Environmental Innovation and Societal Transitions 42 (2022) 331–339

Contents lists available at ScienceDirect

Environmental Innovation and Societal Transitions

journal homepage: www.elsevier.com/locate/eist

A perspective on the future of sustainability transitions research

Bernhard Truffer [a,b,*], Harald Rohracher [c], Paula Kivimaa [d,h], Rob Raven [b,e], Floor Alkemade [f], Luis Carvalho [g], Giuseppe Feola [b,1]

[a] Swiss Federal institute of Aquatic Science and Technology (Eawag), Dübendorf, Switzerland
[b] Copernicus Institute of Sustainable Development, Utrecht University, The Netherlands
[c] Department of Thematic Studies - Technology and Social Change, Linköping University, Sweden
[d] Finnish environment institute (Syke), Helsinki, Finland
[e] Monash Sustainable Development Institute, Monash University, Australia
[f] Eindhoven University of Technology, Department of Industrial Engineering and Innovation Sciences, The Netherlands
[g] School of Economics and Management (FEP), University of Porto, Portugal
[h] SPRU, University of Sussex, Brighton, UK

ARTICLE INFO

Keywords
Sustainability transitions
Academic publishing
Text analytic methods
Editorial strategy

ABSTRACT

The journal Environmental Innovation and Societal Transitions (EIST) recently celebrated its tenth anniversary. Its development represents a great success, contributing substantially to the consolidation and maturation of the research field of sustainability transitions. However, being content with past successes will not be sufficient for tackling emerging challenges. In this perspective paper, we take stock of recent dynamics in the field by analyzing the evolving knowledge structure of the papers published in the journal. Based on these insights, we share the editorial priorities of the new editorial team and elaborate how we want to position the journal in the rapidly changing landscape of academic publishing. This is in the hope to align expectations with future authors and readers and to serve our quickly growing research field even better as it increasingly gains academic recognition and policy relevance.

1. Introduction

The transitions research field has matured, diversified and expanded considerably over the past three decades (Markard et al., 2012; Köhler et al., 2019). Starting as a dedicated, but somewhat marginal social science research field in the late 1990s, concerned with the mutual shaping of technological and social change, it has evolved into a multi-disciplinary social science research field. It has received wide recognition in academia and started to get attention from national and international policy circles dealing with the increasingly pressing challenge of environmental sustainability (EEA, 2019) – with recent additions focusing also on social sustainability. In the course of these developments, the scope of empirical studies in the field expanded considerably from the initial focus on electricity and transport sectors to other domains exposed to rapid transformations, such as water, food, health, housing or manufacturing (van den Bergh et al., 2021).

* Corresponding author at: Swiss federal institute of Aquatic Science and Technology (Eawag), Ueberlandstr. 133, Dübendorf 8600, Switzerland.
E-mail address: bernhard.truffer@eawag.ch (B. Truffer).

[1] The authors constitute the currently acting editorial team of EIST. We gratefully acknowledge support in the analysis of the knowledge networks by Jonas Heiberg. Furthermore, we would like to thank for insightful comments by Matthias Weber and Jochen Markard on earlier versions of this paper.

https://doi.org/10.1016/j.eist.2022.01.006
Received 14 January 2022; Received in revised form 15 January 2022; Accepted 15 January 2022
Available online 26 January 2022

Arguably, we are now witnessing those structural reconfigurations, which were anticipated in the literature on long waves and techno-economic paradigm shifts already two decades ago (Perez, 2013, 1983; Dosi et al., 1988). These shifts have provided fantastic empirical cases to formulate, test, refine and consolidate a wide range of conceptual frameworks and methodologies in transition studies. Given the ongoing 'wicked' environmental and societal challenges, it is very likely that the research perspective of transition studies will not only remain relevant, but also become increasingly important in the coming decades. In the course of these developments, however, the core concepts and methods, as well as problem framings, are likely to shift further, mirroring changes in the real world, with socio-technical changes moving from early niche processes to mainstream system reconfigurations including daily practices and routines (Markard et al., 2020).

An academic journal dedicated to being a home ground for such a rapidly developing research field should provide a basis for presenting and reflecting on these new developments in terms of problem identification, theoretical perspectives, methods and policy implications. It shapes the field via its role as a selection environment constituted by the myriads of decisions by editors, reviewers and authors regarding what counts as good and original transitions research. EIST played a leading role the field over the past ten years and we would like to particularly thank Jeroen van den Bergh, the former Editor-in-Chief of the journal, and his editorial team for their dedicated effort to establish the journal (see van den Bergh, 2021).

In this perspective article, our aim is to take stock of the state of the field and reflect on potential directions that have emerged over the last ten years. In the following sections, we first reconstruct the intellectual development trajectory of the sustainability transitions field as it was represented in our journal. We then elaborate our editorial priorities and some new (as well as discontinued) formats of articles in EIST. This is followed by positioning the strategy in the wider and rapidly shifting context of academic publishing before we express our ambitions in the coming years.

2. Dynamics in the knowledge field over the past decade

A wide variety of papers has been published over the past few years to assess the knowledge dynamics in the transitions field. Regarding EIST, a recent viewpoint identified a list of main topics identified through topic modeling (Savin and van den Bergh, 2021). Furthermore, a number of bibliometric studies have been conducted ranging from rather hands-on analyses of publications and citations (Markard et al., 2012) to automated text analysis approaches (Nesari et al., 2022). Transition studies also regularly emerged as a topic in the analysis of broader knowledge fields such as innovation studies (Rakas and Hain, 2019) or of kindred journals like Technological Forecasting and Social Change (Zhu and Cunningham, 2022). While these approaches are well suited to identify the dynamics of key topics, central authors, leading research institutes and countries, they are often too coarse to reconstruct the intellectual sub-communities and deeper shifts in conceptual understandings that authors subscribe to in their actual research.

In order to map these shifts, we analyzed the co-occurrences of focal concepts, theoretical frameworks applied, policy implications formulated as they occurred in the abstracts of all the papers in EIST since its launching (see coding tree in the Appendix).[2] The methodological approach is inspired by the recently developed method of socio-technical configuration analysis (STCA) (Heiberg et al., 2022). Co-occurrence of the codes can be translated into network graphs showing which codes often appeared in conjunction, how salient they were and how their positioning in the field changed over time.

The first author coded the abstracts of all 491 articles that had been published in EIST between August 2011 and July 2021 – between 21 and 123 articles per year (see Appendix).[3] This resulted in a total of 127 codes, which occurred about 2.800 times in the 491 abstracts (see Fig. 1 for the development of relative shares of frameworks over the 10 years). We selected focal concepts that were used to answer the respective research questions (e.g. incumbent actors, institutional logics, niches, innovation strategy) and the frameworks/disciplines, which were mobilized to frame the research (e.g. TIS, MLP, management studies, political sciences), to map the changes of the core knowledge structure over time. Closeness between two codes was measured by the so-called Jaccard index, which is give by the number of abstracts where two codes were mentioned conjointly relative to the total number of abstracts where at least one of the codes appeared. It results in a measure of 1 if two codes have always been co-mentioned, and 0 if they never were used jointly in any abstract. Values between 1 and 0 indicate the relative share of co-occurrence of two codes in a paper. The resulting n x n bilateral closeness measures may then be graphically depicted as a network of codes (Baur, 2008). Finally, in order to identify those codes that are central for the whole field, a measure of average distance of each code to all others (degree centrality) was calculated to present the data in the form of a radar plot. This means that elements, which appear in the center of the graph have a relatively high closeness to all other elements, whereas those at the periphery represent more specialized topics and frameworks (for further elaborations, see Heiberg et al. (2022).

The following four radar plots (Fig. 2) represent the relational structure between focal concept and framework codes that were attributed to the 491 abstracts in four time periods: 2011–2013; 2014–2016; 2017–2019; and 2020–2021. These periods cover three years each (except the last one) and do not coincide with any a priori identified development phases of the journal. The salience of specific focal concepts or frameworks may have been impacted by special issues that were published in specific years. However, as special issues typically also signal emerging fields of interest, we consider this effect to level out over time. The size of the nodes is

[2] The restriction on EIST can be defended as it is one of the major outlets for and the only dedicated journal of the transitions community even though its research is published in a wide range of journals (see Nesari M, Naghizadeh M, Ghazinoori S, et al. (2022) The evolution of socio-technical transition studies: A scientometric analysis. *Technology in Society* 68: 101834.)

[3] Abstracts were selected instead of full papers for reasons of feasibility. The coding therefore had to be conducted by a knowledgeable coder, able to attribute the codes consistently over the selection of papers.

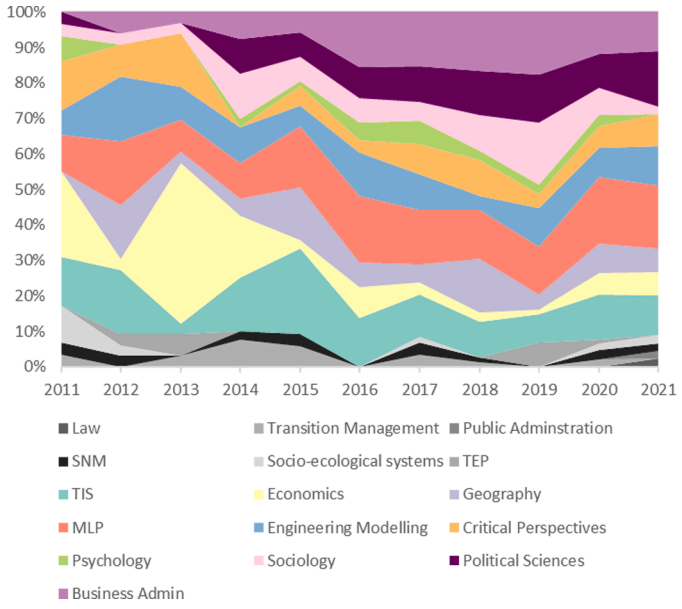

Fig. 1. Share of total number of framework codes in each year from 2011 to 2021.

proportional to the number of times the code was attributed. grey circles depict focal concepts, while colored shapes refer to the frameworks. Thickness of the edges (connecting lines) is proportional to the closeness Jaccard index; no connection means that two concepts never co-occurred in any of the abstracts in the respective time period. Sets of codes that are connected by chains of strong edges can be identified as "network components", which represent typical storylines that were used by epistemic communities to elaborate their argument. Finally, the more central a code appears, the closer it is on average to all the other codes in the field (measured by the degree centrality) and may therefore be interpreted as representing the core of the field in that period.

The first period from August 2011 to end of 2013 (Fig. 2a) represents the starting phase of the journal with an opening issue, assembling a collection of invited short papers to set the agenda for the new journal (Van Den Bergh et al., 2011). Two network components come to the fore. One with the focal concepts of niche, regime, and landscape and strongly related to the multi-level perspective (MLP) framework, see e.g. Geels (2011). A second major component forms around frameworks from economics connected to focal concepts like finance and policies and somewhat related resource problems and modeling. These two major components coincide with the topics collected in the opening issue and hence with the editorial strategy of the original editorial team. Smaller components exist, like geographical approaches, critical perspectives,[4] strategic niche management (SNM), and transition management (TM), among others, but no clear pattern emerges.

In the second phase from 2014 to 2016 (Fig. 2b), we see major shifts in the network composition. While the MLP component seems still strong, it moves somewhat out of the center and gives way to a new component composed of geographical concerns, technological innovation systems (TIS), urban transitions, and notions of place. This change is partly due to a special issue published in 2015 (Truffer et al., 2015), but it also depicts an overall rise in attention for these topics. Economics, modeling and resource-related approaches instead move to the periphery and decrease in size and interconnection. Besides, we see a strengthening of new components around business administration, politics and power, and critical perspectives. Political science frameworks get stronger in connection with the focal concept of politics and power influencing MLP-related work. Of some interest is the consumer/user code, which holds a semi-central position with connections in all directions, but no strong component emerging. This indicates that many papers addressed the role of users but not in a conceptually integrated way, rather as a specific empirical study object.

In the third phase, covering the years from 2017 to 2019 (Fig. 2c), we see papers referring to frameworks of business administration at the center, with strong connections to focal concepts related to business management and the TIS framework. The MLP component gets even more strongly connected to the focal concept of politics and power. At the same time, we see a distancing between the MLP framework and the focal concepts of niche and regime, while the landscape code almost disappears. This indicates that papers increasingly used the niche and regime concepts in rather loose connection with the original MLP framework, but instead connect them to frameworks from other disciplines, most prominently from political sciences. Furthermore, we see the strengthening of a sociology component. The engineering, modeling and economics component instead shrunk even further and continued to play a rather marginal role.

[4] Under "critical perspectives", we aggregated conceptual frameworks like political ecology, diverse economies, post-colonial and post-capitalist, or gender perspectives, which emphasize the need for explicating otherwise implicit assumptions about power relationships in mainstream disciplinary approaches (see Appendix).

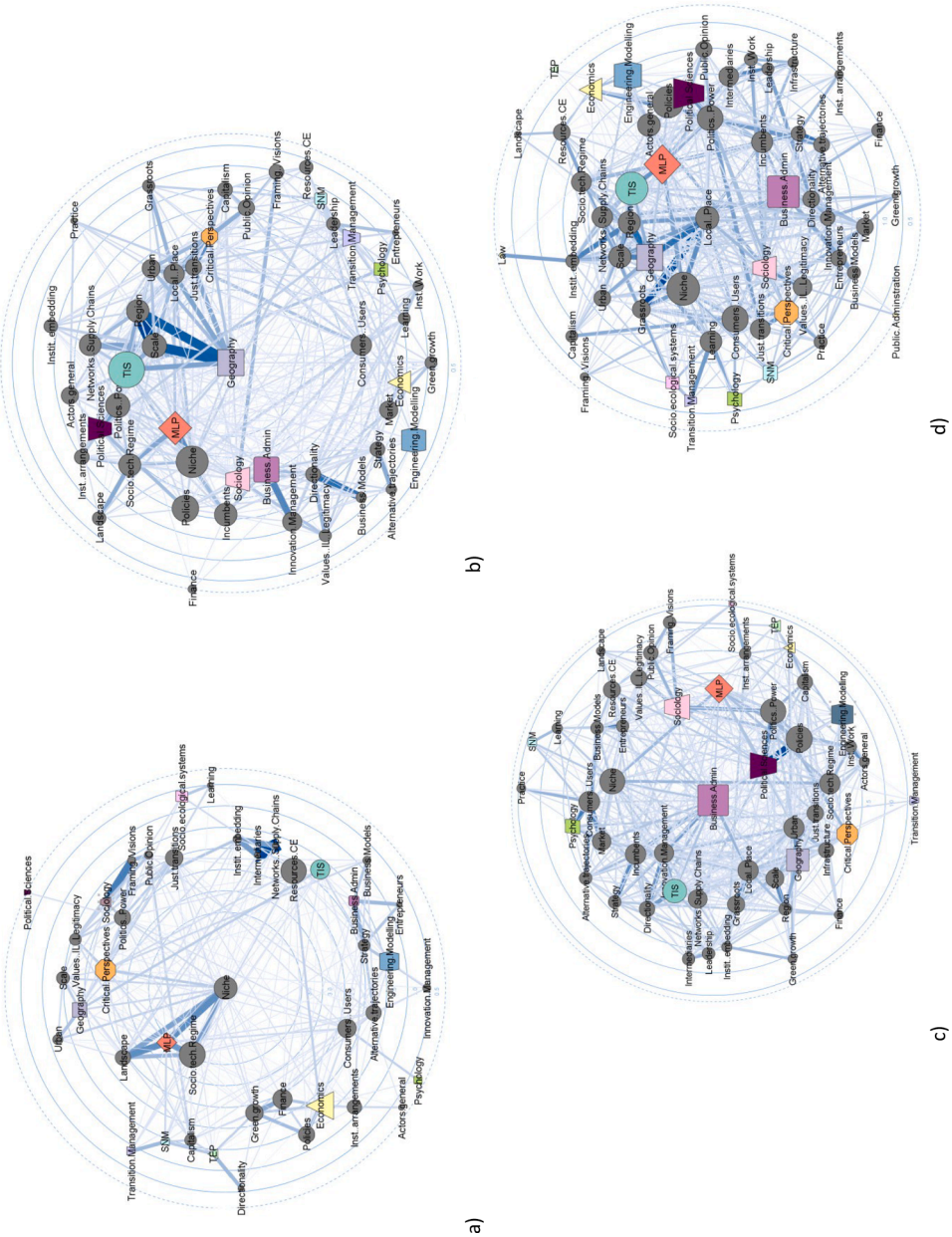

Fig. 2. (a) Radar Plot of concepts and frameworks 2011 (Aug) −2013 (b) Radar Plot of concepts and frameworks 2014–2016 (c) Radar Plot of concepts and frameworks 2017–2019 (d) Radar Plot of concepts and frameworks 2020–2021 (Jul).

Finally, in the last phase between 2020 and July 2021 (Fig. 2d), we observe overall a densification of interconnections indicating a stronger integration of the field as a whole. During this period, geography and niche seem to have become core components focusing on place based transitions, while the MLP and TIS frameworks get more often mentioned jointly. A possible explanation is that they serve more and more as a general reference to original transitions' frameworks, but not providing the main interpretative frame. Business administration as well as the politics and power component still increase in size and interconnection, becoming key research topics for transitions research. New components emerge around users and learning, which this time seem to be addressed in a more focused and conceptually integrated way. Sociology-related focal concepts instead are distributed over the whole field while still not forming a strong component in its own right, which indicates that the exchange with sociological research communities is still weak. Economics and modeling reemerge again in this phase while, at the same time, new disciplinary perspectives enter EIST such as law and public administration.

Overall, we observe a diversification, but also a densification of the field's representation in EIST in terms of focal concepts and frameworks. From the dominance of the MLP as a guiding framework in the first period, research seems more and more inspired by other conceptual frameworks drawn from disciplines such as business administration, organizational studies, geography, political sciences, psychology, sociology and critical perspectives. The foundational concepts like TIS and MLP turned into sort of background references. SNM and TM continued to play a peripheral role overall. We may therefore conclude that the statement made by Köhler et al. (2019) that transition studies essentially consisted of TIS, MLP, SNM and TM does not match the realities of current research activities anymore (see also Zolfagharian et al., 2019). Instead, we see a pluralization of approaches, the emergence of new concepts (like transition pathways, global innovation systems, policy mixes) and a broadening of interest from a diversity of disciplines to engage productively with transition issues. We take this as a promising sign for the liveliness of the research field and as guideposts for the future editorial strategy of the journal.

3. Editorial priorities for the coming years

The analysis of the knowledge dynamics in EIST sets the stage for formulating our editorial strategy for the coming years. In general, we are happy with how the journal and the field have developed so far. The number of submitted manuscripts keeps increasing alongside the expanding topical spread and the number of new empirical application areas, focal concepts and disciplinary frameworks (van den Bergh et al., 2021). We would certainly like to see these developments to continue and strengthen over the coming years. However, we also should be wary not to focus too much on standard topics and, on account of this, miss out on major developments in other scholarly fields. We have seen that transition concepts are taken up and further developed by other fields and disciplines and vice versa. In particular, we see that just transitions, gender and different forms of power and conflict constellations are receiving increasing attention and, alongside with that, critical perspectives have gained increasing salience in the field.

At an empirical level, our analysis further showed that energy-related research is still dominant in EIST publications, followed by transport-related research (see Appendix). Water, construction/housing and food have established themselves as strong empirical areas. Even more recently, research on platform economies and digitalization, but also rather still unusual topics like outer space technologies have begun to influence the field. However, it is fair to say that these latter topics are still blind spots in the field, although developments in these realms may have very strong impacts on the way future transitions will unfold.

As an explicit strategic goal of our editorial work, we want to remain open and accommodative to these and other new and inspiring topics. In the everyday editorial practice, this often proves to be a challenge; sometimes papers that provide potentially fruitful outsider perspectives have been rejected because of a limited engagement with previous transitions research. Some authors seem to believe one necessary condition to get published in EIST is citing at least a handful of the foundational papers of MLP or TIS researchers. This is certainly not the case. Rather, we want to see submissions that contribute to the understanding of drivers, dynamics and implications of major changes in socio-technical systems and how this may contribute to public policy goals like sustainability, including also justice and societal development. So far, we have been rather restrictive in accepting submissions that merely talk about success conditions for isolated innovations, for example, explaining how corporate environmental management could be improved, or sustainability assessments of certain clean technologies that made no connection to broader transformational challenges.

Another change that we want to support very explicitly is to increase the diversity of submissions regarding, among others, the geographical origin of authors, gender and methodological approaches. We are aware that implicit biases might influence editorial decisions. Therefore, we will try to explicitly support manuscripts from authors from underrepresented backgrounds or from junior researchers, and from researchers proposing new, unconventional conceptual perspectives; in all these cases we will be applying special attention to the editorial process as regards, for example, how we judge initial submissions, communicate with authors and follow reviewer recommendations, as well as how much time we allow to revise and resubmit the manuscripts. Beyond all these considerations, however, we cannot ultimately compromise requirements of sound scholarship. In particular, we expect papers to make a clear contribution to the literature and go beyond simple applications of existing frameworks.

Based on these reflections, we also decided to introduce two new paper formats and discontinue others. First, we want to offer the opportunity to publish inspiring short papers, so-called "perspectives", which elaborate on new research avenues before the corresponding concepts are fully spelled out and before they are supported with solid empirical data. So far, we had the category of viewpoints (or officially "comments and views") in EIST. However, the editorial team grew more and more wary of recurring problems with this format. The restricted length requirements led to difficulties in the editorial assessment and also limited authors to sufficiently elaborate innovative ideas. Secondly, we change the former "surveys" format into "reviews" for which we have defined more transparent quality criteria both for authors and reviewers. "Policy briefs" so far played a rather minor role in EIST. Given the increasing attention by policy makers nationally and internationally, we believe there is an urgent need to better reach out to these

circles and we therefore invite to submit new contributions that would strengthen the uptake of transition research by policy makers.

4. Positioning EIST in a rapidly shifting academic publishing landscape

An editorial strategy in these days cannot ignore the wider developments in the academic publication landscape, which is experiencing a number of disruptive developments. First, we observe a strong growth in the number of published papers, which is accommodated by established journals increasing their output and many new journals being launched. A key reason behind this development is that performance assessment of academic work relies increasingly on indicators, measuring the number of publications in international journals. Meanwhile, we observe an increasing global expansion of academic research, broadening the origin of authors participating in scholarly publications

At the same time, pressure to speed up editorial processes is constantly growing, which together with the growing number of submissions leads to an increasing difficulty to recruit reviewers who are prepared to write high quality reviews, which has led to increasing processing times. A variety of new business models have emerged: for instance, open access publishers promise to provide extremely short processing times (sometimes down to two or three weeks between submission and acceptance), while providing the content free of charge to readers, or academic publishers providing a fast-track review for a higher publication fee. These business models enable readers across the world to access scientific content for free. However, the high-speed turnover often leads to poor quality control, as reviewers are not granted enough time for constructive and rigorous peer-review, and the extra charges placed on authors create more unequal publishing environment.

In EIST, we cannot spare ourselves from this ongoing transition in the production and communication of scientific knowledge. Being strongly anchored in the traditional, high-quality approach, we take time to properly engage with manuscripts, finding expert reviewers, considering the review reports in a balanced way and sometimes accepting manuscripts for review, which take longer until they really make a convincing contribution. This leads, in our case, to an average processing time of about nine months from submission to acceptance and one or two weeks for desk rejects. To maintain this high quality service for the community, we depend on the constructive engagement of reviewers and authors. Therefore, we call on the transition community to support us in this endeavor and we thank all those that have done so in the past.

This leads us to conclude about some general guidelines to follow for increasing the chances of a paper to get published in EIST. Many detailed lists exist in other journals, which may be consulted for general do's and don'ts. Here, we only want to specify what a typical EIST manuscript should encompass. First and most importantly, contributions should address some longer-term socio-technical transformation problems, or a specific part or dimension of such transformation processes with an explicit justification of how the specific focus connects to broader transformation dynamics. Papers that address short-term problems of environmental management, innovation management, user behavior or technology assessment without explicit connection to transformation dynamics are more likely to be desk rejected and referred to other journals.

Second, we appreciate submissions that make original conceptual, methodological and/or empirical contributions, which go beyond the description of a single case or problem but embed and relate it to the current state-of-the-art in a thought-provoking manner. A solid anchoring in a disciplinary community, which engages with socio-technical transformations will be necessary. Third, we appreciate purely conceptual papers, but in general, we expect to see solid empirical work to back up or at least illustrate the conceptual arguments. For empirical papers, the sampling rationale and research context has to be properly described and the analysis has to be solidly constructed from a methodological point of view, so the lessons derived from the analysis may be used to inform broader transition problems.

Fourth, we are agnostic regarding qualitative, quantitative or mixed methods approaches. However, we require that these methods are appropriate to address the research question. Importantly, the methods have to be explained in a proper method section, which is intelligible to a broader non-expert audience. Fifth and finally, the formulation of appropriate and well-grounded policy implications is highly welcomed. Of course, not all papers are equally suited to contribute strongly to this dimension. However, sustainability transitions always respond to public policy concerns and have eminent strategy implications for a wide range of actors. Submissions that formulate convincing contributions in at least a subset of these five dimensions will have a high likelihood to be reviewed and ultimately published in EIST.

5. Outlook on what we would like to have edited in EIST in a decade from now

This leaves us with some final considerations of what kind of research we would like to publish in the coming years. We aim at continuing to be the go-to place for high-quality sustainability transitions research. We do want to build on past achievements in transitions research, but also grow beyond that, for instance, by supporting engagement across research communities and disciplines, in order to maintain sustainability transitions as a vibrant field of scholarship.

Furthermore, we would like to expand the methodological reach of transition studies and welcome contributions from quantitative, modeling, assessment, qualitative and mixed methods backgrounds. While transition studies has a strong track-record in qualitative case studies focusing on mechanisms and process explanation, we believe the time is ripe to combine this with quantitative and mixed-method approaches.

We are also eager to expand the geographical reach of transitions research both in terms of authorships and empirical application cases. The transitions community started with strong roots in Western Europe and Australia. Meanwhile, it has reached out to North-America, emerging economies and developing countries. Even though we see an increasing diversity of submissions, we still believe that it should further increase to meet the global dimension of the sustainability challenge.

And last but not least, transition studies continue to aim at informing policy makers. We have seen increasing interest from industrial, innovation and environmental policy makers in transition concepts. However, it still fair to say that transitions research maintains a strong academic orientation and that policy making needs more attention in the quest to support sustainability transitions in the coming decades.

Declaration of Competing Interest

None.

Appendix: coding tree

(three levels of codes with number of years where the codes were attributed and the number of times the codes occurred in the overall collection of abstracts in EIST from 2011 to 2021)

Codes Level 1	*Codes Level 2*	*Codes Level 3*	*# of years coded*	*Times coded*
Focal Concepts				
	Actors and Networks			
		Actors general	8	34
		Consumers, Users	10	58
		Entrepreneurs	6	15
		Grassroots	6	25
		Incumbents	8	43
		Intermediaries	5	18
		Networks, Supply Chains	9	41
	Capitalism		10	24
	Directionality		10	85
	Finance		9	21
	Green growth, catching up		8	18
	Infrastructure		5	13
	Innovation, Industry		11	239
	Institutional concepts		11	99
		Framing, Visions	9	16
		Inst. arrangements	11	19
		Inst. Work	5	13
		Instit. embedding	8	16
		Values, IL, Legitimacy	9	30
	Just transitions		10	41
	Landscape		9	16
	Learning		7	22
	Management Concepts		10	86
		Business Models	9	16
		Innovation Management	10	36
		Leadership	8	16
		Market	8	32
		Strategy	8	22
	Niche		11	101
	Policies		11	94
	Politics, Power		10	67
	Practice		6	10
	Public Opinion		10	24
	Resources,CE		11	49
	Socio-tech Regime		11	61
	Spatial concepts			
		Local, Place	8	43
		Region	7	34
		Scale	10	48
		Urban	8	40
Frameworks				
	Business Admin		10	84
	Critical Perspectives		10	56
		Development Studies	7	10
		Gender Studies	1	1
		Interdisciplinary perspectives	2	3
		Post-growth	1	1
		STS	6	9

(*continued on next page*)

(*continued*)

Codes Level 1	*Codes Level 2*	*Codes Level 3*	*# of years coded*	*Times coded*
	Economics		11	58
	Engineering Modeling		11	76
	Geography		10	63
	Law		1	1
	MLP		11	118
	Political Sciences		9	69
	Psychology		8	22
	Public Adminstration		1	1
	SNM		9	16
	Socio-ecological systems		6	11
	Sociology		11	59
	TEP		4	10
	TIS		11	98
	Transition Management		8	18
Methods				
	Decision analysis, TechnologyAssessment		11	56
	Case Studies		11	269
	Conceptual, Lit Review		11	168
	Discourse analysis		8	14
	Historical reconstruction		10	36
	Methodology		2	4
	Quantitative methods & Modeling		11	92
	SNA, Q, QCA		7	15
	Surveys, Database		11	42
Sector				
	Agriculture, Food		10	30
	Architecture housing		9	20
	Bioeconomy		7	11
	Energy		11	162
	Health		5	5
	Mining, Commodities, capital goods		7	9
	Platform economy, Digitalization		4	14
	Services, products		8	12
	Sustainability, Resources, CC		8	37
	Transport		10	67
	Urban Transitions		6	30
	Waste		6	6
	Water		9	19
Spatial context of case study			11	438
	Africa		6	13
	Asia		10	36
		China	5	16
		India	3	4
		Japan	4	4
		Malaysia Indonesia	3	4
	Australia, New Zealand		7	15
	BeNeLux		9	41
	Eastern Europe, Russia		5	13
	EU		8	18
	Global		9	21
	Latin America		4	5
	North America		9	33
	Scandinavia		10	108
	Southern Europe		6	16
	UK		10	42
	W Europe other		11	77
Year				
	2011		1	25
	2012		1	20
	2013		1	28
	2014		1	24
	2015		1	49
	2016		1	38
	2017		1	36
	2018		1	48
	2019		1	52

(*continued on next page*)

(*continued*)

Codes Level 1	*Codes Level 2*	*Codes Level 3*	*# of years coded*	*Times coded*
	2020		1	119
	2021		1	34

References

Baur M. (2008) Software for the analysis and visualization of social networks: PhD Thesis, Fridericiana University Karlsruhe, Germany.

Dosi, G., Freeman, C., Nelson, R., et al., 1988. Technical Change and Economic Theory. Pinter, London, p. 646.

EEA. (2019) Sustainability transitions: policy and practice. EEA Report. European Environment Agency, Luxembourg: Publications Office of the European Union, 2019, doi:10.2800/641030.

Geels, F.W., 2011. The multi-level perspective on sustainability transitions: responses to seven criticisms. Environ. Innov. Soc. Trans. 1, 24–40.

Heiberg, J., Truffer, B., Binz, C., 2022. Assessing transitions through socio-technical configuration analysis-a methodological framework and a case study in the water sector. Res. Policy 51, 104363.

Köhler, J., Geels, F.W., Kern, F., et al., 2019. An agenda for sustainability transitions research: state of the art and future directions. Environ. Innov. Soc. Trans. 31, 1–32.

Markard, J., Geels, F., Raven, R, 2020. Challenges in the acceleration of sustainability transitions. Environ. Res. Lett. 15, 081001.

Markard, J., Raven, R., Truffer, B, 2012. Sustainability transitions: an emerging field of research and its prospects. Res. Policy 41, 955–967.

Nesari, M., Naghizadeh, M., Ghazinoori, S., et al., 2022. The evolution of socio-technical transition studies: a scientometric analysis. Technol. Soc. 68, 101834.

Perez, C., 1983. Structural change and assimilation of new technologies in the economic and social systems. Futures 15, 357–375.

Perez, C., 2013. Unleashing a golden age after the financial collapse: drawing lessons from history. Environ. Innov. Soc. Trans. 6, 9–23.

Rakas, M., Hain, D.S, 2019. The state of innovation system research: what happens beneath the surface? Res. Policy 48, 103787.

Savin, I., van den Bergh, J., 2021. Main topics in EIST during its first decade: a computational-linguistic analysis. Environ. Innov. Soc. Trans. 41, 10–17.

Truffer, B., Murphy, J.T., Raven, R, 2015. The geography of sustainability transitions: contours of an emerging theme. Environ. Innov. Soc. Trans. 17, 63–72.

van den Bergh, J., Kivimaa, P., Raven, R., Rohracher, H., Truffer, B., 2021. Celebrating a decade of EIST: what's next for transition studies? Environ. Innov. Soc. Trans. 41, 18–23.

van den Bergh, J.C.J.M., 2021. Reflections on editing EIST for ten years. Environ. Innov. Soc. Trans. 41, 2–9.

Van Den Bergh, J.C.J.M., Truffer, B., Kallis, G, 2011. Environmental innovation and societal transitions: introduction and overview. Environ. Innov. Soc. Trans. 1, 1–23.

Zhu, L., Cunningham, S.W, 2022. Unveiling the knowledge structure of technological forecasting and social change (1969–2020) through an NMF-based hierarchical topic model. Technol. Forecast. Soc. Change 174, 121277.

Zolfagharian, M., Walrave, B., Raven, R., et al., 2019. Studying transitions: past, present, and future. Res. Policy 48, 103788.