STRN Newsletter

N°35 | March 2020

Sustainability Transitions Research Network.

Newsletter 35 – March 2020

Content

Special

About

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

Cover picture: Alexandra_Koch, pixabay.com

Editorial

by Jochen Markard, ETH Zurich
jmarkard@ethz.ch

Over the last days, I have told myself repeatedly to write an editorial independent of the Corona virus. The news is already filled with reports and it is difficult to add anything meaningful given the deep uncertainties that we face. However, I also found it impossible to ignore a landscape level event that seems unprecedented (at least in our time) in its level of disruption, pervasiveness across sectors and global scope.

We are impacted as a community and as individuals. The 5th NEST conference (May 7-8) will be held online, many other conferences and meetings have either been cancelled or will also shift to virtual venues, and the prospects for IST 2020 at end of August remain unclear.

Also, most of us are meanwhile working from home, coping with various challenges (childcare, isolation, staying safe, learning new routines), not being able to see family members, friends, or colleagues at work. And this is just the tip of the iceberg, not including those already directly affected by the disease or its economic impacts.

Clearly, the current crisis will also have implications for sustainability. While some of the short-term benefits include cleaner air, reduction of greenhouse gas emissions or cleaner water (e.g. Venice), the mid- to long-term consequences are difficult to assess. The crisis may be a window of opportunity to re-think and re-organize daily practices, lifestyles, travel needs, health care systems, business models or value chains so that they become more sustainable.

It might even counteract earlier trends to cut back the 'role of the state' and recent surges of populism. In fact, these times show how governments can push profound changes in lifestyles and business practices. Economic efficiency, often wielded by incumbents to delay or prevent action on the environment, also appears to have lost its luster as a guiding policy objective – there is hope that this reordering of priorities will extend to sustainability. An even more optimistic outcome would be that the Corona crisis generates a major leap in global coordination that could later be used to also tackle grand sustainability challenges.

Of course, Corona might also generate major setbacks in political systems (e.g. nationalism, national solutions), privacy, solidarity, justice, equality etc. But, given the dark days ahead, let's not delve into these here.

What about transitions research? It will hopefully continue to prosper. Once the worst is over, I can even imagine that our ideas will be needed more than before!

And many new questions await: How can the current disruptions open pathways for desirable and more sustainable futures? How dependent are sustainability transitions on well functioning political, economic and health-care systems? How to conceptualize the manifold interdependencies between different sectors in transition? Or how can we use this shock to change lifestyles, practices and needs for the better?

Ok, back to this newsletter. Our special topic is predatory publishing. We have prepared some updates on recent developments and we are happy that Ben Martin, editor of Research Policy and long-term expert on the topic, agreed to share his views. Predatory publishing is clearly a threat to our field (and academia more broadly) and we do not only need to increase awareness but to actively work against it. Please support us in this. We provide many references and links for you to explore this further.

I am also glad that the special section in EIST with comments on the STRN research agenda is out now. This underlines that our research has many assumptions we, together, should continue to question and boundaries we can push.

As before, I also encourage you to share your feedback, write responses to earlier newsletter topics (such as the one by Stephen) or suggest ideas of how to further improve this newsletter.

Enjoy reading and stay healthy!

EIST Journal

Elsevier decided to apply so-called "article-based publishing" (ABP) to EIST as of 2020. This means that Volume 34 has not the usual format. The order of articles is based upon acceptance, and mixes regular articles and contributions to special issues. Fortunately, special issues are also available through a separate link.

Volume 34 contains ten responses to the STRN transitions research agenda. These include:

- Engaging with multi-system interactions in sustainability transitions: A comment on the transitions research agenda, by Daniel Rosenbloom
- Thinking about individual actor-level perspectives in sociotechnical transitions: A comment on the transitions research agenda, by Paul Upham, Paula Bögel, Elisabeth Dütschke
- Towards a global political economy of transitions: a comment on the transitions research agenda, by Peter Newell
- Geographies of transition—From topical concerns to theoretical engagement: A comment on the transitions research agenda, by Christian Binz, Lars Coenen, James T. Murphy, Bernhard Truffer
- Market formation in the context of transitions: A comment on the transitions agenda, by Wouter P.C. Boon, Jakob Edler, Douglas K.R. Robinson
- Not more but different: A comment on the transitions research agenda, by Debbie Hopkins, Johannes Kester, Toon Meelen, Tim Schwanen
- The role of inter-sectoral dynamics in sustainability transitions: A comment on the transitions research agenda, by Allan Dahl Andersen, Markus Steen, Tuukka Mäkitie, Jens Hanson, Taran M. Thune, Birthe Soppe
- Neglected systems and theorizing: A comment on the transitions research agenda, by Laur Kanger
- The potential of sustainability-oriented digital platform multinationals: A comment on the transitions research agenda, by Ans Kolk, Francesca Ciulli
- Let's focus more on negative trends: A comment on the transitions research agenda, by Miklós Antal, Giulio Mattioli, Imogen Rattle

In addition, volume 34 also includes a special section on "Learning in sustainability transitions", with six contributions:

- Editorial: Learning about learning in sustainability transitions, by Barbara van Mierlo, Johannes Halbe, Pieter J. Beers, Geeske Scholz, Joanne Vinke-de Kruijf
- Opening up the black box of learning-by-doing in sustainability transitions, by Katrien Van Poeck, Leif Östman, Thomas Block
- Understanding and governing learning in sustainability transitions: A review, by Barbara van Mierlo, Pieter J. Beers
- Wider learning outcomes of European climate change adaptation projects: A Qualitative Comparative Analysis, by Joanne Vinke-de Kruijf, Claudia Pahl-Wostl, Christian Knieper
- Who learns what in sustainability transitions?, by Nihit Goyal, Michael Howlett
- A social learning and transition perspective on a climate change project in South Africa, by Geeske Scholz, Nadine Methner

Volume 34 includes the following regular articles:

- Nurturing nature: Exploring socio-spatial conditions for urban experimentation, by Marloes Dignum, Hade Dorst, Maarten van Schie, Ton Dassen, Rob Raven
- Closing the green finance gap – A systems perspective, by Sarah Hafner, Aled Jones, Annela Anger-Kraavi, Jan Pohl
- China's role in the next phase of the energy transition: Contributions to global niche formation in the Concentrated Solar Power sector, by Jorrit Gosens, Christian Binz, Rasmus Lema
- Corporate-NGO partnership for environmentally sustainable innovation: Lessons from a cross-sector collaboration in aviation biofuels, by Seyedesmaeil Mousavi, Bart Bossink
- Global pressures vs. local embeddedness: the de- and restabilization of the Estonian oil shale

industry in response to climate change (1995–2016), by Silver Sillak, Laur Kanger

- International markets and technological innovation systems: The case of offshore wind, by H.Z. Adriaan van der Loos, Simona O. Negro, Marko P. Hekkert
- Strategic niche management in transition pathways: Telework advocacy as groundwork for an incremental transformation, by Jonathan Stiles
- Historical transitions of Western Australia's electricity system, 1880-2016, by Sam Wilkinson, Michael Davidson, Gregory M. Morrison
- Explaining inclusivity in energy transitions: Local and community energy in Aotearoa New Zealand, by Anna L. Berka, Julie L. MacArthur, Claudia Gonnelli
- Complexity, tensions, and ambiguity of intermediation in a transition context: The case of Connecting Mobility, by T.N. Tanja Manders, A.J. Anna Wieczorek, G.P.J. Geert Verbong
- Finding convergence: Economic perspectives and the economic practices of an Australian ecovillage, by Oriana Milani Price, Simon Ville, Emma Heffernan, Belinda Gibbons, Mary Johnsson
- Power from above? Assessing actor-related barriers to the implementation of trolley truck technology in Germany, by Aline Scherrer, Patrick Plötz, Frank Van Laerhoven
- Saskatchewan's energy future: Risk and pathways analysis, by Mac Osazuwa-Peters, Margot Hurlbert, Kathleen McNutt, Jeremy Rayner, Samuel Gamtessa

Finally, volume 34 contains two commentaries.

- Making sustainability transitions research policy-relevant: Challenges at the science-policy interface, by Bruno Turnheim, Mike Asquith, Frank W. Geels
- Mission-oriented innovation systems, by Marko P. Hekkert, Matthijs J. Janssen, Joeri H. Wesseling, Simona O. Negro

Prof. Maurie Cohen has indicated that he wants to step down as associate editor. He will start a new research institute at his university, which evidently comes with a significant work load. Hence, we are looking for candidates to substitute him. Anyone interested should contact the editor-in-chief.

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

Jeroen van den Bergh
Editor-in-Chief

STRN Events

Upcoming

11th IST conference, Vienna, Aug. 18-21, 2020

We are monitoring the COVID-19 pandemic and its consequences for the IST2020 Conference in Vienna this summer.
All countries are taking decisive measures to fight further spread of the virus, which will slowly show results. Currently it remains uncertain how international travelling will be affected in August.

We will provide further details on organization and registration after Easter (mid-April).

For all updates, please check the conference website and our social media channels (@ist2020_vienna) on a regular basis.

We are extremely pleased by the nearly 600 submissions and the efforts of the scientific committee in reviewing them. Be assured, all preparations for notification of acceptance will continue. However, given the circumstances, we will delay notification until we are able to better assess the situation.

More than ever it becomes clear that the conference theme and all other topics of the STRN community are incredibly relevant and will play an important role in shaping a sustainable post-Corona future. Therefore, the organizing team will do everything to make the conference happen, in whatever form. The scientific discourse and networking among sustainability researchers must go on and should even be intensified.

Please stay tuned and be safe!
Klaus, Verena, Gudrun from the organising team

For further inquiries, please contact the organizing team at ist2020@ait.ac.at

5th NEST conference (May 7-8) goes digital

Following the outbreak of the COVID-19, public authorities around the world have called on citizens to self-isolate to curb the spread of the disease. Eawag and ETH Zurich, the institutions hosting the 5th NEST conference during May 7-8, 2020 in Switzerland, have announced that their facilities will remain closed for the foreseeable future.
Under these circumstances, we have decided to cancel the physical event. However, given the enthusiasm shown by participants and keynote speakers, the 5th NEST conference remains in place and will be held entirely online. The keynote speakers have generously accepted to present remotely, and the organizing team is reformulating the way participants can share their work, feedback and comments with each other. In the coming weeks, the organizing team will coordinate with the registered participants and set up the first fully digital NEST conference. On the bright side, this version of the conference is poised to be the most sustainable to date.

For further inquiries, please contact the organizing team at transitions.nest@gmail.com

Other News

Call for Papers

Bohnsack, R., Pinkse, J., and Bidmon, C.
Sustainability in the Digital Age
Special Issue in Business Strategy and the Environment

This special issue aims to set an agenda for future research and inform policy-makers and managers about the opportunities and challenges arising from the increasing proliferation of digital technologies for sustainability transitions. We are looking for high-quality empirical papers as well as conceptual contributions that deal with the question of how sustainability looks like in the digital age. Transition scholars are explicitly encouraged to submit.

More Information

Submission Deadline: September 20, 2020

New projects

Governance of the Sustainable Economy Transition: Challenges of Exnovation (GOSETE)

Various network governance constellations are being developed for the stimulation, co-creation and institutional anchorage of sustainability-oriented innovation and grassroots initiatives. Beyond this bright and mobilizing side of transitions governance, this project deliberately targets its crucial but hitherto relatively neglected counterpart of exnovation.

How can the existing governance arrangements and regulatory frameworks in the Brussels Capital Region be supported in dealing with the sustainable economy transition and its exnovation challenges?

For more information, please contact Bonno Pel. More information on the main proceedings of the project can be found here.

Second phase of the Interreg NWE project: community-based Virtual Power Plant (cVPP)

I am happy to announce a second phase of the Interreg NWE funded project on community-based Virtual Power Plant (cVPP) as a novel model of radical decarbonisation based on empowerment of community energy initiatives.

In the first phase we conceptualised cVPP as a portfolio of aggregated distributed energy resources, coordinated by an ICT platform, which reacts to changing prices, energy flows and weather, and which is adopted by prosumers who collectively generate and trade electricity. Through aggregation, cVPP empowers prosumers and boosts local renewable energy production and distribution. It thereby provides a climate protection strategy to radically reduce GHG emissions that individual initiatives would not able to achieve (van Summeren, Wieczorek and Verbong, 2020).

A second phase of this project will start in June 2020. Specifically, we will focus on: (i) Socio-technical upscaling of operating cVPPs by professionalising their installed community equipment (technical upscaling) and improving their business cases (social upscaling) through connection to adjacent new target groups such as SMEs, DSO's or rental sector. (ii) Territorial upscaling of the cVPP concept to new Rescoop areas in Europe. (iii) Upgrading of the MoRe model with insights emerging from the upscaling process and from the ongoing transposition of EU's Clean Energy for All Package to national laws.

For more information please contact Anna J. Wieczorek (project leader).

University education as a driver for sustainability transitions (UNI4ST)

This Marie Skłodowska-Curie fellowship project at Uppsala University is funded by the European Commission and runs from January 2020 until December 2023.

UNI4ST creates empirically grounded knowledge on how university education can be designed and performed in such a way that it becomes a fruitful driver for Sustainability Transitions (STs). Drawing on pragmatist educational scholarship and the multi-level perspective on STs, we develop a tailored analytical toolbox for empirical investigations.

These analytical tools are then applied to 3 case studies of university education practices where academics, students and societal stakeholders jointly address real-life sustainability challenges. These studies will reveal *what* and *how* university students and societal stakeholders learn from joint engagement in striving for STs. Beyond assessing the effectiveness of pedagogical efforts in terms of desirable learning *outcomes*, UNI4ST focuses on the educational *process*, i.e. on *how* knowledge, skills, values, habits, worldviews, etc. come about and transform through concrete practices and how this is related to potential societal transformation.

For more information contact Katrien Van Poeck or Leif Ostman.

Communication

Response to the special feature on decline, 34th STRN newsletter link

Stephen D. McGrail

While the decline or 'destabilisation' agenda discussed in the last newsletter is gathering momentum, aspects of this emerging agenda appear to require more attention and reflection. In particular, I would like to comment on the ambiguity of the decline agenda (i.e. *what* we aim to study, how, and *why*).

The special feature's emphasis on *deliberate* decline and destabilisation suggests that a major intended focus is studying policy interventions and their effectiveness. However, might we also be interested in studying things like the emergence of social movements that challenge an industry or seek to abolish an activity? The special feature also implies that by 'decline' we primarily mean the decline of established industries and technologies. What about established practices like eating high meat diets or flying regularly? Additionally, are we solely interested in 'deliberate' decline (if so, why?), or are we also interested in other processes that can generate decline? For example, decline may be the result of increasing obsolescence and related factors – such as new or increasing competition, myopia (actor short-sightedness [e.g. Levitt, 1960]), or the emergence of new social norms – which can give rise to the gradual or sudden displacement of technologies, industries, and large technical systems (e.g. Markard, 2020, Sovacool et al, 2018).

A further consideration is the main research objective. How does examination of decline contribute to transition theory or to related knowledge? I am aware that scholars have argued that transition research has an innovation/novelty bias. However, I am not sure of the extent to which this bias exists or, if it does exist, the extent to which it impairs our theories. Here we could consider a well-known paper such as Geels' (2002) shipping transition study. Yes, the paper principally attends to the gradual breakthrough of steamships but this includes the decline of the sailing ship regime and the related eventual obsolescence of old technologies. Perhaps the story could be retold as a decline story – from the perspective of sailing ships and related actors – but what would this add? It's also not clear that an explanatory framework for decline would be all that different from other transition frameworks given that the causal processes may be the same or similar. Perhaps for some forms of decline (or 'destabilisation') such a framework may more strongly emphasise political action and politics (e.g. Johnstone & Newell 2018).

More broadly, I think we need to ask the key question: 'so what?' By this I don't mean that decline itself is unimportant. Rather, what do researchers working on decline (or 'destabilisation') topics hope to achieve in either a practical or intellectual sense? Are policymakers (or other actors) seeking guidance on decline-related matters? If so, about what policy issues? Do decline researchers think *specific* aspects of transition theory need improvement which decline-oriented research can uniquely contribute to? I am presently reflecting on such questions for a decline-focussed transition research project and I think it would be helpful if those seeking to advance this agenda also reflected on these questions.

Acknowledgements:
Edited by Daniel Rosenbloom.

Reflections on transitions research.

Geert Verbong, professor for System Innovations & Sustainability Transitions at Eindhoven University of Technology has been involved in the field since its conception. Now that his retirement is near, Floor Alkemade asked him to share his insights on 20 years of sustainability transitions research.

Floor: You have been a part of the transitions community from the beginning. What were your personal highlights?

Geert: 20 years ago, I received a phone call from Jan Rotmans who was back then professor at Maastricht University and later became one of the leaders of the Dutch KSI program, a craddle for transition studies. He was preparing a policy advice for the Dutch government, and was looking for an example of a successful energy transition in the past. I had just finished my study on the history of the Dutch energy system and selected the past transition to natural gas as a case. The resulting policy report introduced the notion of transitions in Dutch policy and, over the years, Eindhoven became one of the centers of transition studies, with Johan Schot, Frank Geels, Rob Raven, and later Anna Wieczorek (who will lead the sustainability transitions research group after my retirement) and Floor Alkemade. A great intellectual environment!

Of course, today, the main question is: Can we do it again, a successful energy transition, but, this time, away from fossil fuels towards a sustainable energy system? The Dutch experience in the early 2000s with a large (sustainable) energy transition

project has been sobering, as vested interests gradually took and we have lost precious time. Understanding why the transition is so difficult has been the driving force for much of my research.

In my experience, long term perspectives on the energy transition brings important insights. The most important lesson is that, even at this time, many pathways to a (more) sustainable energy system are possible and feasible. But we do not know if we will succeed to accomplish this. This is a challenge for transition scholars, not only in the energy domain but for many other societal domains as well!

Floor: Interestingly, the Netherlands is now phasing out natural gas, mainly because of earth-quakes. Many other countries, in contrast, are moving towards natural gas and see it as transition fuel.

Geert: The main insight is that the built environment can do very well without natural gas. We have known for over a decade how to construct houses, greenhouses and other buildings that produce more energy than they use. Of course, seasonal storage is needed to make this work, but this is possible already (e.g. heat and cold storage in underground aquifers). The real issue is how to implement these innovations in society. At the moment, a battle of heating systems is waging in the Netherlands: are we going for all-electric or for heat distribution networks based on biogas or hydrogen? The lock-in into natural gas is one of the biggest barriers for the transition in heating.

Floor: How do you see the development of the field of transition studies in this regard?

Geert: The field has developed greatly. It is a very vibrant field and our network and IST conferences demonstrate the international character of the community. I very much like that the field is interdisciplinary and that we deal with very complex problems that go beyond the boundaries of a single discipline. My own journey reflects this: I started in physics, did my PhD in history of technology and now consider myself a social scientist.

What I also like about transition studies is that it is basically a normative approach, we want to support the transition to a more sustainable society. This makes our research very relevant. One warning I want to issue is that we assume all too often that we are moving in the right direction. It requires continuous and reflexive monitoring to ensure that our new energy system will not only be more sustainable but also more just/fair/inclusive etc. This is what transition studies can offer to inform policy making.

Floor: What are key challenges for transition studies?

Geert: The main challenge is “How are we going to organize our future energy system”. Technologies and energy sources are important but there are many more issues. We have seen the introduction of technologies such as smart grids, of new actors and market models, but there are still open questions, regarding for example the role of local energy cooperatives or communities, or the tasks of energy distribution companies.

A related problem is how we organize learning for transitions. In the formative phase of the field, the period from 2000 to 2010, we learnt that doing the analysis and then telling policymakers or other stakeholders what to do doesn’t work. The question of how we learn and the organization of learning is crucial for upscaling. How can we share knowledge, and how can we ensure that the knowledge generated reaches the people it is intended for? The translation of insights from transition research into practice remains a challenge. Policy recommendations are often not sufficient. We have to get out there and get our hands dirty.

Predatory publishing

How to assure high quality academic research in the STRN community

Jochen Markard and Bernhard Truffer

The field of sustainability transitions research continues to expand at a rapid pace. In March 2020, the cumulative number of papers in the Scopus database was around 3'500, with more than 1'000 alone from the last two years.

Is this a sign of a healthy research field? Or, are we in the midst of a bubble of inflated publications that may in the end even jeopardize the integrity of our research? We have observed and discussed these developments with increasing concern and we would like to share some new insights with the STRN community.

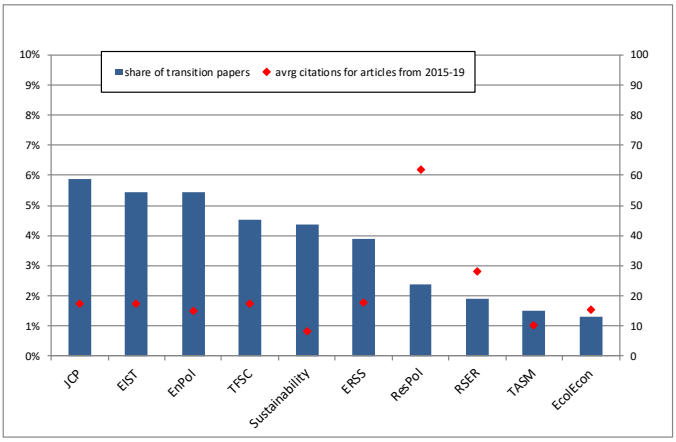

Figure 1: Journals with high shares of papers on sustainability transitions

JCP – Journal of Cleaner Production, EIST – Environmental Innovation and Societal Transitions, EnPol – Energy Policy, TFSC – Technological Forecasting and Social Change, ERSS – Energy Research and Social Science, ResPol – Research Policy, RSER – Renewable and Sustainable Energy Reviews, TASM – Technology Analysis and Strategic Management, EcolEcon – Ecological Economics

Let us first look in some more detail at the facts underlying this massive expansion of productivity in our field. Figure 1 shows the journals with the highest numbers of publications on sustainability transitions. Together they cover almost 40% of all 3'500 transition papers. We find major differences in the average number of citations for articles published *in the last five years*. For most journals, this value is around 17. Papers in Research Policy, however, receive much higher attention with average scores above 60 and articles in Renewable and Sustainable Energy Reviews were cited 28 times.

These developments have to be judged in conjunction with recent shifts in the publishing industry. More and more journals appear on the market that follow a very expansive growth strategy in terms of numbers of publications. Some go for 'mass production' at the expense of quality. An extreme form of this has become known as "predatory publishing" (see the following article by Ben Martin).

We are not in a position to qualify all the journals out there as being either predatory or not. However, what we want to scrutinize in the following is the effect of mass production on our field. We therefore took a closer look at the overall number of papers in the above journals over time (Figure 2). The most important finding is that all journals have expanded their output. However, there are major differences. ResPol and EcolEcon have doubled their output since 2005, which equals a yearly growth rate of about 5%, the lowest value in our list. On the other end of the scale, Sustainability is the most aggressive with a yearly growth rate of 68%, followed by JCP and ERSS with 29% each and RSER with 24% (Table).

	Annual growth	Papers in 2019
Sustainability	68%	6371
JCP	29%	4710
ERSS	29%	268
RSER	24%	734
EIST	15%	80
TFSC	14%	456
TASM	11%	132
EnPol	10%	775
ResPol	5%	198
EcolEcon	5%	325

This leads to major differences in the total number of papers processed in recent years. Again, we find major differences. EIST has the smallest output with 80 papers (up from 53 in 2018), while JCP and Sustainability are almost two orders of magnitude above that. Note that journals also vary in the share of transition papers they publish. EIST has the largest share (>50%, it is probably due to our

search algorithm that this is not even higher), followed by ERSS (10%), TFSC, TASM and ResPol (4% each). In all other journals, transition papers are rather marginal.

A third observation lies with the dynamics over time. Energy Policy, for example, already had a massive expansion many years back, followed by a decline and subsequent stabilization at a high level of more than 700 papers per year. RSER shot up from 9 (in 2000) to 1'400 in 2017; after some recent decline it is still above 700. For JCP and Sustainability, in contrast, we do not see any signs of stabilization. They are currently operating at a factor five to ten (!) above the other high sellers.

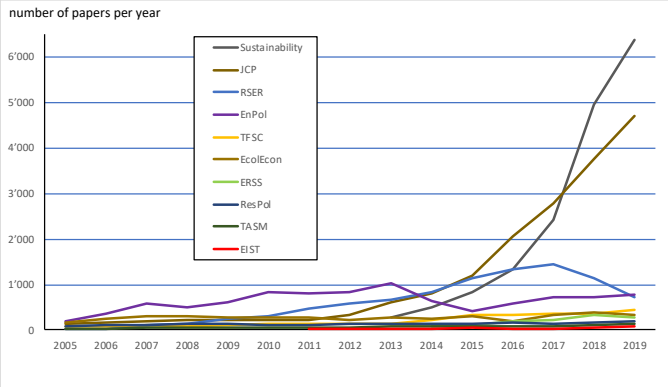

Figure 2: Development of the number of publications per year for journals that publish many papers on sustainability transitions

What does that mean for research in our field and beyond?

First, there seems to be a strong push to publish more and more papers. A major reason for this is the increasing pressure to quantify the assessment of universities and academic promotions. Another reason is the rapid globalization of academic research.

Second, journals of mass production often have low entry barriers for manuscripts and therefore offer a welcomed outlet for the mounting pressure. It remains a mystery how editors of these journals are able to keep up with quality assessment, how they are able to recruit enough decent reviewers, while speeding up revision times simultaneously.

Third, the inflation of output is also driven by journals that invite an excessive number of special issues. One of the above-mentioned journals is running several hundred special issues in parallel. So, if such a journal calls you to become a guest editor for a special issue of your choice, then please let all alarm bells ring before you send out invitations to your colleagues. In the end, you might have spent a lot of time and work to come up with a decently edited special issue. But this will be bogged down by low-quality publications in the same journal.

Fourth, these developments are not only problematic for individual careers. They can also jeopardize the reputation and legitimacy of an entire at community. STRN already has some measures in place to not support publishing in mass journals and we will continuously review and strengthen them.

To conclude, we ask you to be wary about all too easy outlets for your research, both for the sake of your individual career and for the community as a whole. We should not take shortcuts at the expense of academic standards. Such developments will be picked up only too happily by those in the public discourse who want to delegitimize the voice of academic research in order to promote their own partisan positions. We cannot let this happen, especially in fields of research that may be vital for the survival of our planet.

Acknowledgements:
We thank Ben Martin and Daniel Rosenbloom for comments on an earlier version.

Predatory publishing - short communication

Ben R. Martin, SRPU, University of Sussex

One of the banes of academic life is the incessant influx of unsolicited emails inviting you to submit papers to journals promising publication within a few days, presumably with little or no peer review. According to one estimate, the cost imposed on academics in dealing with spam emails is around $2.5 billion, similar to the costs of peer review (Teixeira da Silva et al., 2019). More worrying is the damage being done to the science in terms of its reliability and reputation, with hundreds of thousands of papers now being published annually in dubious journals.

To warn researchers of the dangers, Jeffrey Beall

for several years maintained a public list of what he termed 'predatory journals'. However, this was discontinued in 2017, apparently because of legal threats from publishers claiming to operate on the right side of the inevitably rather blurred boundary between non-predatory and predatory publishing. Instead, Cabell's now produces a 'Black List' of dubious journals. This is arguably more rigorous but is only available on a subscription basis so it is far less used.

From publishing, predatory behaviour spread next to conferences, with academics receiving a growing flood of emails inviting them to participate in a 'conference', generally in a hotel rather than a university. Those who turn up find that the papers presented are unrelated and the audience minimal. More recently, the predatory phenomenon has spread to include fake Impact Factor providers for journals keen to bolster their appeal.

What factors might lie behind this disturbing growth in predatory activities? The first and most obvious is the shift to 'open access' publishing in which the author rather than the reader (or library) pays (for a review of the early development of open-access publishing, see e.g. Laakso et al., 2011). While this is shift is well intentioned, enabling readers who do not have access to a university or specialist library to read articles in learned journals, it creates a new business model in which there is a large incentive for the publisher to publish as many articles as possible. It also creates opportunities for less scrupulous publishers to offer a cheaper and faster alternative to traditional learned journals (the latter of which typically charge $3000 for a paper to be open access) by omitting to carry out any quality control process. Hence, the use of the term 'predatory' – i.e. the unscrupulous publisher 'preying' on gullible researchers.

However, there is growing evidence that many authors are fully aware of the true nature of predatory journals, but are simply desperate to get their paper published (Bagues et al., 2018). Moreover, such behaviour is not confined to lower-income countries and less prestigious institutions – Harvard, for example, is one of the institutions with most articles in such journals (Moher et al., 2017). Thus, the term 'predatory' is misleading, since the supposed 'victims' may often be co-conspirators.

That so many authors are complicit in publishing in such dubious journals undoubtedly reflects the greatly increased competitive pressures on researchers, especially those in the early stages of their career. Academics are expected to publish more and to have more impact. Their assessment is often based largely if not entirely on metrics, in particular on numbers of publications. With leading journals now often rejecting over 90% of submissions, a researcher desperate to meet some publication target will inevitably turn to lower-status journals, even if that means ending up with a dubious journal.

When I began research 40 years ago, the pressure to publish was far less intense. My first 'good' article only appeared in my fifth year. Now, new researchers are typically expected to churn out two good journal articles a year from the start. While some increase in the competitive pressures on academics was needed and probably proved healthy, we are now in severe danger of 'over-dosing' on competition. Like most things in life (e.g. wine, chocolate), so with competition – up to a certain level it may do you good but too much is decidedly unhealthy!

What should be done? First, we should recognise this is not just a problem in lower-income countries. Second, we need clearer definitions of predatory publishing, building on the work of COPE and others (e.g. Grudniewicz et al., 2019), and generating awareness and consensus on what is unacceptable behaviour. Third, we as individual researchers must resist the temptation to split our published output into ever more 'thin' slices to boost our publication numbers, instead focusing on producing a smaller number of high quality papers. Fourth, in assessments of individuals and institutions there should be far less emphasis on metrics, especially publication numbers. Lastly, but most difficult, we need to work towards reducing the hypercompetitive pressures now rampant in academia if we are to ensure the vitality and sustainability of research and academic life.

Failure to act not only runs the risk of creating long-term damage to the reputation of science in general; it also opens the doors to those with other interests – for example, those who oppose sustainability for reasons of ideology or profit.

Acknowledgements:
The author is grateful to Jochen Markard for comments on an earlier version.

Publications

PhD theses

Isoaho, K. (2020)
University of Helsinki
Decarbonising energy regimes: Methodological explorations and empirical insights for policy.
link

Decarbonisation is an urgent, global challenge now widely recognised by policymakers, researchers, businesses and citizens alike. Shifting towards a fossil free future is a value-laden process, prone to political contestation. It is thus critical to examine politics and policy processes that influence and condition energy system change.
This dissertation advances research on decarbonisation policy and politics by exploring methodological questions that help improve synergies between policy studies and energy transition studies. It sets out to answer the following research question: What novel contributions can textual methodologies bring to the study of decarbonisation policy and politics, both in terms of methods and empirical insights? The dissertation takes an interest in discursive approaches and unsupervised machine learning methods, in particular that of topic modelling.
First, the potential and limitations of each group of methods are studied on the meta-level. Second, each method is applied to an empirical case. A topic modelling analysis is conducted on the development of the European Energy Union project, while the decline of coal-fired power generation (UK) is examined through a discourse analysis.
The findings indicate that discursive methodologies can enhance our understanding of the role of political ideology and state orientation, publics, and institutional and policy change. In addition, discursive approaches are found to complement the classical energy transition frameworks. The examination of topic modelling shows that while the method can be used to examine policy-relevant corpora with an unprecedented scale and scope, seeking to gain straightforward qualitative or policy relevant value from the topic modelling output risks being misleading.
This dissertation suggests that topic modelling brings added value to textual analysis when used in mixed-method designs. Taken together, the findings encourage scholars to further experiment with the use of computer mediated textual analysis approaches in practice.
This study also highlights several higher-level implications for research and policy. It calls for in-depth methodological dialogue among computational scientists, statistical experts and social scientists. This is because developing computational social science approaches requires that the models are designed to match the real-world societal phenomena they are applied to. Furthermore, the results provide important lessons for transition scholars and policy-makers. The UK case shows that coal declined rapidly and with relatively little resistance by incumbent actors. The results also reveal how the Energy Union's policy priorities have been increasingly geared towards decarbonisation objectives by furthering policy convergence between climate-security and energy efficiency-affordability paradigms.

Vattes, K., (2019)
National and Kapodistrian University of Athens
Socio-technical energy transitions and the tourist industry: Steering to sustainable development.
link

The discipline of socio-technical transitions has been underdeveloped in the Eastern Mediterranean, at least until recently. More specifically in Greece, where there is an emerging energy transition, approaches from the transition studies are used only rarely (Fotopoulos et al, 2019). This dissertation aims at contributing to in-depth analysis of nested and emerging transitions in the geographic area of the Aegean Sea and more specifically in the islands of Eastern Aegean Sea.
By using current socio-technical transitions approaches, this thesis aims at providing governance options in order to steer transitions of the entangled socio-technical regimes of energy and tourism. In this context, the research provides governance patterns for a sustainable, low carbon future, both by studying the dynamics of the transition in the energy and the tourism regime and by understanding the interdependence and entangled character of the transformations.
Thus, this essay examines the way socio-technical pathways co-produced with governance patterns. In this view, it has been developed a hybrid model for sustainable socio-technical transitions integrating governance and local engagement approaches. This thesis investigates possible socio-technical pathways emerging dynamically as socio- technical options in the making of the transition.The research is theoretically based on the deep transitions concept (Schot and Kagner, 2018; Kagner and Schot, 2019) while it uses insights from those approaches in transition studies stressing transition dynamics, power relations and institutional innovations for the steering and the governance of the transitions (Smith et al, 2005; Meadowcroft, 2007; Foxon et al, 2010).
The thesis argues that the entangled character of the energy and tourism regime in the Aegean Islands is socially embedded and the transition of the tourism regime necessitates socio-technical transitions in the energy regime both in the supply and the demand side.

Emerging sustainable transitions in the tourism regime calls for public engagement in the decision making and the steering both within the regime as well as in the interrelated energy regime. Deep socio-technical transformation involving the co-production of visions, institutions, social practices and technological innovations, characterizes the transition of entangled regimes.

Ford, A. (2020)
The University of Melbourne
Regime resistance and accommodation in sustainable energy transitions.
link

To accelerate the decarbonisation of electricity generation and meaningfully mitigate climate change, a more nuanced understanding of the power and influence of incumbent electricity firms in government policymaking is required. Building on sustainability transitions literature, concepts from neo-Gramscian political economy and insights from strategic management, this study investigated the ways in which incumbent electricity generators, network operators, retailers, and their industry organisations sought to influence residential solar power policy. The single case study focused on Victoria, Australia, collecting and analysing data from documents and transcripts of in-depth, semi-structured interviews with key informants.
The research found that incumbent actors contributed to the (re)production of a socio-technical regime by drawing on material, institutional and discursive forms of power to execute strategies of resistance and accommodation. Incumbent actors resisted solar feed-in tariffs by framing them in negative terms, building alliances with opposed civil society organisations, lobbying policymakers, and reminding them of their mutually dependent relations. However, incumbent actors accommodated feed-in tariffs by working with government to implement its policy. Incumbent firms accommodated renewables more generally by operating renewable energy business units and joining renewable energy industry organisations, although early involvement moderated support for feed-in tariffs.
The study also found that a number of external and internal factors shaped the strategic approach of incumbent electricity firms and limited the extent of their resistance, generating useful insights for policymakers, incumbent and renewable energy firms and civil society organisations.

van Welie, M. J. (2019)
Utrecht University
Transition pathways of splintered regimes: Addressing sanitation provision challenges in informal settlements.
link

The world`s rapid urbanization leads to a multitude of problems in the provision of urban basic services such as transport, water, sanitation, electricity in cities in low-income countries, especially in informal settlements. Sanitation is a particular challenging urban basic service: 60% of the global population still lacks safely managed sanitation. The aim of the thesis is to analyse how innovations can contribute to fundamental changes towards sustainability in urban basic service sectors in low-income countries.
To that end, insights from the field of sustainability transitions research are mobilized to analyse the interrelated factors that lead to obduracies in these sectors, as well as to identify challenges that innovators face when addressing the problems, and how their activities lead to potential transition pathways. The thesis focusses on the case of sanitation provisioning in Nairobi, the capital of Kenya.
The findings provide insights in the provision and use of sanitation services in different neighbourhoods in Nairobi. The daily practices of users and providers are associated with particular well-established configurations of technologies, organizational forms, and user/ provider routines, which are called “service regimes”.
Five service regimes exist in Nairobi’s sanitation sector based on domestic sewer, shared on-site, public, and container-based services and coping strategies. Especially in informal settlements, a complex variety of service regimes is found. The sector is weakly planned and the different service regimes are not coordinated. This means that many services do not function optimally and effectively for users and providers: waste is not well-managed and users do not have 24/7 access to well-functioning hygienic services. The service regimes thus form a splintered regime at the sectoral level.
Several actors in Nairobi pursue innovation strategies to improve this situation. The public utility recently started to extend its operations into informal settlements. Another innovation strategy is pursued by social enterprises and NGOs, which try to develop new on-site “sanitation value chains” in informal settlements. Not all resources for innovative activities can be mobilized at the local level. At the global level, several actors and networks in international development cooperation aim to establish a globally accepted paradigm of safely managed non-grid sanitation.
As a result of these innovation strategies, Nairobi’s splintered regime will develop over time. The often aspired transition to a “monolithic regime” based on a centralized sewerage system seems unrealistic in the coming years. Instead, a much broader set of possible end-points of transition pathways towards sustainability can be identified.
All in all, the thesis provides conceptual and empirical insights in transition processes in basic service sectors in cities in-low income countries. The conceptual extensions are also of relevance for transition research beyond the context of cities in low-income countries.

Books

Edomah, N. (2020)
Electricity and Energy Transition in Nigeria.
Routledge, Taylor & Francis Group. London and New York
link

Electricity and Energy Transition in Nigeria provides readers with a detailed account of the dynamics of energy infrastructure change in Nigeria's electricity sector. The book starts by introducing the basic theories underpinning the politics of energy infrastructure supply and goes on to explore the historical dimensions of the Nigerian energy transition by highlighting the influences and drivers of energy systems change. Edomah also examines the political dynamics at play, highlighting the political actors and institutions that shape energy supply, as well as the impact of consumer politics. The book concludes by considering how all these factors may influence the future of energy in Nigeria. This book will be of great interest to students and scholars of energy transitions, energy technology and infrastructure, and African Studies more generally.

Papers

Isoaho, K. and Markard, J. (2020)
The Politics of Technology Decline: Discursive Struggles over Coal Phase-Out in the UK.
Review of Policy Research
link

The decline of carbon intensive technologies is a key element in the ongoing energy transition and our attempts to tackle climate change. At the same time, our understanding of technology decline and of the associated policies and politics is still limited. This paper builds on the sustainability transitions perspective, a novel approach to analyze socio-technical transformation, including the complex interplay of policy and technology change. We study the decline of coal-fired power generation in the United Kingdom from 2000 to 2017 by analyzing the discourse in *The Guardian*. We find scientists and environmental NGOs criticizing coal for climate and health reasons. Government and incumbent businesses tried to re-legitimate coal but eventually, their resistance collapsed and coal was almost completely abandoned in just a few years. Particularly devastating for coal were failed promises around carbon capture and storage, rapid diffusion of wind energy, and pressure from various policies. This study contributes to better understanding the contested nature of decline, and the interplay of discursive struggles, technology change, and public policy in sustainability transitions.

Fesenfeld, L.P., Wicki, M., Sun, Y. and Bernauer, T. (2020)
Policy packaging can make food system transformation feasible
Nature Food 1, 173–182
link

Redesigning food production and consumption is key to limit global warming, soil erosion and biodiversity loss. Yet, transforming the food system may involve political feasibility problems, as potentially effective policy interventions interfere with citizens' daily lives. Here, we show that policy packaging – the systematic bundling of different policy measures – can help mitigate the potential trade-off between political feasibility and problem-solving effectiveness. We use conjoint experiments with citizens from China, Germany and United States to scrutinize support for different combinations of policies aimed at reducing food systems' environmental impacts. Our results do not support the widespread claim that costly market-based or push measures per se receive less support than non-market-based or pull measures. Instead, they show that citizens are likely to support even costly policies, but this support varies per country and depends on the specific combination of policy measures, their stringency, and revenue earmarking.

Trutnevyte, E., Hirt, L.F., Bauer, N., Cherp, A., Hawkes, A., Edelenbosch, O.Y., Pedde, S. and van Vuuren, D.P. (2019)
Societal Transformations in Models for Energy and Climate Policy: The Ambitious Next Step.
One Earth 1, 423–433
link

Whether and how long-term energy and climate targets can be reached depend on a range of interlinked factors: technology, economy, environment, policy, and society at large. Integrated assessment models of climate change or energy-system models have limited representations of societal transformations, such as behavior of various actors, transformation dynamics in time, and heterogeneity across and within societies. After reviewing the state of the art, we propose a research agenda to guide experiments to integrate more insights from social sciences into models: (1) map and assess societal assumptions in existing models, (2) conduct empirical research on generalizable and quantifiable patterns to be integrated into models, and (3) build and extensively validate modified or new models. Our proposed agenda offers three benefits: interdisciplinary learning between modelers and social scientists, improved models with a more complete representation of multifaceted reality, and identification of new and more effective solutions to energy and

climate challenges.

Strøm-Andersen, N. (2020)
Innovation and by-product valorization: A comparative analysis of the absorptive capacity of food processing firms.
Journal of Cleaner Production 253: 1–15
link

The transition toward the bioeconomy concerns how firms innovate, especially how they utilize bio-based resources. This qualitative study explores how incumbent firms in a low-tech industry like food make use of technological developments to create high added-value for their by-products. The paper compares managerial efforts to utilize biotechnology in a meat and a dairy firm in the Norwegian food processing industry. The theoretical approach draws on the concept of absorptive capacity from organizational learning literature and innovation studies. The study finds that firms in the same industry with quite similar structures (i.e. the form of ownership) can nevertheless pursue divergent strategies toward developing innovations for by-product utilization. Through the process of learning, the study notes the role of firms' absorptive capacity—exploratory, transformative, and exploitative—in acquiring external knowledge, experimenting with the newly acquired knowledge, and mobilizing necessary resources to adopt and develop technological innovations during the transition process. The study highlights the importance of inter-industry learning and research collaboration, market understanding, and supportive policies and regulations in fostering a bioeconomy.

Murto, P., Juntunen, J., Jalas, M. and Hyysalo, S. (2019)
The difficult process of adopting a comprehensive energy retrofit in housing companies: Barriers posed by nascent markets and complicated calculability.
Energy Policy 132: 955-964
link

Comprehensive energy retrofits by households and housing companies have been recognised as important means for emission reductions. However, the diffusion of comprehensive energy retrofits has not been as fluent as expected. In this article, we study the Finnish energy retrofit market and comprehensive energy retrofit acquisition process through participant observation and interview methods in order to better understand the work that housing companies, as potential adopters, must carry out. The results of our study suggest that to operate in the current market, adopters must expend a considerable amount of effort in finding market actors, understanding the offerings and coming to grips with what kind of energy system would be ideal for their site. Only a handful of market actors are able to help adopters in this work and even these were difficult to locate due to their position in the energy retrofit market ecology. The study indicates that future policy should foster matchmaking between potential adopters and energy counselling services and support tighter collaboration between public and private energy sector actors.

Hyysalo, S., Marttila, T., Perikangas, S., and Auvinen, K. (2019)
Intermediate codesigning in transitions governance: Catalysing and channeling participant action.
The Design Journal 22:6, 873-894
link

Design research is increasingly used in catalysing society-wide changes in futuring and in transition process-related deliberations. These processes underscore the role of 'intermediate designs' – the means, tools, and procedures that help participants to reach meaningful outcomes. Whilst intermediate designs are well recognized in collaborative design, the design of intermediate designs is a hitherto little studied area. To orient design researchers towards it, we analyse a codesign process of developing a transition pathway formation tool, and characterize its specific features and design considerations. The main finding is the continuous effort by designers towards the 'channelling of participant action' through design choices so that the outcomes and processual integrity of the collaborative envisioning is ensured while avoiding 'designing the participations', which would hamper participants' freedom to deliberate, express, create, and take ownership of the process and its results.

Hyysalo, S., Marttila, T., Perikangas, S., and Auvinen, K. (2019)
Codesign for transitions governance: A Mid-range pathway creation toolset for accelerating sociotechnical change.
Design Studies 63: 181-203
link

Vision building, pathway construction and experimentation are key processes in the management of long-term sociotechnical transitions. The need to accelerate transitions and to adapt transition management to new country contexts calls for new means to catalyse these processes. We improved the path creation toolsets and procedures of transition management to create more detailed pathways and analyses of pathway step interrelations. Our path creation system uses magnetic elements that could be easily moved around a large metallic board, a set of

procedures and a digitalized counterpart of the board for out-of-the-workshop commentary and reporting. The system has facilitated and anchored well the discussions by participants with cross-sectoral backgrounds. Overall, the redesigned system underscores the potential that codesign for sustainability transitions holds.

Ting, M.B. and Bryne, R. (2020)
Eskom and the rise of renewables: regime-resistance, crisis and the strategy of incumbency in South Africa's electricity system
Energy Research and Social Science, 60 (2020), 101333
link

The sustainability transitions literature considers regimes as sources of inertia, in which change is difficult to achieve due to resistance and lock-in. However, regime-resistance is an understudied issue, and so it is unclear which parts of the regime create resistance and how. In this paper, we contribute such an analysis by developing the concept of a multi-dimensional selection environment to explore regime-resistance and the maintenance of regime-stability in the face of challenges from a niche. We present a case study tracing the efforts of South Africa's state-owned electricity utility Eskom, conceptualised as a dominant regime-incumbent, to resist the addition of renewable energy-based electricity generation, conceptualised as part of a niche. We examine battles over rule-changes to the regime selection environment, wherein Eskom tried to maintain the status quo and niche actors tried to transform it. We find that Eskom had an evolving strategy of regime-resistance in response to several gains achieved by the renewables niche over time. Our analysis suggests ways to theorise regime-resistance by developing a more specific and dimensioned view of the selection environment and operationalising the strategies that regime and niche actors might implement in their respective attempts to maintain or change that selection environment. By understanding how these strategies work, we argue that those seeking to transform an unsustainable regime could develop more effective strategies for undermining regime-resistance and promoting niches.

Kuzemko, C. and Britton, J. (2020)
Policy, politics and materiality across scales: A framework for understanding local government sustainable energy capacity applied in England.
Energy Research and Social Science 62, 101367
link

Analyses of local climate change governance and sustainable energy transitions have tended to focus on understanding broader governance networks, within which local governments are important actors. Such approaches often make appeals to (lack of) capacity when seeking to understand the many limits to local sustainability programmes, however local government capacity is rarely given a primary analytical focus. We offer a definition of local government sustainable energy capacity, organise it into six types, and explore it in relation to contextual factors across scales: political institutions; energy and climate change policies and material aspects of energy systems. This heuristic framework is applied to case studies of eight local and combined authorities in England, a country with particularly centralised political institutions and energy systems. We conclude that capacity is a useful lens through which to explore the extent to which, and importantly how, local governments can become active sustainability actors. We also find that the development of knowledge capacity is becoming increasingly important; that there is some evidence of political re-scaling in energy; and identify some ways in which material aspects of energy systems have significant implications for local government sustainable energy capacity.

Suyash, J., Grillitsch, M. and Hansen, T. (2020)
Agency and actors in regional industrial path development. A framework and longitudinal analysis.
Geoforum, In Press
link

Despite significant interest in regional industrial restructuring in economic geography, surprisingly, scarce attention has been paid to the changing role of agency over time. The current paper develops a framework for understanding the role of multiple types of actors and the agency they exercise for regional industrial path development. The framework is employed in a longitudinal study of industry development in Värmland, Sweden, from forestry towards a bio-economy. The analysis highlights how actors exercise very different types of agency in different periods of regional industrial path development.

Befort, N., (2020)
Going beyond definitions to understand tensions within the bioeconomy: The contribution of sociotechnical regimes to contested fields.
Technological Forecasting and Social Change 153, 119923
link

The bioeconomy is steadily becoming more important to regional, national and European public policy. As it encompasses the transformation of agricultural, marine and organic resources into food, feed, fuels, energy and materials, the bioeconomy should become a major new industry replacing oil-based products. However,

policymakers take two main approaches to developing the bioeconomy. The first, biotech-oriented approach depicts the bioeconomy as a biotechnology subsector. The second, biomass-oriented approach (i) considers biomass transformation as its starting point, (ii) raises the issue of bioeconomy sustainability, and (iii) considers biotechnology as just one of many transformation technologies. The growing literature on defining the bioeconomy has not yet covered the articulation between biotechnology and bioeconomy. This paper fills this critical gap and provides policy recommendations depending on whether the goal is to develop biotechnology or to contribute to green growth and sustainability.

Lestar, T. and Böhm, S. (2020)
Ecospirituality and sustainability transitions: agency towards degrowth.
Religion, State and Society, 48:1, 56-73
link

'Sustainability transitions' has emerged as one of the most important and influential literatures on understanding the pathways towards a more sustainable future. Yet, most approaches in this literature privilege technological and regime-wide innovations, while people's agencies, grassroots innovations, and social factors more generally are often underrepresented. This article focuses on the role of ecospirituality as worldview, aiming to understand how spiritual and religious beliefs play an important role in practical, everyday sustainability transitions. In an extensive desk-based study, literature across disciplines is reviewed to explore connections between spirituality, pro-environmental behaviour, climate policy, and sustainability agencies. Showing the importance of ecospiritual practice, the purpose of this article is to make a case for the inclusion of ecospirituality, as worldview, in the study of sustainability transitions. We argue that ecospirituality is a significant dimension to understanding people's contemporary agencies that shift away from endless economic growth and resource efficiency mantras towards more radical worldviews of degrowth and different ways of achieving happiness and fulfilment in life.

Friis, F. (2020)
An alternative explanation of the persistent low EV-uptake: The need for interventions in current norms of mobility demand.
Journal of Transport Geography 83, 102635
link

Worldwide, electric vehicles (EVs) are regarded as a key technology in decarbonising the transport sector by integrating renewable energy sources into the grid. Considering the great potentials to disseminate this smart-grid technology, the EV uptake remains low. This tension between the recent years high anticipation of the peak-shaving and storage potential of EVs and the associated persistent minor adoption rate is discussed through an in-depth case study of a Danish mobility operator's attempt to test EVs across a variety of Danish households. Considering the operator's ambitious and strategic promotion of EVs lower cost of operation, sustainable aspects and ability to meet driving needs, almost none of the participants wanted to adopt an EV after the trial ended. Corresponding with dominant approaches, the operator reproduced conventional problem framings' focus on technology, economic rationality, and information. However, through an alternative practice-based analysis, this paper critically recommends urgent sustainable mobility interventions to identify the crucial intervention points in the complexes of interlinked social practices to help explain the persistent low EV-uptake. The paper essentially acknowledges the need for policy makers and designers to scale down the focus on technology fix and innovation, and strategical intervene in the current concepts of practice configurations. In particularly, governance of mobility is recommended to involve multiple change agents to design practice-based interventions that target to reframe and reconceptualise the norms enmeshed in current mobility demand.

Lauttamäki, V. and Hyysalo, S. (2019)
Empirical application of the multi-level perspective: Tracing the history of ground-source heat pumps in Finland.
Sustainability: Science, Practice, and Policy 15 (1) 82-103
link

The emergence and evolution of more sustainable technologies and related industrial fields is a core concern for sustainability transitions scholars. This interest is accentuated as it has become evident that the upscaling of transition-relevant technologies follows different pathways in varying national and geographic contexts. The usual research approach to studying such industry-field dynamics in particular contexts has been to use the technological innovation systems (TIS) framework, focusing on the emergence of functioning TISs. The current calls for life-cycle TIS and the few existing examples of operationalizing the multi-level perspective (MLP) in a more focused way underscore the need to better account for the contextual specifics, contingencies, and later phases in the proliferation of transition technologies. We elaborate on the benefits of using the MLP in long-term analyses of transition technologies by examining the history of ground-source heat pump (GSHP) systems in Finland from the era of the energy crises in the 1970s until the present day. The investigation reveals how the present success of GSHPs has not followed just from simple innovation-system dynamics or niche-regime landscape relations but is also

a result of variations and extent of landscape pressure as well as unplanned support from neighboring niche technologies.

Jordan, N. D. and Bleischwitz, R. (2020)
Legitimating the governance of embodied emissions as a building block for sustainable energy transitions.
Global Transitions 2:37–46
link

Highlights:
- Presents important developments in governance of embodied emissions.
- Empirical analysis of building industry as vanguard of embodied emissions governance.
- Connects developments in building industry to potential breakthroughs in global climate governance.
- Proposes legitimising dimensions crucial to governance of embodied emissions.

Schmid, B. and Smith, T.S.J. (2020)
Social transformation and postcapitalist possibility: Emerging dialogues between practice theory and diverse economies.
Progress in Human Geography
link

While practice theories and diverse economy approaches are widely employed by human geographers, the two literatures have developed in parallel, rather than in dialogue. This article argues that this has constrained understandings of postcapitalist social change and traces an emerging theoretical conversation between these traditions. It outlines the potential of scholarly engagement with what we term 'diverse practices', especially when discussing the scalar possibilities and constraints of community activism. By grounding diverse economic scholarship in practice-theoretical conceptions of power, politics, and scale, the article proposes a materialisation of postcapitalist possibility and explores the barriers and facilitators of transformative geographies.

O'Neill, K. and Gibbs, D. (2020)
Sustainability transitions and policy dismantling: Zero carbon housing in the UK.
Geoforum 108, 119-129
link

In this paper we examine the failure of the zero carbon homes agenda in the UK and argue that it represents a case of policy dismantling, where a range of policies and programmes have been introduced, revised and then removed by government. We bring together the sustainability transitions literature with the literature on policy dismantling, regime resistance and regime detractors, and suggest that the zero carbon housing agenda in the UK offers useful insights into the politics of sustainability transitions. We identify three phases of policy change, from policy expansion, symbolic dismantling and eventual active policy dismantling. In the conclusions we offer some suggestions on processes of policy dismantling and what this might mean for future sustainability transitions given the significant contributions of buildings to greenhouse gas emissions and the urgent need for rapid low carbon transitions.

Yu, Z. and Gibbs, D. (2019)
Unravelling the role of green entrepreneurs in urban sustainability transitions: a case study of China's Solar City
Urban Studies
link

This paper aims to understand the role of green entrepreneurs in urban sustainability transitions. We propose an analytical framework combining transition approaches and green entrepreneurship from a relational lens. It includes four processes: emergence of green entrepreneurs, multi-scalar interest coordination, empowering through anchoring, and struggling with the regime at the urban scale. This framework is illustrated through an empirical analysis of the role of green entrepreneurs in the development of the solar water heater industry in China's Solar City. The analysis unravels how the local institutional contexts and multi-scalar relations empowered local green entrepreneurs to become system builders for urban transitions.

Wesseling, J.H., Bidmon, C. and Bohnsack R. (2020)
Business model design spaces in socio-technical transitions: The case of electric driving in the Netherlands.
Technological Forecasting & Social Change 154
link

Whereas research acknowledges the potential of business model innovation (BMI) to destabilize an existing regime, the impact of a socio-technical system in transition on BMI remains under-conceptualized. To advance work in this direction, this study expands the concept of a business model design space (BMDS), which describes the opportunities and constraints to design novel ways of creating and capturing value from niche technologies available at a given point in time in a transition. Illustrated with the case of electric vehicles in the Netherlands, we show how BMI are affected by and, in turn, affect this design space. We find that the policy and the science and technology dimensions of the socio-technical system form hard boundaries to the BMDS that niche actors cannot directly overcome via BMI. Yet, BMI can push the softer industry, market, and cultural

boundaries of the BMDS by supporting niche expansion via coupling novel technologies to business models that (i) conform to the current regime, or that (ii) attempt to transform the regime. This paper offers an analytical framework that connects firm- and system-level to support the exploration of questions like how much novelty niche actors can introduce into a ST-system at specific points in a transition.

Lamb, W. F. and Minx, J. C. (2020)
The political economy of national climate policy: Architectures of constraint and a typology of countries.
Energy Res. Soc. Sci. 64 101429
link

In the wake of the Paris Agreement, countries have yet to embark on deep decarbonisation pathways. This article explores the reasons for this limited response, taking a comparative political economy lens to identify national constraints that actively hinder climate policy progress. We discuss different metrics of climate policy progress, including emissions trends, climate legislation adoption, policy adoption, policy stringency, and policy outcomes. We then review literatures that explain varying national outcomes along these dimensions. Identified constraints include (but are not limited to) exposure to fossil fuel extraction activities, supply-side coal dependency, a lack of democratic norms, exposure to corruption, a lack of public climate awareness, and low levels of social trust. Correlation and principal component analysis of these variables demonstrates strong co-dependencies, including a North-South divide in institutional quality, trust and climate awareness that limits full participation in climate legislation and the removal of fossil subsidies. Recent trends indicate stability in corruption across the whole sample, and the continued durability of autocratic and extractivist states. We identify common constraints for five distinct country groups using cluster analysis: 'oil & gas states', 'fragile states', 'coal-dependent development', 'fractured democracies' and 'wealthy OECD'. We highlight the need to scrutinise architectures of constraint – combinations of political economic factors that are mutually reinforcing and highly resistant to intervention.

Hess, D.J. and Sovacool, B. K. (2020)
Sociotechnical Matters: Reviewing and Integrating Science and Technology Studies with Energy Social Science.
Energy Research & Social Science 65 101462, 1-17
link

Theoretical frameworks associated with science and technology studies (STS) are becoming increasingly prominent in social science energy research, but what do they offer? This review provides a brief history of relevant STS concepts and frameworks and a structured analysis of how STS perspectives are appearing in energy social science research and how energy-related research is appearing in social science STS. Drawing from an initial body of 262 journal articles and books with a stratified sample of 68 published from 2009 to mid-2019, the review identifies four major groups of perspectives: (1) STS-related cultural analysis, especially the study of sociotechnical imaginaries; (2) STS-related policy analysis, such as research on the social construction of risks and standards and on the performativity of economic models; (3) STS perspectives on public participation processes, expert-public relations, and mobilized publics; and (4) the study of sociotechnical systems, including large technological systems, the politics of design, and users and actor-networks. Connections among the perspectives and the value for energy social science research are also critically discussed.

Lee, J., Bazilian, M., Sovacool, B. K., Hund, K., Jowitt, S. M., Nguyen, T. P., Månberger, A., Kah, M., Greene, S., Galeazzi, C., Awuah-Offei, K., Moats, M., Tilton, J. and Kukoda, S. (2020)
Reviewing the material and metal security of low-carbon energy transitions.
Renewable & Sustainable Energy Reviews 124, 109789, 1-24
link

The global transition to a low-carbon economy will involve changes in material markets and supply chains on a hitherto unknown scale and scope. With these changes come numerous challenges and opportunities related to supply chain security and sustainability. To help support decision-making as well as future research, this study employs a problem-oriented perspective while reviewing academic publications, technical reports, legal documents, and published industry data to highlight the increasingly interconnected nature of material needs and geopolitical change. The paper considers a broad set of issues including technologies, material supplies, investment strategies, communal concerns, innovations, modeling considerations, and policy trends to help contextualize policy decisions and regulatory responses. Policy options are outlined for each topical section, as well as areas for further research. Together, these recommendations serve to help guide the complex, interdisciplinary approach to materials required for a low-carbon transition.

Sovacool, B. K. and Martiskainen, M. (2020)
Hot transformations: Governing rapid and deep household heating transitions in China, Denmark, Finland and the United Kingdom.
Energy Policy 139, 111330, 1-16
link

The rapid decarbonisation of heat remains a challenging energy and climate policy priority. In this study, after screening 461 global case studies, we examine four national household transitions in heat, and examine their implications for governance. These transitions were both rapid, involving transformations in heat provision in a short timeframe of 18–35 years; and deep, involving diffusion that collectively reached more than 100 million households and more than 310 million people. From 1995 to 2015, China stimulated industrial research with strong municipal and national targets and policies to the point where they saw adoption rates for solar thermal systems surpass 95% market penetration in many urban areas. From 1976 to 2011, Denmark blended small-scale decentralized community control with national standards and policies to promote district heating so it reached 80% of household needs. From 2000 to 2018, Finland harnessed user and peer-to-peer learning, and innovation, alongside national and European policies and incentives so that heat pumps reached almost a third of all homes. From 1960 to 1977, The United Kingdom coordinated a nationalized Gas Council and Area Boards with industry groups, appliance manufacturers, installers and marketing campaigns so that gas central heating reached almost half of all homes. These four rapid case studies share commonalities in polycentric governance, rooted in (1) equity, (2) inclusivity, (3) information and innovation, (4) ownership and accountability, (5) organizational multiplicity, and (6) experimentation and flexibility. The study affirms that designing the right sort of political and governance architecture can be just as salient as technical innovation and development in stimulating transitions.

Sovacool, B.K., Ali, S. H., Bazilian, M., Radley, B., Nemery, B., Okatz, J., and Mulvaney, D. (2020)
Sustainable minerals and metals for a low-carbon future.
Science 367 (6473), 30-33
link

Climate change mitigation will create new natural resource and supply chain opportunities and dilemmas, because substantial amounts of raw materials will be required to build new low-carbon energy devices and infrastructure. However, despite attempts at improved governance and better corporate management, procurement of many mineral and metal resources occurs in areas generally acknowledged for mismanagement, remains environmentally capricious, and, in some cases, is a source of conflict at the sites of resource extraction). These extractive and smelting industries have thus left a legacy in many parts of the world of environmental degradation, adverse impacts to public health, marginalized communities and workers, and biodiversity damage. We identify key sustainability challenges with practices used in industries that will supply the metals and minerals—including cobalt, copper, lithium, cadmium, and rare earth elements (REEs)—needed for technologies such as solar photovoltaics, batteries, electric vehicle (EV) motors, wind turbines, fuel cells, and nuclear reactors. We then propose four holistic recommendations to make mining and metal processing more sustainable and just and to make the mining and extractive industries more efficient and resilient.

Sovacool, B.K., Hook, A., Martiskainen, M., Brock, A., and Turnheim, B. (2020)
The decarbonisation divide: Contextualizing landscapes of low-carbon exploitation and toxicity in Africa.
Global Environmental Change 60, 102028, 1-19
link

Much academic research on low-carbon transitions focuses on the diffusion or use of innovations such as electric vehicles or solar panels, but overlooks or obscures downstream and upstream processes, such as mining or waste flows. Yet it is at these two extremes where emerging low-carbon transitions in mobility and electricity are effectively implicated in toxic pollution, biodiversity loss, exacerbation of gender inequality, exploitation of child labor, and the subjugation of ethnic minorities. We conceptualize these processes as part of an emerging “decarbonisation divide.” To illustrate this divide with clear insights for political ecology, sustainability transitions, and energy justice research, this study draws from extensive fieldwork examining cobalt mining in the Democratic Republic of the Congo (DRC), and the processing and recycling of electronic waste in Ghana. It utilizes original data from 34 semi-structured research interviews with experts and 69 community interviews with artisanal cobalt miners, e-waste scrapyard workers, and other stakeholders, as well as 50 site visits. These visits included 30 industrial and artisanal cobalt mines in the DRC, as well as associated infrastructure such as trading depots and processing centers, and 20 visits to the Agbogbloshie scrapyard and neighborhood alongside local waste collection sites, electrical repair shops, recycling centers, and community e-waste dumps in Ghana. The study proposes a concerted set of policy recommendations for how to better address issues of exploitation and toxicity, suggestions that go beyond the often-touted solutions of formalisation or financing. Ultimately, the study holds that we must all, as researchers, planners, and citizens, broaden the criteria and analytical parameters we use to evaluate the sustainability of low-carbon transitions.

Geels, F.W. (2020)
Micro-foundations of the Multi-Level Perspective on socio-technical transitions: Developing a multi-dimensional model of

agency through crossovers between social constructivism, evolutionary economics and neo-institutional theory.
Technological Forecasting and Social Change, 152, 119894
link

The Multi-Level Perspective (MLP) is a prominent framework to understand socio-technical transitions, but its micro-foundations have remained under-developed. The paper's first aim is therefore to develop the MLP's theoretical micro-foundations, which are rooted in Social Construction of Technology, evolutionary economics and neo-institutional theory. The second aim is to further identify crossovers between these theories. To achieve these goals, the paper analytically reviews the three theories, focusing on: 1) the relevance of each theory for transitions and the MLP, 2) the theory's conceptualisation of agency, 3) criticisms of each theory and subsequent conceptual elaborations (which prepare the ground for potential crossovers between them). Mobilizing insights from the analytical reviews, the paper articulates a multi-dimensional model of agency, which also provides a relational and processual conceptualization of ongoing trajectories in which actors are embedded. Specific conceptual linking points between the three theories are identified, leading to an understanding of socio-technical transitions as evolutionary, interpretive and conflictual processes.

Geels, F.W., McMeekin, A., and Pfluger, B. (2020)
Socio-technical scenarios as a methodological tool to explore social and political feasibility in low-carbon transitions: Bridging computer models and the Multi-Level Perspective in UK electricity generation (2010-2050).
Technological Forecasting and Social Change, 151, 119258
link

Social acceptance and political feasibility are important issues in low-carbon transitions. Since computer models struggle to address these issues, the paper advances socio-technical scenarios as a novel methodological tool. Contributing to recent dialogue approaches, we develop an eight-step methodological procedure that produces socio-technical scenarios through various interactions between the multi-level perspective and computer models. As a specific contribution, we propose 'transition bottlenecks' as a methodological aid to mediate dialogue between qualitative MLP-based analysis of *contemporary* dynamics and quantitative, model-generated *future* pathways. The transition bottlenecks also guide the articulation of socio-technical storylines that suggest how the social acceptance and political feasibility of particular low-carbon innovations can be improved through social interactions and endogenous changes in discourses, preferences, support coalitions and policies. Drawing on results from the 3-year PATHWAYS project, we demonstrate these contributions for the UK electricity system, developing two low-carbon transition pathways to 2050 commensurate with the 2 °C target, one based on technological substitution (enacted by incumbent actors), and one based on broader system transformation (enacted by new entrants).

Rogge, K.S., Pfluger, B. and Geels, F.W. (2020)
Transformative policy mixes in socio-technical scenarios: The case of the low-carbon transition of the German electricity system (2010-2050).
Technological Forecasting and Social Change, 151, 119259
link

Much research and policy advice for addressing climate change has focused on developing model-based scenarios to identify pathways towards achieving decarbonisation targets. The paper's first aim is to complement such model-based analysis with insights from socio-technical transition analysis to develop socio-technical storylines that show how low-carbon transitions can be implemented. Our second aim is to explore how policymakers could govern such transition processes through transformative policy mixes. We take the example of the transition of the German electricity system towards renewable energies, and elaborate two transition pathways which are assumed to achieve an 80% reduction in greenhouse gas emissions by 2050, but differ in terms of lead actors, depth and scope of change: the first pathway captures the substitution of technological components (pathway A), while the second aims at broader system transformation (pathway B). We find that multi-dimensional socio-technical change (pathway B) requires greater emphasis on societal experimentation and a more proactive role for anticipatory deliberation processes from the outset. In contrast, shifting gear from a new entrant friendly past trajectory to an incumbent dominated pathway (pathway A) requires agency from incumbents and is associated with regime stabilizing instruments defending the old regime while simultaneously fulfilling decarbonisation as additional success criteria.

Sareen, S. and Haarstad, H. (2020)
Legitimacy and accountability in the governance of sustainable energy transitions.
Global Transitions 2, 47-50
link

How can we enable equitable decarbonisation? There is a wide gap between power to make transformative decisions, on the one hand, and agency on the part of those affected by climate change, on the other. We converge scholarly strands to understand and address the causes for insufficient action towards equitable decarbonisation – the crisis of accountability – despite

global recognition of the urgent need for such action. Just as we study the socio-materiality of energy systems to understand the ephemeral flows of energy, we must also unpick the making of socio-political arrangements to comprehend what practices determine the elusive governance of energy transitions. To unite the twin concerns of energy and accountability, we probe the relationship between accountability and legitimacy on the one hand, and the governance of sustainable energy transitions on the other. This synthesis offers three key insights. First, accountability and legitimacy are deeply conflictual issues where various actors negotiate and struggle for control in energy transitions. Second, the negotiations around accountability and legitimacy have outcomes that are often inequitable. Third, it is crucial that reforms and policies that aim to stimulate sustainable energy transitions address power imbalances as well as carbon emissions. Overall, building equity into processes of systemic change requires instituting strong mechanisms that generate public benefits while legitimating new socio-material infrastructure and practices.

Fuchs, G. (2019)
Legitimacy and field development: Electricity transition(s) in Germany.
Global Transitions 1, 141-147
link

The paper draws on recent developments in the field of electricity generation and distribution in Germany to outline some basic assumptions on how legitimation strategies are framed and differ between emerging and stable action fields. We analyze decentralized forms of electricity generation and distribution. Pioneers of this development seized opportunities connected with broad institutional changes to discredit the status quo and work out legitimations for their new model of how to generate and distribute electricity. Just like skilled actors in stable fields working on adaptation strategies to changing environments, the ones in emerging fields engaged in working out new search strategies, built coalitions, undertook collective action, and established affiliations with recognized authorities and elites. However, unlike skilled actors in stable fields, those in the emerging ones, could not build on established routines. Instead, they drew on logics from outside their field and emphasized the benefits of their activities for society at large. Our analysis shows how actors legitimate novel organizational forms in emerging fields vs. the attempts of incumbent actors in mature fields to preserve their position in a contentious period. Theories of social change should explicitly account for field context.

Wu, D. (2019)
Accountability relations and market reform in China's electric power sector.
Global Transitions 1, 171-180
link

Environmental authoritarianism characterizes China's energy transition and its renewable energy boost as a top-down process initiated by the centralized developmental state. This article attempts to present a contrary viewpoint and argues that China's energy transition is a process of repeated integrative bargaining and non-zero-sum games that both the central and sub-national actors play. An examination of the roles of central and provincial governing authorities in market reforms of China's electric power sector finds that China has embarked on electricity market restructuring by adjusting the accountability relationship between the central and provincial governing authorities. From an actor-centered institutionalist perspective and based on the consideration that central and provincial authorities are institutional constraints of each other, this article studies the capabilities and preferences of central and provincial actors in order to explain their modes of interactions and the resulting policy outcomes. It draws the conclusion that the central and provincial authorities have always shared fluid and dynamic accountability relations. The balance of power is constantly changing with the changes in policy objectives. The transformation of energy governance and particularly the accountability relations in Chinese spatial politics have enabled China to get its market reforms on track in the electric power sector.

Grossmann, K. (2019)
Using conflicts to uncover injustices in energy transitions: The case of social impacts of energy efficiency policies in the housing sector in Germany.
Global Transitions 1, 148-156
link

Energy efficiency in the housing stock has been praised as a win-win strategy reducing end energy use for heating and alleviating energy poverty. However, policies to foster energy efficiency improvements have led to rising protests and conflicts because investments made into retrofitting became a means of speculation and displacement of low-income residents. Conflict theory emphasises the role of conflicts as drivers of social change; they open a window into how and by whom the legitimacy of existing rules and government is challenged. The paper uses social conflict theory to interpret the conflicting interests and issues at stake here. It concludes that what seemed to be a conflict between social and ecological goals, turns out to be a distributional conflict around affordable housing and against unjust distributions of cost burdens of energy transitions. The manifest conflicts between tenants and the housing industries were caused – or enabled – through the specific policy context. The state had imposed new norms for energy standards of buildings

and left their economic consequences to be solved in the conflicts between housing companies and tenants. The legitimacy of these policies was challenged, especially the actual ecological effects – and thus the intention to reach the climate mitigation goals of the German government – are disputed. The conflicts described here stimulated the formation of interest groups, contributed to social movements and raised awareness to the social impacts of energy efficiency policies. Thus, the paper shows how much a clearer engagement of sustainability transition literature with conflicts and conflict theory is needed to better address justice issues in energy transitions.

Bedi, H. P. (2019)
"Lead the district into the light": Solar energy infrastructure injustices in Kerala, India.
Global Transitions 1, 181-189
link

Solar energy represents a fossil fuel alternative to meet India's rising energy demand. Large mega-watt solar projects require contiguous land, which is sparse in the South Indian state of Kerala. Drawing from ethnographic research in Kerala, this paper traces the role that solar infrastructure plays in making and unmaking land and lives in pursuit of light. Government officials promoted the Kasaragod solar park and associated green corridor transmission line as climate-friendly infrastructure development for the energy deficit state. Select government officials encouraged solar projects as the renewable resource would help, "lead the district into the light." Although the energy infrastructure promoters promised development benefits for local stakeholders, Adivasis (indigenous peoples) without legal land titles and others opposed the acquisition of their land for the solar project. The Kasaragod Solar Park exemplifies how national climate goals for renewable energy and empty infrastructure pledges translated into the reification of land unevenness, with particularly profound implications for Adivasis. This reproduction of socio-environmental injustices did not go unchallenged. Local political opposition significantly reduced the 200 Megawatt (MW) solar park to 50 MW, but not before some Adivasis and others without land titles lost their land and livelihoods. This case illustrates how the completion of renewable energy infrastructure to meet national and state climate goals may hinge on the assertion of local political power to thwart or promote large-scale projects. Efforts to pursue ambitious national renewable energy infrastructure goals without recognition of historical land and development unevenness may hinder India's capacity to pursue renewable energy transition goals.

Blondeel, M. (2019)
Taking away a "social licence": Neo-Gramscian perspectives on an international fossil fuel divestment norm.
Global Transitions 1, 200-209
link

The international fossil fuel divestment norm formulates a standard of appropriate behaviour to withdraw investments from fossil fuel assets and reinvest them into climate-friendly solutions. Its ultimate objective is to take away the industry's "social licence to operate". In other words, the norm fundamentally questions the legitimacy of an industry because of its major impact on climate change. This paper offers a neo-Gramscian view as to how a radical divestment norm seeks to delegitimise the role of fossil fuels and the industry in society and how it only partly succeeds in doing so. This analytical interpretation of norm diffusion offers a rich understanding of the discursive and relational aspects of energy transitions and how societal consent to elite practices—and not just their coercive power—is pivotal in successfully maintaining or transitioning away from a fossil fuel-based society. I trace the origins and analyse the current state of the campaign and argue that four drivers are key to understanding norm diffusion: (legitimacy of) norm entrepreneurs; framing and discursive contestation; political opportunity structures; extant normative environment. I conclude that although there is certainly room for counter-hegemonic norm articulation, the constraining effects of a liberal social order, epitomised by liberal environmentalism, reduces its radical aspects to a passive revolution.

Hargrove, A., Qandeel, M. and Sommer, J. M. (2019)
Global governance for climate justice: A cross-national analysis of CO2 emissions.
Global Transitions 1, 190-199
link

Sustainable energy transitions are key to achieving climate justice for all. Carbon dioxide emissions' (CO2) unequal distribution globally is one of the many issues preventing climate justice. Efforts to reduce global CO2 impacts are vital for environmental justice efforts and a future free from climate change issues. Researchers have long been interested in how the rise of global governance initiatives, such as multilateral treaties, impact environmental outcomes across the world. However, little is known about how global governance concerning energy usage and technologies impacts CO2 emissions across the world. Using two-way fixed effects regression analysis from 1996 to 2011, we test how 24 multilateral environmental treaties with an energy focus impact CO2 emissions per capita, CO2 emissions as a percentage of gross domestic product, and total CO2 emissions for 162 nations. The multilateral energy treaties were collected from Ecolex. This analysis

assesses how the legitimacy of global contracts may impact actual decreases in CO2 emissions, resulting in climate justice outcomes. Additionally, this analysis considers how factors of institutional state governance, including control of corruption, rule of law, political stability, government effectiveness, and regulatory quality moderate the impact of multilateral energy environmental treaties and CO2 emissions. We find that stocks of environmental treaty ratification are associated with decreases in all three types of CO2 emissions. Renewable energy consumption, GDP per capita, and urban and total population are associated with increased CO2 emissions. We also find some support for the idea that treaties are associated with larger decreases in emissions in nations with higher levels of state governance. Understanding how state accountability, transparency, and legitimacy factor into the effectiveness of multilateral environmental treaties on reducing CO2 emissions is essential to combating climate change issues.

Bartiaux, F., Maretti, M., Cartone, A., Biermann, P. and Krasteva, V. (2019)
Sustainable energy transitions and social inequalities in energy access: A relational comparison of capabilities in three European countries.
Global Transitions 1, 226-240
link

The influences of energy transitions on social inequity are multidimensional in their attributes and connections. For adequate accountability of their social correlates, policies aiming to implement a transition towards sustainable energy supply and demand have also to be evaluated regarding their influences on social inequalities, namely in terms of energy access and consumption. A capability-based and relational approach is used to monitor the social correlates of the governance of energy transitions. This accountability model is applied to three different European countries: Austria, Belgium, and Bulgaria. They have different characteristics in terms of levels and inequalities regarding material deprivation and energy access as well as patterns of energy transitions. The proposition here is that the capability approach could be usefully adopted to evaluate future implementation of energy transitions and to assess how they could influence inequalities in various aspects of citizen's daily life. In such a framework, the focus is on potential links between energy transitions and energy inequalities that can be channelled by their respective relations to the capabilities. Data used to quantify the inequalities regarding various capabilities are from the Generations and Gender Programme (GGP).

Brisbois, M. C. (2020)
Decentralised energy, decentralised accountability? Lessons on how to govern decentralised electricity transitions from multi-level natural resource governance.
Global Transitions 2, 16-25
link

Emerging decentralised electricity systems require new approaches to energy governance. As energy sources shift and technology evolves, electricity governance is shifting from largely centralized models to include multiple decentralised and multi-level sites not bounded in their operations by established democratic processes. New forms of accountability are required to ensure that multi-level electricity systems meet societal needs and expectations. While multi-level governance dynamics are new for many electricity systems, they are common across other resources (e.g. water). This article uses an OECD framework that synthesizes decades of research on multi-level natural resource governance to describe 12 principles for "good" resource governance. These principles are developed and applied to decentralising electricity governance contexts in order to develop mechanisms, and identify potential governance gaps, that are relevant for ensuring accountability in decentralised electricity governance systems. The nature of decentralised electricity systems particularly highlights the need to rescale many governance functions, while paying attention to issues of inclusion, capacity building, coherence, adaptiveness, and transparency.

Jordan, N. D. and Bleischwitz, R. (2020)
Legitimating the governance of embodied emissions as a building block for sustainable energy transitions.
Global Transitions 2, 37-46
link

Highlights:
- Presents important developments in governance of embodied emissions.
- Empirical analysis of building industry as vanguard of embodied emissions governance.
- Connects developments in building industry to potential breakthroughs in global climate governance.
- Proposes legitimising dimensions crucial to governance of embodied emissions.

Sareen. S., Thomson, H., Tirado, S. Herrero, Gouveia, J. P., Lippert, I. and Lis, A. (2020)
European energy poverty metrics: Scales, prospects and limits.
Global Transitions 2, 26-36
link

Energy poverty, a condition whereby people cannot secure adequate home energy services, is gaining

prominence in public discourse and on political and policy agendas. As its measurement is operationalised, metrical developments are being socially shaped. A European Union mandate for biennial reporting on energy poverty presents an opportunity to institutionalise new metrics and thus privilege certain measurements as standards. While combining indicators at multiple scales is desirable to measure multi-dimensional aspects, it entails challenges such as database availability, coverage and limited disaggregated resolution. This article converges scholarship on metrics – which problematises the act of measurement – and on energy poverty – which apprehends socio-political and techno-economic particulars. Scholarship on metrics suggests that any basket of indicators risks silencing significant but hard to measure aspects, or unwarrantedly privileging others. State-of-the-art energy poverty scholarship calls for indicators that represent contextualised energy use issues, including energy access and quality, expenditure in relation to income, built environment related aspects and thermal comfort levels, while retaining simplicity and comparability for policy traction. We frame energy poverty metrology as the socially shaped measurement of a varied, multi-dimensional phenomenon within historically bureaucratic and publicly distant energy sectors, and assess the risks and opportunities that must be negotiated. To generate actionable knowledge, we propose an analytical framework with five dimensions of energy poverty metrology, and illustrate it using multi-scalar cases from three European countries. Dimensions include historical trajectories, data flattening, contextualised identification, new representation and policy uptake. We argue that the measurement of energy poverty must be informed by the politics of data and scale in order to institutionalise emerging metrics, while safeguarding against their co-optation for purposes other than the deep and rapid alleviation of energy poverty. This 'dimensioned' understanding of metrology can provide leverage to push for decisive action to address the structural underpinnings of domestic energy deprivation.