

<https://helda.helsinki.fi>

---

## Intermediaries in accelerating transitions : Introduction to the special issue

Kivimaa, Paula

2020-09-07

---

Kivimaa , P , Bergek , A , Matschoss , K & van Lente , H 2020 , ' Intermediaries in accelerating transitions : Introduction to the special issue ' , Environmental Innovation and Societal Transitions , vol. 36 , pp. 372-377 . <https://doi.org/10.1016/j.eist.2020.03.004>

---

<http://hdl.handle.net/10138/342903>

<https://doi.org/10.1016/j.eist.2020.03.004>

---

cc\_by\_nc\_nd

acceptedVersion

---

*Downloaded from Helda, University of Helsinki institutional repository.*

*This is an electronic reprint of the original article.*

*This reprint may differ from the original in pagination and typographic detail.*

*Please cite the original version.*

# Intermediaries in accelerating transitions: Introduction to the special issue

Paula Kivimaa<sup>ab</sup>, Anna Bergek<sup>c</sup>, Kaisa Matschoss<sup>d</sup>, Harro van Lente<sup>e</sup>

<sup>a</sup> Finnish Environment Institute SYKE, Climate Change Programme. Latokartanonkaari 11, FI-00790, Helsinki Finland. Email: [paula.kivimaa@ymparisto.fi](mailto:paula.kivimaa@ymparisto.fi). Corresponding author.

<sup>b</sup> University of Sussex, Science Policy Research Unit SPRU. Falmer, Brighton, BN1 9RH, United Kingdom

<sup>c</sup> Chalmers University of Technology, Gothenburg, Sweden.

<sup>d</sup> University of Helsinki, Centre for Consumer Society Research. Unioninkatu 40 C, 00014 University of Helsinki, Finland

<sup>e</sup> Maastricht University, Faculty of Arts and Social Sciences. Grote Gracht 90-92, 6211SZ Maastricht, The Netherlands

## Acknowledgements

This special issue arose from a two-day seminar “Intermediaries in Transitions” that was organised during 11-12 April 2019 in Helsinki by a research project “Intermediaries in the energy transition: The invisible work of creating markets for sustainable energy solutions (TRIPOD), funded by the Academy of Finland. We want to thank all the workshop participants and organisers for initiating the discussion on the special issue, and specifically those who contributed to this with papers. Our specific thanks go to Sampsa Hyysalo and Eva Heiskanen who’s inputs have been instrumental in the development of this theme and in the TRIPOD research project. In the organisation of the workshop, we would also like to thank Kelly Purchell for her excellent work. Paula Kivimaa and Kaisa Matschoss acknowledge the funding of their work for this special issue from the Academy of Finland (decision numbers 322667 and 288402).

# Intermediaries in accelerating transitions: Introduction to the special issue

## 1. Introduction

Sociotechnical transitions, such as the ongoing shift from fossil fuels to renewable energy, are dynamic processes that involve far-reaching technological, institutional, societal and cultural changes. Much hope is placed on *transition intermediaries* to speed up transitions. They can be defined as “actors and platforms that positively influence sustainability transition processes by linking actors and activities, and their related skills and resources, or by connecting transition visions and demands of networks of actors with existing regimes in order to create momentum for socio-technical system change, to create new collaborations within and across niche technologies, ideas and markets, and to disrupt dominant unsustainable socio-technical configurations” (Kivimaa et al., 2019a: p.1072). Examples of transition intermediaries include innovation funders, energy agencies, technology transfer agencies and policy task forces (in the public sector) as well as NGOs, membership organisations, project developers, consultancies and internet discussion forums (in the private sector). They are sometimes established to intermediate but, more often, emerge in response to system gaps or failures, or established organisations adopting new roles. Previous research has found that intermediary actors can facilitate transition processes in various ways, for example, by creating new markets for innovative solutions through transferring knowledge, technology and other resources.

Sustainability transitions occur through interactions between different system elements (e.g. technology, rules, actors, practices, institutions) and dynamics at different levels of action (niche spaces for innovations, socio-technical regimes and the broader landscape). Thus, transition intermediaries need to operate in highly intricate environments (Manders et al., 2020). On the one hand, they connect actor groups, such as technology suppliers and adopters, energy producers and end-users, disconnected consumers, or new entrants and incumbents, and build and manage networks that can support the transition towards sustainability (e.g. Hyysalo et al., 2018; Matschoss and Heiskanen, 2018; Mignon and Bergek, 2016). On the other hand, they may advance transitions by advocating specific technologies or policy goals and facilitating their strategic mobilisation in policy work (e.g. Hodson and Marvin, 2009; Smith et al., 2016). Intermediaries can translate information between different actors, and aggregate and advocate different interests.

Much of the previous literature on intermediaries in transitions has focused on the early phase of transitions, while a research gap pertaining to intermediary actors in governing subsequent transition phases has been noted (Köhler et al., 2019). This special issue aims to answer questions on three

themes: what kind of intermediaries and intermediary roles exist in accelerating transitions (especially pertaining to technology diffusion and policy change); what kind of intermediary gaps may slow down transitions; and what challenges and difficulties intermediaries face in the acceleration phase. These are important questions which have received little attention so far.

In the progress of sustainability transitions, acceleration has been described to follow pre-development and take-off. Niches developed around novel solutions begin to build up (Safarzynska et al., 2012), requiring new forms of nurturing and shielding (Smith and Raven, 2012). Acceleration requires niches to attract more users and begin to compete with markets in the incumbent regime (Kanger and Schot, 2016). Accelerating transitions also means that structural changes become more visible (Rotmans et al., 2001; Safarzynska et al., 2012) and that the pace of transitions speeds up (Roberts et al., 2018).

Some of the key distinctions between emergence and acceleration are that innovations in the acceleration phase already exist (at least in some form). Thus, specific intermediation needs pertain to:

- diffusion of an innovation, and whether necessary intermediaries exist to provide knowledge and links between technology suppliers, adopters and users;
- creation of a new market, by intermediaries engaging users, attracting businesses and changing policy;
- management of conflicts and tensions between different stakeholders (including other intermediary actors), and;
- change of focus from facilitating experimentation and learning to higher system level aggregation, to create common expectations and coherence between different activities.

The need for intermediation is likely to change over the course of transitions (Van Lente et al., 2011) requiring attention to these changes. In the following, we will introduce the contributions to this special issue.

## 2. Contributions of the special issue/section

The articles contributing to this special issue can be grouped under three themes: intermediary actors in the adoption and diffusion of technology at the project level (Bergek, this issue; Mignon and Ebers Broughel, this issue; Murto et al., this issue), intermediary actors in policy change (Kivimaa et al., this issue; Vihemäki et al., this issue), and systemic intermediaries (Kanda et al., this issue; Van Boxstael et al., this issue; Van Lente et al., this issue). They address a variety of conceptual issues related to understanding the role of intermediaries in supporting and accelerating sustainability transitions and, thereby, complement the emerging research on intermediaries in transitions, recently published in EIST (Boyer, 2018; Lukkarinen et al., 2018; Martiskainen and Kivimaa, 2018; Mignon and Kanda, 2018; Kivimaa et al., 2019b; Manders et al., 2020).

The empirical contexts covered in the special issue include the diffusion of renewable energy, particularly wind and solar (Bergek, this issue; Mignon and Ebers, this issue); reduction of energy use in buildings via construction and retrofitting (Kivimaa et al., this issue; Murto et al., this issue); advancing

sustainable construction (Vihemäki et al., this issue); and more broadly eco-innovation and the energy transition (Kanda et al., this issue; Van Boxtael et al., this issue; Van Lente et al., this issue). While there is an emphasis on Northern Europe, two articles include cases from Central and Southern Europe.

The contributions also show methodological diversity, where more traditional interview-based analyses of intermediation (Kanda et al., this issue; Kivimaa et al., this issue; Vihemäki et al., this issue) are complemented with ethnography (Murto et al., this issue), choice experiments (Mignon and Ebers Broughel, this issue) and the use of registry data (Bergek, this issue).

Below, we summarise the key contributions under each theme, and give a short description of each article.

## 2.1 Intermediaries in the diffusion of technology

Many transition intermediaries operate at the level of specific development or adoption projects, in one-to-one or one-to-many relationships, rather than at the broader system level. In the context of energy transitions, such projects may aim to diffuse renewable energy technologies (Bergek, this issue; Mignon and Ebers Broughel, this issue) or reduce energy use, for example in buildings, via new technology or service acquisition (Murto et al., this issue). Three contributions focus on so-called 'diffusion intermediaries'. Diffusion intermediaries, such as project developers, consultants and retailers, are located downstream in the supply chain in between technology adopters and suppliers of various inputs to the adoption process (Bergek, this issue) and mainly engage with technology adoption and diffusion. In the context of acceleration, they enable new technologies to reach new customer segments.

Bergek (this issue) develops a taxonomy of four different types of diffusion intermediaries – dedicated, dispersed, integrated, and diversified – which differ from each other in terms of whether they are specialised in intermediation or involved in a wider set of business activities, and whether they cover one or a broader set of sectors. An analysis of the business descriptions of intermediaries involved in renewable electricity technologies in Sweden (e.g. project developers, import companies, and consultants) shows that most intermediaries are not exclusively involved in intermediation and that many are active in several sectors. Moreover, the importance of different intermediary activities differs between different types of intermediaries and seems to have a technology-specific component.

Mignon and Ebers Broughel (this issue) investigate how diffusion intermediaries (in the form of third-party wind power and solar PV developers in Sweden) prioritise between different stakeholder interests. Through a discrete choice experiment, they show that there are both similarities and differences in how diffusion intermediaries mediate between different interests. Interestingly, they find that neither wind nor solar intermediaries prioritise their own interests over their clients' interests and that they both consider (reasonable) client requirements a top priority. However, while solar intermediaries prioritise client satisfaction before project output or their own profits, wind intermediaries emphasise the reliability and social acceptance power generation projection and prioritise electricity output over their own profits or their clients' satisfaction.

Murto et al. (this issue) examine energy retrofitting in Finland, where energy consultants and other diffusion intermediaries (e.g. local energy advisors), in an ideal case, help housing companies adopt new energy technologies. However, the study reveals that such intermediaries may be missing or unavailable to adopters. They discuss the benefits and drawbacks of real-time ethnography to understand how intermediaries shape emerging transitions, as compared with retrospective interviews. The study suggests that ethnographic methods are better at providing detailed insight into the ecology of intermediaries and the uncertainty and complexity of micro-level transition processes. In contrast, retrospective interviews are better at capturing common intermediation patterns across cases and can provide insights into non-observable aspects, such as actor views and interests. The article shows the lack and need of intermediary actors to help housing companies in their retrofit challenge, which is crucial for the acceleration of energy retrofits.

Together, these articles emphasise the heterogeneous nature of the ecology of intermediaries involved in the diffusion processes of new solutions important for transitions. They also illustrate the usefulness of applying different types of methodologies to study them. Bergek (this issue) and Mignon and Ebers Broughel (this issue) also show that intermediation has technology-specific features, regarding both intermediation activities and the prioritisation between different stakeholder interests.

## 2.2 Intermediary influence on policy change

Some transition intermediaries operate in the interface between policy and other parts of the society, seeking to promote policy change to accelerate sustainability transitions. However, such policy change is often difficult, because existing policy systems have been built around existing technologies, infrastructures and associated rules and skill-sets. Two contributions focus on intermediaries in influencing policy change (Kivimaa et al., this issue; Vihemäki et al., this issue).

Kivimaa et al. (this issue) examine two different policy processes for building energy efficiency in Finland. They analyse which actors took intermediary functions in these processes and how intermediation occurred. They use previous literature on transition intermediaries to create an analytical framework identifying relevant intermediary functions in different stages of the policy cycle: agenda setting, policy formulation, policy implementation and evaluation. They find that intermediaries (e.g. building sector membership organisations, an energy agency, an innovation fund) are especially important for effective policy implementation, undertaking functions such as coordinating the implementation process, ‘translating’ and interpreting policy to their target recipients, and ‘selling’ policies to stakeholders. For accelerating transitions, intermediation between change agents in the society and agenda setting and policy formulation is often needed to achieve policy change that is fast and ambitious enough – undertaken by intermediaries in systemic or regime positions.

Vihemäki et al. (this issue) examine what kinds of intermediaries have been involved in policy processes, with ambitions to influence the market diffusion of wooden multi-story construction in Finland, and how they have operated. They draw from previous literature on transition intermediaries to conduct a

qualitative analysis in this policy field. They find that a complex set of intermediaries conduct policy advocacy work, having various goals, partly overlapping roles and different ways to influence policy. They argue that the lack of coordination among the intermediaries and differing agendas are critical challenges which limit a positive effect towards policy change, also influencing acceleration.

The two contributions show the heterogeneous nature of intermediation in advancing transformative policy change, the lack of synergies between different transition intermediaries operating in the policy interface, and the contrast they face from actors (including other intermediaries) aiming for status quo or more incremental policy change. Both studies refer to the building sector in Finland. This suggests the need for further work on this theme in other sectors and countries, and in relation to city (as opposed to) national governance.

### 2.3. Systemic intermediaries and intermediaries at different system levels

What distinguishes transition intermediaries from ‘traditional’ innovation intermediaries is both the attention given to sustainability and to system level change. The concept of systemic intermediaries was coined in 2003 by Van Lente et al. (2003), who described them as strategic actors that intermediate between multiple other actors, organising discourse and creating conditions for learning in the context of innovation systems. Systemic intermediaries are depicted to operate on a ‘higher’ system level in coordinating innovation networks (Klerkx and Leeuwis, 2009) and sustainability transitions (Kivimaa et al., 2019a). Three contributions in this special issue pay specific attention to systemic intermediaries in advancing transitions (Kanda et al., this issue; van Boxstael et al., this issue; van Lente et al., this issue). In addition, systemic intermediation is also partly addressed in the contributions dealing with policy change (Kivimaa et al., this issue; Vihemäki et al, this issue).

Kanda et al. (this issue) explore how systemic intermediaries address different system levels, identifying three: in-between entities in a single network, in-between different networks of entities, and in-between actors, networks, and institutions. Empirically, the paper examines selected intermediaries in eco-innovation support systems in three regions across Finland, Germany, and Sweden (e.g. energy agencies, eco-innovation agencies, collaborative networks, sustainability clusters), and finds that the third level – intermediation between actors, networks and institutions – is the rarest one despite its importance for sustainability transitions. This research also reveals that systemic intermediaries often emerge in response to gaps in knowledge, coordination or services in relation to systemic change and transition processes. The authors end by noting that policy makers should nurture a range of intermediaries operating at different system levels and undertaking different roles and activities. They argue that if systemic intermediaries are active at all three levels of innovation support systems, this better supports the acceleration of sustainability transitions through the creation of common expectations for the overall direction of the transition.

Van Boxstael et al. (this issue) provide a transnational view on the activities of a systemic intermediary, EIT InnoEnergy, by examining the experiences of the intermediary in two geographical locations: Scandinavia and Iberia. They aim to analyse how operating in these different locations affects the

intermediary's role in facilitating the energy transition. They find that some intermediary functions were more difficult to realise in the pro-transition Scandinavian context, resulting in cooperation with different kinds of actors than in Iberia where the context was more welcoming to the intermediary's activities. The research concludes that each location has its unique characteristics and conditions that need to be considered when designing policies for the acceleration of transitions via new market creation.

Van Lente et al. (this issue) investigate how systemic intermediaries (energy innovation intermediary Novem, agricultural intermediary TransForum, and Steering Committee for Orphan Drugs) obtain legitimate roles or positions. Using positioning theory, with roots in symbolic interactionism, they trace how positions emerge in interactions as a negotiated set of rights and obligations. Positions are invoked in the actors' actions and statements ('speech-acts') and draw from mutually constructed narratives ('storylines'). In their analysis, they compare systemic intermediaries seeking sustainable transitions in energy production, agriculture, and healthcare. The contribution argues that while systemic intermediaries live on the 'promise of the field', they both profit and suffer from the dilemma between initiating and sustaining innovative systemic changes. The authors highlight that systemic intermediaries must be explicit about their position and their credibility as they have to operate between different parties. This is especially the case when they wish to accelerate transitions, as conflicts and tensions may become stronger when the socio-technical systems face more disruptive forces.

The contributions in this special issue show that existing systemic intermediaries may have established positions in the socio-technical system and follow a specific mandate or strategy to intermediate change (Kanda et al., this issue; van Lente et al., this issue). However, the accelerating transition creates new challenges for systemic intermediaries: lack of direction, willingness and capacity to engage with institutional change (Kanda et al., this issue), insufficient collaboration with regime actors (van Boxstael et al., this issue) or uncertainty what roles to take (van Lente et al, this issue). Therefore, systemic intermediaries need to continually adapt their strategic positions within the shifting ecology of actors in the transition (involving market and policy changes).

### 3. Conclusions and directions for future research

This special issue aims to contribute novel insights about how intermediary actors can accelerate sustainability transitions. The contributions in it focus on the diffusion of innovations, policy change and system-level activities. Here, we make three conclusions pertaining to intermediation in the acceleration of sustainability transitions, related to the three themes, i.e. (1) involvement of a broader set of stakeholders not previously active in the transition, (2) increasing contestation and tensions; and (3) emerging confusion and re-positioning requirements of intermediary actors as transitions accelerate.

Regarding the first conclusion, highlighted in several contributions, acceleration involves a *broader set of stakeholders* than earlier phases of the transition. This implies that new types of intermediary activities may be needed. The number of adopters and users of new technologies and services increases, including, for example, housing companies, households, farmers and public organisations, who may have



less knowledge and expertise in (and perhaps also less interest in the details of) new solutions and policies than early adopters. This increases the need for intermediaries who support technology transfer (including imports and sales), retrofit planning, and policy ‘translation’. Such intermediaries require different skills than those interacting with early niche actors. Both adopters and intermediaries may find it difficult to navigate the changing ecology of intermediaries — especially if there is considerable overlap between the activities of different intermediaries. Yet, potential users may also face an absence of intermediaries to help them acquire the new solutions or benefit from policy subsidies. Further confusion for users is created by the constant flux where intermediaries are established, terminated or change their offers over time. Acceleration also comes with a greater need for intermediation across all levels of a socio-technical system, between regimes and sub-regimes, and between different geographical locations.

Our second conclusion, arising from some contributions, relates to increasing *contestation and tensions* as the transition accelerates. In predevelopment, niche developments pose relatively little threat to actors in established systems, and intermediary activities are then mainly focused on supporting experimentation, aggregation of knowledge and policy advocacy for innovation. As transitions accelerate, the new solutions begin to compete with existing solutions for market shares, which creates uncertainty for traditional skills and knowledge, and potentially declining policy support, for the established systems. Thus, the obvious location of tensions and contestation is between transition intermediaries and intermediaries aiming to keep the status quo or solve societal problems with incremental changes only. Such struggles are likely to be tackled with different strategies, involving knowledge dissemination, visioning, persuasion, or even false claims. Another location for tension is between different transition intermediaries that compete for space to operate in, for resources between non-commercial intermediaries, and for markets between commercially operating intermediaries. As noted by Kivimaa et al. (2019a), battles for ‘survival’ between intermediaries may take the focus away from the task at hand, slowing down actual transition efforts. It is not easy for intermediaries to maneuver amidst existing interests of established actors and the expanding ecology of intermediaries.

This leads to our third conclusion, confusion among intermediaries regarding the accelerating transition. Incumbent actors, which may have earlier been slow to react to or even oppose transition, increasingly begin to orient themselves toward the transformative change needed (e.g. Turnheim and Sovacool, 2019). Thus, acceleration multiplies the actors in transition, blurring niche-regime boundaries and making it more difficult to distinguish transition actors from other actors. This entails changes in the positioning of the intermediaries and makes some of the intermediary actors redundant. For intermediaries, this creates uncertainty and hesitation about who they are and what roles they could play. Are they to satisfy clients? Who are their allies or adversaries? Should they warrant collective progress? The contributions showed some potential strategies to overcome this confusion and manage conflicting transition interests, such as focusing on longer term goals, differentiating intermediation activities and networks in different contexts, and re-positioning the intermediary roles. This is in line with recent findings by Manders et al. (2020: p. 93), who argue that intermediaries change their roles from initial mandates and meet their roles “fluidly as a response to their dynamic context and internal learning processes”.

Several issues deserve attention in future research on intermediaries in transitions. Pertinent topics are conflict among transition intermediaries, their positioning with respect to each other and in relation to new issues that emerge when transitions unfold, and how these affect the ‘success’ of intermediary activities. Insights are needed on how acceleration increases overlap and competition between intermediaries in practice, possibly giving rise to unfair strategies, including false claims about the (dis)benefits of new technologies or policies, which will no longer be limited to those actors that oppose transitions but may also be employed by those favouring them. Here, further work on the positioning of and tensions between transition intermediaries is needed. Finally, from a policy perspective, an important question is how intermediation could be supported so that there is a sufficient number and variation of intermediaries to advance transitions in the pace required to address the sustainability challenges that societies now face.

## References

Boyer, R. H. 2018. Intermediacy and the diffusion of grassroots innovations: The case of cohousing in the United States. *Environmental innovation and societal transitions*, 26, 32-43.

Gliedt, T., Hoicka, C.E., Jackson, N., 2018. Innovation intermediaries accelerating environmental sustainability transitions. *J. Clean. Prod.* 174, 1247–1261.

Hodson, M., & Marvin, S. 2009. Cities mediating technological transitions: understanding visions, intermediation and consequences. *Technology analysis & strategic management*, 21(4), 515-534.

Hyysalo, S., Juntunen, J. K., & Martiskainen, M. 2018. Energy Internet forums as acceleration phase transition intermediaries. *Research Policy*, 47(5), 872-885.

Kanger, L., Schot, J., 2016. User-made immobilities: a transitions perspective. *Mobilities* 11 (4), 598–613.

Kivimaa, P. 2014. Government-affiliated intermediary organisations as actors in system-level transitions. *Research policy*, 43(8), 1370-1380.

Kivimaa, P., Boon, W., Hyysalo, S., & Klerkx, L. 2019a. Towards a typology of intermediaries in sustainability transitions: A systematic review and a research agenda. *Research Policy*, 48(4), 1062-1075.

Kivimaa, P; Hyysalo, S; Boon, W; Klerkx, L; Martiskainen, M; Schot, J 2019b. Passing the baton: How intermediaries advance sustainability transitions in different phases. *Environmental Innovation and Societal Transitions*, in press.

Klerkx, L., & Leeuwis, C. 2009. Establishment and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological forecasting and social change*, 76(6), 849-860.

Köhler, J., Geels, F. W., Kern, F., Markard, J., Onsongo, E., Wieczorek, A., ... & Fünfschilling, L. 2019. An agenda for sustainability transitions research: State of the art and future directions. *Environmental Innovation and Societal Transitions*.

Lukkarinen, J., Berg, A., Salo, M., Tainio, P., Alhola, K., & Antikainen, R. 2018. An intermediary approach to technological innovation systems (TIS)—The case of the cleantech sector in Finland. *Environmental innovation and societal transitions*, 26, 136-146.

Manders, T. T., Wieczorek, A. A., & Verbong, G. G. 2020. Complexity, tensions, and ambiguity of intermediation in a transition context: the case of Connecting Mobility. *Environmental Innovation and Societal Transitions*, 34, 183-208.

Martiskainen, M., & Kivimaa, P. 2018. Creating innovative zero carbon homes in the United Kingdom—Intermediaries and champions in building projects. *Environmental Innovation and Societal Transitions*, 26, 15-31.

Matschoss, K., & Heiskanen, E. 2018. Innovation intermediary challenging the energy incumbent: enactment of local socio-technical transition pathways by destabilisation of regime rules. *Technology Analysis & Strategic Management*, 30(12), 1455-1469.

Manders, T., Wieczorek, A., Verbong, G. 2020. Complexity, tensions, and ambiguity of intermediation in a transition context: The case of Connecting Mobility. *Environmental Innovation and Societal Transitions* 34: 183-208.

Mignon, I., & Bergek, A. 2016. System-and actor-level challenges for diffusion of renewable electricity technologies: an international comparison. *Journal of Cleaner Production*, 128, 105-115.

Mignon, I., & Kanda, W. 2018. A typology of intermediary organizations and their impact on sustainability transition policies. *Environmental Innovation and Societal Transitions*, 29, 100-113.

Moss, T., 2009. Intermediaries and the governance of sociotechnical networks in transition. *Environ. Plann. A* 41, 1480–1495.

Rotmans, J., Kemp, R., van Asselt, M., 2001. More evolution than revolution: transition management in public policy. *Foresight* 3, 15–31.

Safarzynska, K., Frenken, K., van den Bergh, J., 2012. Evolutionary theorizing and modeling of sustainability transitions. *Res. Policy* 41(6), 1011–1024.

Smith, A., Hargreaves, T., Hielscher, S., Martiskainen, M., & Seyfang, G. 2016. Making the most of community energies: Three perspectives on grassroots innovation. *Environment and Planning A*, 48(2), 407-432.

Smith, A., Raven, R., 2012. What is protective space? Reconsidering niches in transitions to sustainability. *Res. Policy* 41(6),1025–1036.

Turnheim, B., Sovacool, B., 2019. Forever stuck in old ways? Pluralising incumbencies in sustainability transitions. *Environmental Innovation and Societal Transitions*, in press.

Van Lente, H., Hekkert, M., Smits, R., van Waveren, B., 2003. Roles of systemic intermediaries in transition processes. *Int. J. Innov. Manag.* 7, 247–279.

Van Lente, H., R. Smits, M.P. Hekkert, and B. Van Waveren 2011. Systemic Intermediaries and Transition Processes in S. Guy, S. Marvin, W. Medd and T. Moss (Ed.), *Shaping Urban Infrastructures. Intermediaries and the Governance of Socio-Technical Networks*, London: EarthScan, 36-52.