three relevant groups of value chain actors by clustering industrial sectors: (a) equipment manufacturers, (b) high-emitting producers, and (c) producers of materials and fuels. Then, we derive a criteria list from the review. Finally, the analysis reveals how CCU innovations are anticipated to impact different industries: Equipment manufacturers could contribute to economic growth. For high-emitting producers, CCU provides one option for "surviving" sustainability transitions. Meanwhile, material and fuel producers need to act as "problem solvers" by offering competitive ways of utilizing CO2. We conclude by identifying research gaps that should be addressed to better understand the economic and social dimensions of CCU and to increase the chances of such innovations contributing to broader sustainability transformations of industrial and energy systems.

Petzer, B. J. M., Wieczorek, A. J. and Verbong, G. P. J. (2020)
Dockless bikeshare in Amsterdam: a mobility justice perspective on niche framing struggles.
Applied Mobilities 5(3)
link

This paper conceptually integrates socio-technical transitions with a mobility justice framework through the method of discourse analysis. A sample of media articles and secondary sources relating to the contested introduction of dockless bikeshare in the mature cycling city of Amsterdam was analysed using a multi-dimensional discursive interaction framework, which emphasises actors' ability to succeed in framing struggles by persuasively combining content-related claims with relevant aspects of their context. Mobility justice tenets were then applied to this framework, yielding a number of novel framings that correspond to a prescriptive logic rather than the descriptive, strategic focus of discursive transitions. These novel framings represent not only a new rhetorical resource for actors seeking to legitimate their innovations, but also enable transitions researchers to pay more explicit attention to groups and sets of interests who are affected by but excluded from innovation debates. This degree of attention may also bring to light inequalities, barriers and immobilities that as yet lie outside of the frames through which transitions research seeks to analyse innovation journeys. Mobility justice in its turn stands to benefit from closer engagement with the micro-dynamics of innovation journeys, which may yield more detailed insights into how normative frameworks can be embedded into specific contests.

Ruggiero, S., Busch, H., Hansen, T. and Isakovic, A. (2021)
Context and agency in urban community energy initiatives: An analysis of six case studies from the Baltic Sea Region.
Energy Policy 148(111956)
link

In this paper, we analyse community energy (CE) projects in urban settings. Building on insights from the literature on the geography of sustainability transitions, we examine how contextual conditions promote or hinder the development of CE. Furthermore, reflecting on calls for greater attention to agency in transitions, we investigated how actors engaged in urban CE projects exploit beneficial conditions or overcome obstacles related to some of the contextual conditions. Empirically, we draw on six case studies of CE projects from the Baltic Sea Region. To develop a thorough understanding of our cases we conducted 24 semi-structured interviews and analysed numerous secondary sources. Our results show that institutions as well as visions, e.g. plans for future energy generation, are important contextual features for urban CE projects. Local actors seek to overcome unfavourable contextual conditions for CE initiatives by building trust, appealing to their community's sense of identity, networking, and promoting demonstration projects. Based on the results, we recommend that local and national governments address the following four issues to strengthen the role of CE in the transformation of urban energy systems: 1) harmonising policies; 2) creating a culture for transitions; 3) developing visions for CE; and 4) promoting policy learning from experiments.

Sengers, F., Turnheim, B. and Berkhout, F. (2020)
Beyond Experiments: Embedding Outcomes in Climate Governance.
Environment and Planning C
link

Concerted action on climate change will require a continuing stream of social and technical innovations whose development and transmission will be influenced by public policies. New ways of doing things frequently emerge in innovative small-scale initiatives – 'experiments' – across sectors of economic and social life. These experiments are actionable expressions of novel governance and socio-technical arrangements. Mobilising and generalising the outputs of these experiments could lead to deep reductions in greenhouse gas emissions over the long- term. It is often assumed that the groundswell of socio-technical and governance experiments will 'scale-up' to systemic change. But the mechanisms for these wider, transformative impacts of experiments have not been fully conceptualised and explained. This paper

proposes a conceptual framework for the mobilisation, generalisation and embedding of the outputs and outcomes of climate governance experiments. We describe and illustrate four 'embedding mechanisms' – (1) replication-proliferation; (2) expansion-consolidation; (3) challenging-reframing; and (4) circulation-anchoring – for entwined governance and socio-technical experiments. Through these mechanisms knowledge, capabilities, norms and networks developed by experiments become mobile and generic, and come to be embedded in reconfigured socio-technical and governance systems.

Sharmeen, F., Ghosh, B. and Mateo-Babiano, I. (2021)
Policy, users and discourses: Examples from bikeshare programs in (Kolkata) India and (Manila) Philippines.
Journal of Transport Geography 90(102898)
link

This paper examines two bikeshare programs implemented in two Global South cities, examining the role of users in promoting sustainable transport. To explore the sustainability of smart cycling, we argue that it is important to understand the prevailing administrative and socio-institutional practices within a given context. For the effective stabilisation of smart regimes, harmony between the administrative and socio-institutional practices must be established. In this context, we introduce a complementary approach to understanding transitions. Maintenance of political commitments and institutional support are crucial for cycling success, not incidental footloose initiatives. We explore two case studies in the context of the Global South, in the first one top-down policies and planning initiatives dictate the directions of transitions by enabling or constraining user routines. In the second one, citizens take control to resolve a transport deficit by initiating and driving a very bottom-up user-led transition narrative. We propose a framework to cater to the unique political, cultural and smart discourses of the Global South and the role of users in conjunction with the administrative and socio-institutional practices around them. Investigating both the bikeshare cases through the lens of this framework provides unique insights extending our knowledge beyond the built environment features of sustainable planning initiatives. Our findings reveal the complex narratives that are in play in developing nations and conclude that understanding and realising cycling transitions in southern megacities require a different approach compared to the Global North.

Sovacool, B. K., Bergman, N., Hopkins, D., Jenkins, K. E. H., Hielscher, S., Goldthau, A. and Brossmann, B. (2020)
Imagining our sustainable energy future: Valence, temporality, and radicalism in the visions surrounding seven low-carbon innovations.
Social Studies of Science 50(4), pp. 642–679
link

Based on an extensive synthesis of semi-structured interviews, media content analysis, and reviews, this article conducts a qualitative meta-analysis of more than 560 sources of evidence to identify 38 visions associated with seven different low-carbon innovations – automated mobility, electric vehicles, smart meters, nuclear power, shale gas, hydrogen, and the fossil fuel divestment movement – playing a key role in current deliberations about mobility or low-carbon energy supply and use. From this material, it analyzes such visions based on rhetorical features such as common problems and functions, storylines, discursive struggles, and rhetorical effectiveness. It also analyzes visions based on typologies or degrees of valence (utopian vs. dystopian), temporality (proximal vs. distant), and radicalism (incremental vs. transformative). The article is motivated by the premise that tackling climate change via low-carbon energy systems (and practices) is one of the most significant challenges of the twenty-first century, and that effective decarbonization will require not only new energy technologies, but also new ways of understanding language, visions, and discursive politics surrounding emerging innovations and transitions.

Sovacool, B. K., Furszyfer, D. Del Rio, and Griffiths, S. (2020)
Contextualizing the Covid-19 pandemic for a carbon-constrained world: Insights for sustainability transitions, energy justice, and research methodology.
Energy Research & Social Science 68(101701), pp. 1-12
link

The global Covid-19 pandemic has rapidly overwhelmed our societies, shocked the global economy and overburdened struggling health care systems and other social institutions around the world. While such impacts of Covid-19 are becoming clearer, the implications of the disease for energy and climate policy are more prosaic. This Special Section seeks to offer more clarity on the emerging connections between Covid-19 and energy supply and demand, energy governance, future low-carbon transitions, social justice, and even the practice of research methodology. It features articles that ask, and answer: What are the known and anticipated impacts of Covid-19 on energy demand and climate change? How has the disease shaped institutional responses and varying energy policy frameworks, especially in Africa? How will the disease impact ongoing social practices, innovations and sustainability transitions, including not only renewable energy but also mobility? How might the disease, and social responses to it, exacerbate underlying patterns of energy poverty, energy vulnerability, and energy injustice? Lastly, what challenges and insights does the pandemic offer for

the *practice* of research, and for future research methodology? We find that without careful guidance and consideration, the brave new age wrought by Covid-19 could very well collapse in on itself with bloated stimulus packages that counter sustainability goals, misaligned incentives that exacerbate climate change, the entrenchment of unsustainable practices, and acute and troubling consequences for vulnerable groups.

Sovacool, B. K., Hess, D. J., Amir, S., Geels, F. W., Hirsh, R., Medina, L. R., Miller, C., Palavicino, C. A., Phadke, R., Ryghaug, M., Schot, J., Silvast, A., Stephens, J., Stirling, A., Turnheim, B., Vleuten, E. van der, van Lente, H. and Yearley, S. (2020)
Sociotechnical Agendas: Reviewing Future Directions for Energy and Climate Research.
Energy Research & Social Science 70(101617)
link

The field of science and technology studies (STS) has introduced and developed a "sociotechnical" perspective that has been taken up by many disciplines and areas of inquiry. The aims and objectives of this study are threefold: to interrogate which sociotechnical concepts or tools from STS are useful at better understanding energy-related social science, to reflect on prominent themes and topics within those approaches, and to identify current research gaps and directions for the future. To do so, the study builds on a companion project, a sys- tematic analysis of 262 articles published from 2009 to mid-2019 that categorized and reviewed sociotechnical perspectives in energy social science. It identifies future research directions by employing the method of "co- creation" based on the reflections of sixteen prominent researchers in the field in late 2019 and early 2020. Drawing from this co-created synthesis, this study first identifies three main areas of sociotechnical perspectives in energy research (sociotechnical systems, policy, and expertise and publics) with 15 topics and 39 subareas. The study then identifies five main themes for the future development of sociotechnical perspectives in energy research: conditions of systematic change; embedded agency; justice, power, identity and politics; imaginaries and discourses; and public engagement and governance. It also points to the recognized need for pluralism and parallax: for research to show greater attention to demographic and geographical diversity; to stronger research designs; to greater theoretical triangulation; and to more transdisciplinary approaches.

Sovacool, B. K., Noel, L., Rubens, G. Z. D. and Kester, J. (2020)
Actors, business models, and innovation activity systems for Vehicle-to-Grid (V2G) technology: A comprehensive review.
Renewable & Sustainable Energy Reviews 131 (109963), pp. 1-21
link

This study is motivated by the prospect of needing to harness significant flows of investment and finance, along with private sector commitment, towards decarbonizing passenger transport in Europe. It asks: what types of actors and stakeholder groups, business models, and resulting innovation activity systems might vehicle-to-grid (V2G) technology create or accelerate? Based primarily on qualitative research interviews and focus groups in five countries - Denmark, Finland, Iceland, Norway and Sweden, and a comprehensive literature review, the study assess stakeholder perceptions of primary and secondary business models for V2G. It identifies at least twelve meaningful stakeholder types and corresponding business markets: automotive manufacturers, battery manufacturers, vehicle owners, energy suppliers, transmission and distribution system operators, fleets, aggregators, mobility-as-a-service providers, renewable electricity independent power providers, public transit operators, secondhand markets and secondary markets. These business models fall into the five clusters of equipment, grid services, aggregation, bundling, and secondary markets. We then examine how these business models differ by innovation activity systems - that is, by content, structure, and governance. We lastly translate these findings into policy recommendations of relevance for all types of countries.

Sovacool, B. K., Turnheim, B., Hook, A., Brock, A. and Martiskainen, M. (2021)
Dispossessed by decarbonisation: Reducing vulnerability, injustice, and inequality in the lived experience of low-carbon pathways.
World Development 137(105116)
link

This study examines the justice and equity implications of four low-carbon transitions, and it reveals the ''lived experiences" of decarbonisation as manifested across Africa and Europe. Based on extensive, original mixed methods empirical research – including expert interviews, focus groups, internet forums, community interviews, and extended site visits and naturalistic observation – it asks: How are four specific decarbonisation pathways linked to negative impacts within specific communities? Relatedly, what vulnerabilities do these transitions exacerbate in these communities? Lastly, how can such vulnerabilities be better addressed with policy? The paper documents a troublesome cohabitation between French wineries and nuclear power, the negative effects on labor groups and workers in Eastern Germany by a transition to solar energy, the stark embodied externalities in electronic waste (e-waste) flows from smart meters accumulating in Ghana, and the precarious exploitation of children

involved in cobalt mining for electric vehicle batteries in the Democratic Republic of the Congo. The aims and objectives of the study are threefold: (1) to showcase how four very different vulnerable communities have been affected by the negative impacts of decarbonisation; (2) to reveal tensions and tradeoffs between European transitions and local and global justice concerns; and (3) to inform energy and climate policy. In identifying these objectives, our goal is not to stop or slow down all low-carbon transitions. Rather, the study suggests that the research and policy communities ought to account for, and seek to minimize, a broader range of social and environmental sustainability risks. Sustainability transitions and decarbonisation pathways must become more egalitarian, fair, and just.

Sovacool, B. K., Turnheim, B., Martiskainen, M., Brown, D. and Kivimaa, P. (2020)
Guides or gatekeepers? Incumbent-oriented transition intermediaries in a low-carbon era.
Energy Research & Social Science 66(101490)
link

Transitions intermediaries - agents who connect diverse groups of actors involved in transitions processes and their skills, resources and expectations - are becoming more prominent in research on low-carbon transitions. Most work, however, has focused on their ability to push innovations or emerging technologies forward, em- phasising their involvement in disrupting incumbent regimes or firms. However, in focusing on new entrants, often at the grassroots level, such literature runs the risk of overlooking the potentially positive role that in- cumbent transition intermediaries - those oriented to work with or centrally consider the interests of dominant government, market or civic stakeholders - can play in meeting sustainable energy and transport goals. In this paper, we focus specifically on five different incumbent transition intermediaries - Smart Energy GB in the United Kingdom, Energiesprong in the Netherlands, SULPU in Finland, CERTU in France, and the Norwegian Electric Vehicle Association - and explain their efforts to meet socially desirable goals of accelerating innovation or decarbonizing energy or transport systems. We ask: Why were these intermediaries created, and what pro- blems do they respond to? How do they function? What are their longer-term strategies and aspirations? In what ways do they reflect, reinforce, or otherwise shape incumbency? In answering these questions via a comparative case study approach, the paper aims to make contributions to the study of incumbency and intermediation in the context of transitions, to identifying different types of incumbent intermediaries (market, governmental, civic), and to informing debates over energy and climate policy and politics.

Veldhuizen, C. (2021)
Conceptualising the foundations of sustainability focused innovation policy: From constructivism to holism.
Technological Forecasting and Social Change 162(120374)
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The emergence of complex global problems and related concerns about 'sustainability' are central pre-occupations of discourses concerning innovation and its pursuit. The pressing need to gain fresh insights into the nature of new ideas and collaborative endeavour that can be used to drive societal transitions, is increasingly acknowledged. The objective of this paper is to contribute to these insights by examining and enriching the conceptual foundations of sustainability focused innovation policy. It's comparative metatheoretical approach enables exploration of the epistemological and political dimensions of the geography of transitions and systems literatures and the implications for the way in which they inform transformational change. The potential for deeper engagement with systems theory to create more holistic representations of complex problems, and the issues which must be addressed to resolve them, is explored. Findings regarding theory development and its implications for sustainability focused policy making provide a vital contribution to the fields of economic geography and the geography of transitions as well as to transitions literature more generally. As such it augments the foundations of ongoing empirical study and discourses which address the diminishing returns associated with current growth trajectories.

Wamsler, C., Schäpke, N., Fraude, C., Stasiak, D., Bruhn, T., Lawrence, M., ... and Mundaca, L. (2020)
Enabling new mindsets and transformative skills for negotiating and activating climate action: Lessons from UNFCCC conferences of the parties.
Environmental Science & Policy 112(227-235)
link

Technological and policy solutions for transitioning to a fossil-free society exist, many countries could afford the transition, and rational arguments for rapid climate action abound. Yet effective action is still lacking. Dominant policy approaches have failed to generate action at anywhere near the rate, scale or depth needed to avoid potentially catastrophic futures. This is despite 30 years of climate negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), and wide-ranging actions at national, transnational and sub-national levels. Practitioners and scholars are, thus, increasingly arguing that also the root causes of the problem must be addressed – the mindset (or paradigm) out of which the climate emergency has arisen. Against this background, we investigate decision-makers' views of the need for a different mindset and inner qualities that can support

negotiating and activating climate action, along with factors that could enable such a mindset shift. Data were collected during participatory workshops run at the 25th UNFCCC Conference of the Parties (COP25) in 2019, and comprise surveys, as well as social media communication and semi-structured interviews with COP attendees. Our results underline vast agreement among participants regarding the need for a mindset shift that can support new ways of communication and collaboration, based on more relational modes of knowing, being and acting. They also suggest the emergence of such a mindset shift across sectors and contexts, but not yet at the collective and systems levels. Finally, they highlight the importance of transformative skills and the need for experimental, safe spaces. The latter are seen as a visible manifestation and enabler that can support agency for change through shared self-reflection, experience and practice. We present a transformative skills framework, and conclude with further research needs and policy recommendations.

Wittmayer, J. M., Avelino, F., Pel, B. and Campos, I. (2020)
Contributing to sustainable and just energy systems? The mainstreaming of renewable energy prosumerism within and across institutional logics.
Energy Policy, in Press
link

Renewable energy (RE) prosumerism comes with promises and expectations of contributing to sustainable and just energy systems. In its current process of becoming mainstream, numerous challenges and doubts have arisen whether it will live up to these. Building on insights from sustainability transitions research and institutional theory, this article unpacks the mainstreaming by considering the range of institutional arrangements and logics through which these contributions might be secured. Taking a Multi-actor Perspective, it analyses the differences, combinations, and tensions between institutional logics, associated actor roles and power relations. Firstly, it unpacks how mainstreaming occurs through mechanisms of bureaucratisation and standardisation (state logic), marketisation and commodification (market logic), as well as socialisation and communalisation (community logic). Secondly, it highlights the concomitant hybridisation of institutional logics and actor roles. Such hybrid institutional arrangements try to reconcile not only the more known trade-offs and tensions between for-profit/non-profit logics (regarding the distribution of benefits for energy activities and resources), but also between formal/informal logics (gaining recognition) and public/private logics (delineating access). This institutional concreteness moves the scholarly discussion and policy debate beyond idealistic discussions of ethical principles and abstract discussions about power: Simplistic framings of 'prosumerism vs incumbents' are dropped in favour of a critical discussion of hybrid institutional arrangements and their capacity to safeguard particular transformative ideals and normative commitments.

Wöhler, L., Hoekstra, A. Y., Hogeboom, R. J., Brugnach, M. and Krol, M. S. (2020)
Alternative societal solutions to pharmaceuticals in the aquatic environment.
Journal of Cleaner Production, 124350
link

Environmental contamination with pharmaceuticals is widespread, inducing risks to both human health and the environment. This paper explores potential societal solutions to human and veterinary pharmaceuticals in the aquatic environment. To this end, we adopt transition research's multi-level perspective framework, which allows us to understand the dynamics underlying pharmaceutical emissions and to recognize social and technical factors triggering change. Our qualitative analysis is based on data collected through literature research and interviews with actors from pharmaceutical industry, the health and agricultural sector. The research aims at identifying potential future solutions including requirements for as well as barriers to pathways leading to these solutions and describing the role of key actors involved. The three alternative societal solutions identified are: 1) accepting pharmaceuticals in the environment - substantial changes to the system are not required; 2) reconfiguring the current system by implementing various innovations that reduce pharmaceutical emissions; 3) fundamentally changing the current system to (largely) avoid pharmaceutical emissions. The paper further elicits societal, financial, organizational, regulatory and technological requirements that can facilitate implementation of these solutions. This work is novel as it constitutes a systemic view on all stages of the pharmaceutical lifecycle, comprehensively synthesizing options and measures along the entire lifecycle into societal solutions that are framed as transition pathways. Deriving societal solutions from key actor's perspectives is innovative and provides insights to reflect on choices societies are going to have to make regarding pharmaceuticals in the environment.