



# Experimentation and intermediaries

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- Intermediary actors in the context of sustainability transitions?
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- How experiments, intermediaries and policy mixes connect?

# Space for experiments and intermediaries? Limitations & challenges in dominant forms of state-led governance

- In-effectiveness or slowness of top-down steering (particularly in context of climate change)
- Increasingly complex policy mixes due to layering of new policy goals and instruments
- Ambitious policies (when taken on board) may clash with existing practices of implementing organisations

# Emerging governance trends in academia & practice



- Experimental governance culture
  - E.g. Sabel & Zeitlin 2012, Broto and Bulkeley 2013, Karvonen & van Heur 2014
- Policy, social and technological experimentation
  - What are the explicit and hidden agendas? Where does this lead to?
- Alternatives/complements to state-led governance
  - Community initiatives, living labs, public-private partnerships (e.g. Evans & Karvonen 2014, Seyfang et al. 2014, Voytenko et al. 2016)
  - Intermediary actors at the interface of public and private
- Mixes of policies in the context of transformational/transition policy



# Part 1: Experiments in transformative innovation policy – insights from Kivimaa, Hildén et al. 2017



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## Experiments in climate governance – A systematic review of research on energy and built environment transitions

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# Experimentation in climate and sustainability governance

- proposed as a key way in which governance drives sustainability transitions
  - creating space for innovative solutions to emerge
- can challenge the *status quo* and enable the exploration of governance innovations, technologies and services in a temporary space

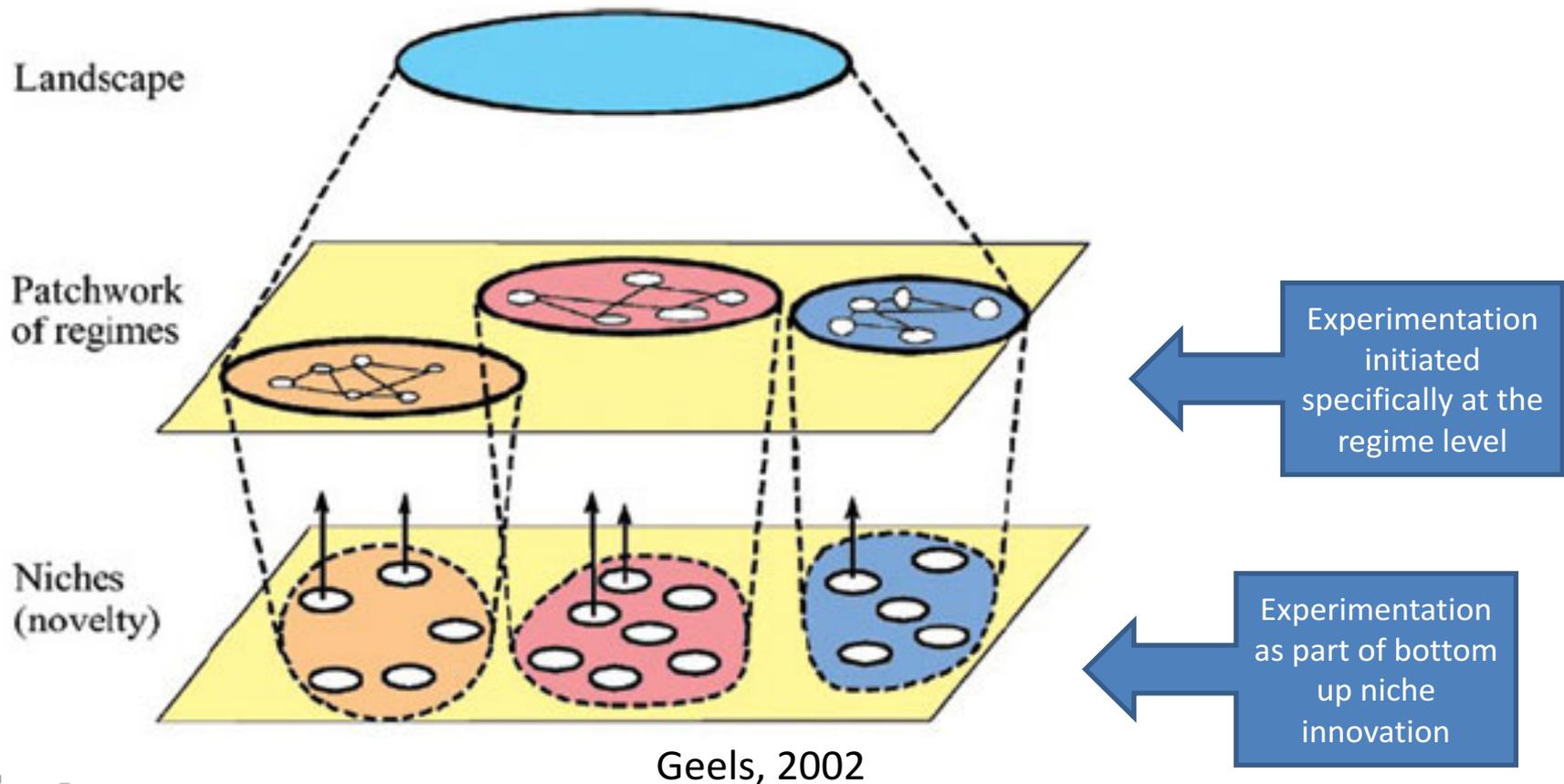
# Definitions of experiments

- offer some flexibility & opportunity to test novel policy options on a limited scale; to some extent reversible (Tasseey 2014)
- *“a recursive process of provisional goal-setting and revision based on learning from the comparison of alternative approaches to advancing them in different contexts”* (Sabel & Zeitlin 2014)
- *“planned initiatives that embody a highly novel socio-technical configuration likely to lead to substantial (environmental) sustainability gains”* (Berkhout et al., 2010)

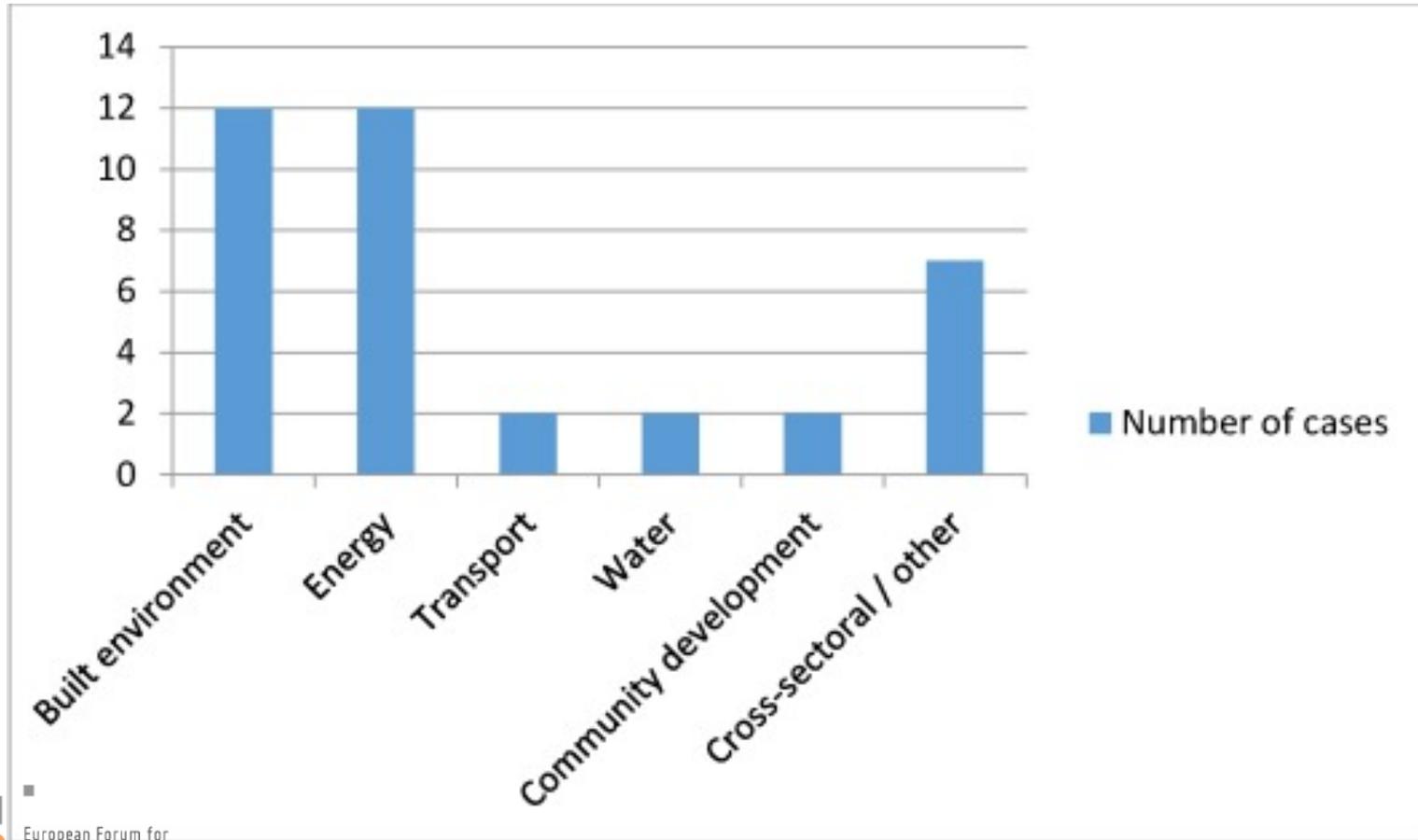
# Climate governance experiments

- *deliberate field-trials of innovations that operate in a temporary space and scale, are reversible during the trial period, and are designed to challenge and disrupt status quo policies and contribute to [social] learning on how to advance decarbonisation and climate transitions (Kivimaa, Hildén, Huitema, Jordan & Newig, 2017).*

# Multiple levels of transition

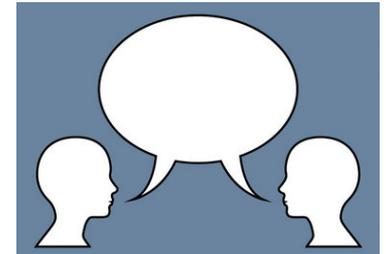


# Systematic review of experiment case studies



# Outputs and outcomes of experiments

1. Changed discourse
  - New vision, narratives, or ways of thinking
2. New technology
  - Practical applications of PV, solar heating, ceiling insulation etc.
3. Built environment or infra change
  - Land use planning, low carbon infrastructure
4. Policy and institutional change
  - New planning practices, using outside actors in policy making, "new political space"
5. New business practices
  - New business models for renewable energy or energy services
6. Market change
  - E.g. emergence of markets for energy efficient social housing
7. New consumer / citizen practices
  - Alternative communities, new energy consumption practices



# Summarising literature review

- a way to reconfigure existing socio-cultural, technological, regulative and institutional elements of socio-technical systems
- proofs of concept and initiate learning
- niche spaces protected from the mainstream environment and its “selection pressure”
- no shared terminology

# Systematic deliberate combination of different types of experiments needed

Experiment type	Aim	Scale	Setting	Key actors
Niche creation	Test sustainable technology/service & create niche around it	Initially local but aim to expand	Protected niche	Local, individual innovators
Market creation	Change market conditions and space for alternative sustainability niches	Regional, national or broader	Several niches or policy	Innovators, marketers, procurement specialists, policymakers
Spatial planning	Long-term spatial development with sustainability benefits	Local or regional	Concrete use of space and land	Local/regional policy makers and stakeholders
Societal problem solving or change	Empower citizens / local community to promote sustainable change and find solutions	Local, regional or national	Policy level	Policy makers, change agents and stakeholders

# Future research avenues proposed in Kivimaa, Hildén et al. 2017

1. successes and shortcomings of (climate) governance experiments with reference to the articulations of policy, politics and polity
2. exploration of ‘accidental experiments’ or ‘quasi-experiments’ in governance and policy
3. long term aggregate evaluations of experiments  
- what happens after the experiment and how can societies reap the benefits of an ‘experimental society’ for sustainability transitions

# Open questions pertaining to experiments

- What are ‘policy experiments’ or ‘institutional experiments’ under transformative innovation policy?
- How do (transformative) experiments fit within existing policy mixes?
  - Can we trace the origin and influence of such experiments?
- What is the importance of experimenting in different policy domains and sectors?

# Part 2: Intermediary actors in 'sustainable transformative change'

Kivimaa, P (2014) [Government-affiliated intermediary organisations as actors in system-level transitions](#). Research Policy, 43 (8). pp. 1370-1380.

Kivimaa, P, Boon, W & Antikainen, R (2017) [Commercialising university inventions for sustainability—a case study of \(non-\)intermediating 'cleantech' at Aalto University](#). Science and Public Policy.

Kivimaa, P & Martikainen M (unpublished). Innovation, low-energy buildings and intermediaries in Europe: Systematic case study review.

Kivimaa, P & Martiskainen M (unpublished). Creating innovative low energy homes – intermediaries and champions in building projects.

Kivimaa, P, Boon W, Hyysalo S & Klerkx (unpublished). Towards a dynamic typology of intermediaries in transitions: a systematic review and research agenda



# Innovation intermediaries

- Facilitators of innovation processes that are neither the inventors nor the customers (Den Hertog, 2000)
- *“actors who create spaces and opportunities for appropriation and generation of emerging technical or cultural products by others who might be described as developers and users”* (Stewart & Hyysalo, 2008)
- Comprise a range of organisations, e.g. consultants, brokers, agencies, innovation centres and science parks
- Range in their reach over the production-supply-use chain (from short to long) and the breadth of content (from thin to fat), the latter referring to the range of products and services (Stewart and Hyysalo, 2008)
- Often hybrid and boundary crossing; seek for neutrality (Howells, 2006)

# Intermediaries in technology transfer

**Table 1.** Analytical framework comprising generic and sustainability-specific roles of innov

Roles that contribute to	Range of activities within that focus
Information/knowledge exchange	Scanning, processing, exchange Foresight Advice and education Articulating innovation needs Articulating sustainability needs for R&D; offering sustainability/cleantech training to personnel and/or projects
Technological development	Evaluating, prototyping and piloting, configuring, accrediting and legitimising, standard setting, scaling up, transfer Using sustainability criteria and life cycle analyses to aid decision-making
Collaboration	Finding information, network formation, matchmaking, brokering/negotiating a transaction/deal, finalising contract Co-operation with sustainability/cleantech-oriented actors
Financing	Seeking information, sponsoring, gathering resources, (managing)  Using sustainability criteria in resource allocation
Intellectual property	Rights and patents advice, management
Process facilitation	Steering, process management, creation of business case, commercialisation, evaluation of outcomes Bringing sustainability/clean tech expertise into the process

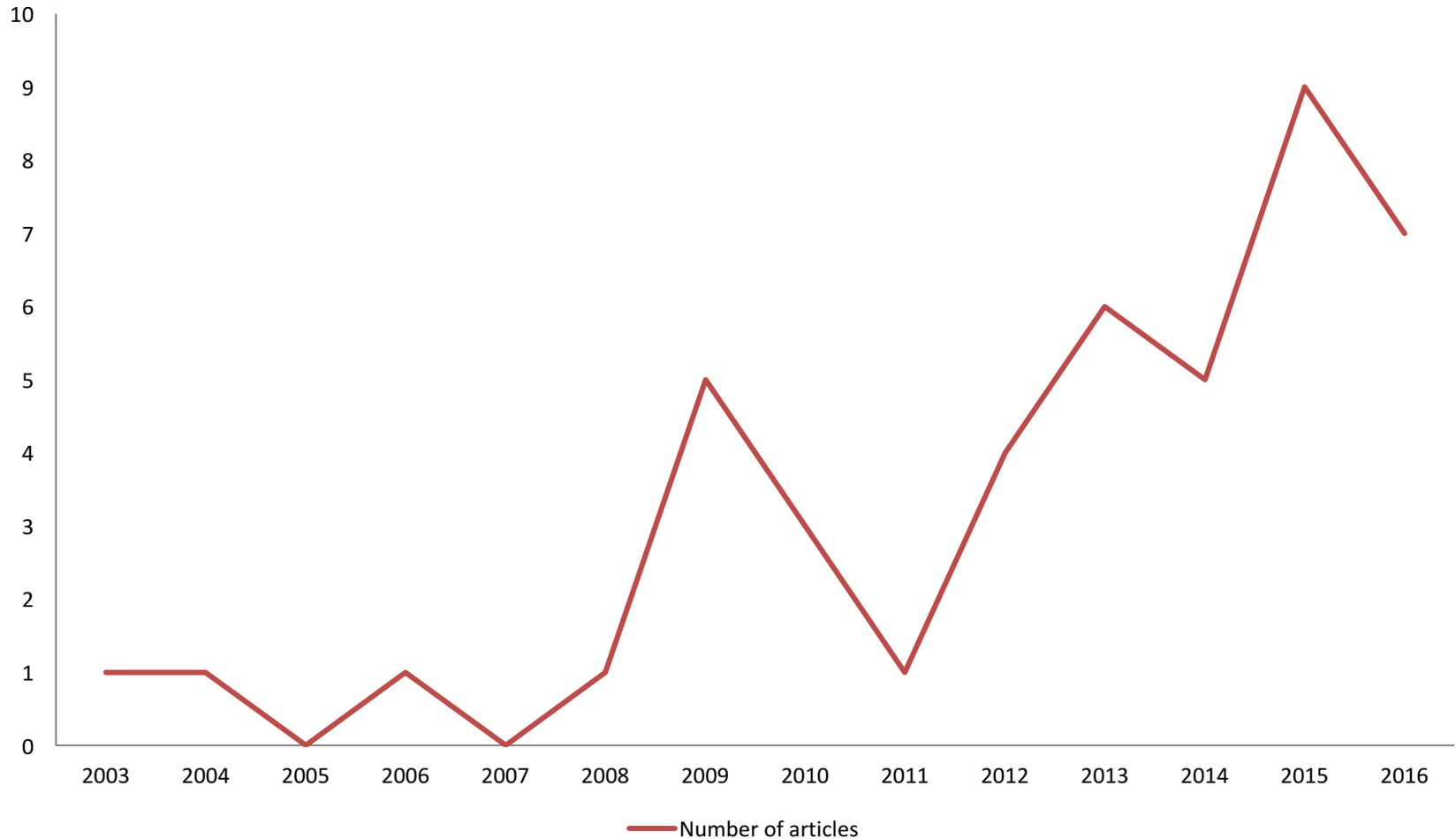
# Roles of intermediaries building from strategic niche management

**Table 2**

A typology of intermediary roles as contributors to niche internal processes.

Articulation of expectations and visions	Building of social networks	Learning processes and exploration at multiple dimensions	Other
<ul style="list-style-type: none"> <li>• Articulation of needs, expectations and requirements (A1)<sup>1,2,3,4,5</sup></li> <li>• Strategy development (A2)<sup>2,5</sup></li> <li>• Acceleration of the application and commercialisation of new technologies (A3)<sup>1,2,6</sup></li> <li>• Advancement of sustainability aims (A4)<sup>6,7</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Creation and facilitation of new networks (N1)<sup>1,4,5,6,8,9</sup></li> <li>• Gatekeeping and brokering (N2)<sup>3,4,5,8</sup></li> <li>• Configuring and aligning interests (N3)<sup>2,4,6,8,9</sup></li> <li>• Managing financial resources – finding potential funding and funding activities (N4)<sup>1,3,4,6,8</sup></li> <li>• Identification and management of human resource needs (skills) (N5)<sup>1,2,4,6,8</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge gathering, processing, generation and combination (L1)<sup>1,3,6,8</sup></li> <li>• Technology assessment and evaluation (L2)<sup>3</sup></li> <li>• Prototyping and piloting (L3)<sup>1,3,6,8</sup></li> <li>• Investments in new businesses (L4)<sup>1</sup></li> <li>• Communication and dissemination of knowledge (L5)<sup>1,2,4,6,8</sup></li> <li>• Education and training (L6)<sup>1,6,8</sup></li> <li>• Provision of advice and support (L7)<sup>4,5,6</sup></li> <li>• Creating conditions for learning by doing and using (L8)<sup>2,8,9</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Arbitration based on neutrality and trust* (O1)<sup>3</sup></li> <li>• (Long-term) project design, management and evaluation (O2)<sup>1,2,3,6,9</sup></li> <li>• Policy implementation (O3)<sup>3,9</sup></li> <li>• Accreditation and standard setting (O4)<sup>3,8</sup></li> <li>• Creating new jobs (O5)<sup>10</sup></li> </ul>

# Intermediary actors in transitions – an emerging discussion



# Intermediary actors in transitions – an emerging discussion

- Predominant focus on niche level (Geels and Deuten, 2006; Hargreaves et al., 2013; Bird and Barnes, 2014; Seyfang et al., 2014; Barnes, 2015; Seyfang and Longhurst, 2015)
- Empirically, attention on intermediaries in urban development (Hodson & Marvin, 2009, 2010; Guy et al, 2010; Hamann & April, 2013; Hodson et al., 2013)
  - Some rural (Opazo, 2014) or regional (Mattes et al., 2015) applications recently
- Intermediaries may also attempt to destabilise dominant regimes
  - e.g, by aiming to decrease public legitimacy for and endogenous commitment to an existing regime, or (un)intentionally disrupt existing structures (Kivimaa, 2014; Klerkx and Leeuwis, 2009)

# Examples of recent findings regarding intermediaries in low carbon transitions

- **Local-niche level:**

- Ability to translate, interpret and facilitate innovation processes (Grandclement et al., 2015)
- There is a specific sequence of configuring, brokering and facilitating that intermediaries take in low energy projects (Barnes, forthcoming)

- **Global-niche level:**

- Global carriers of best practice, standard development, institutionalising learning, mobilising resources (Seyfang and Longhurst, 2015)

- **Niche-regime interface:**

- Boundary spanners convening, translating, facilitating collaboration, opening up the regime to novelty (Smink et al., 2015)

- **Regime level:**

- Articulating expectations for a transformed regime, policy renewal, policy implementation, investment activity (Kivimaa, 2014)
- Mediating between production and consumption, between priorities of different funders and social interests, across different levels (for example, between householders and municipalities or between city government and SMEs (Hodson et al., 2013))

# Definition of transition intermediaries

- Transition intermediaries (working definition)

*= innovation intermediaries that mediate a sector (e.g. electricity, transport, agriculture) or a region (e.g. city, country) towards a systematically new and more sustainable configuration*

- Undertake activities in micro (niche), macro (landscape) or intermediate (regime) level
  - Support emergence/diffusion of new technologies, services or consumption patterns
  - Open up spaces (for above) by destabilising institutions or by forming experimental spaces and markets

# Archetypes of transitions intermediaries (Kivimaa et al. 2017)

Category	Scale of action	Origin	Insider / outsider	Agency	Neutrality / bias
Systemic intermediary	Niche niche- regime regime	Typically established to intermediate	Insider or outsider to regime	Pursues given goals on system level	Typically perceived as unbiased
Regime intermedary	Niche- regime regime	Existing actor subsuming intermediary roles;	Insider to the regime	Pursues given goals/solutions	Change-oriented regime player
Niche (or grassroots) intermediary	Niche niche- regime	Often emerging to intermediate	Insider to the niche	Pursues given goals/solutions	Player advancing a selected niche (or no vision)
Process (or project) intermediary	Niche niche- regime regime	Set up specifically to intermediate	Outsider to niche and regime	No goals (mere facilitator)	Perceived as unbiased
User intermediary	Niche niche- regime regime	Emerging or set up	Insider to niche or regime	Represents end-users	Leans towards user interests

# How does changing political & institutional landscape increase demand for intermediaries?

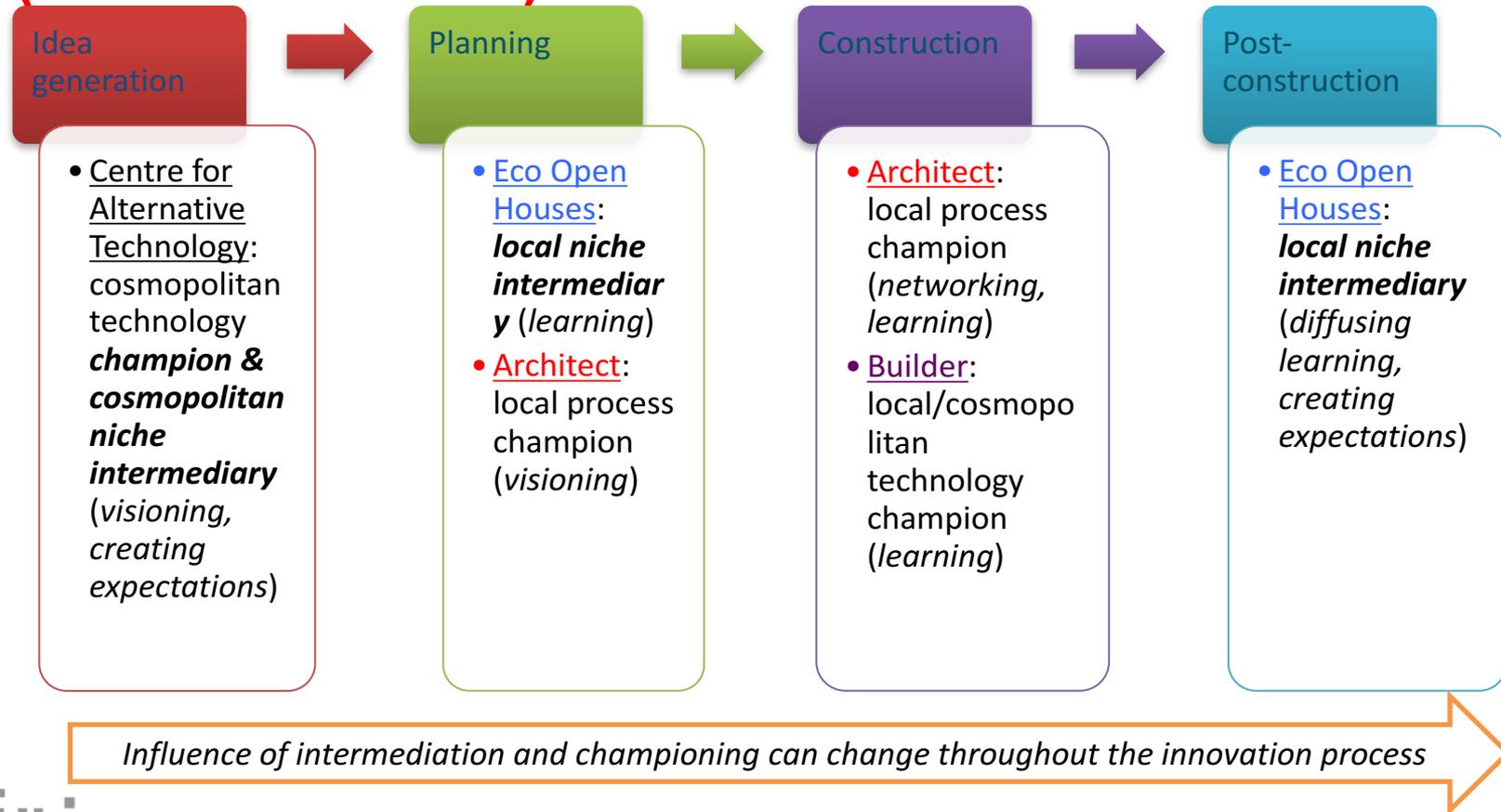
- **Fragmented and distributed (climate) governance?**
  - Need for intermediaries as connectors in polycentric or distributed climate governance
- **Increasingly complex policy mixes**
  - Need for intermediaries to translate and simplify 'messy' policy mixes for individual projects and niche development.
- **Increasing attention for policy and governance experimentation**
  - Need for intermediaries connecting experiments and transferring and interpreting learning across levels and between sectors?
- **Drastic reduction in the number of policies driving change in some UK policy sectors, such as building energy use or renewable energy**
  - Need for alternative governance arrangements and non-government intermediaries to prevent complete halt in innovation and their diffusion?

# Example: Intermediaries in low energy building transitions



- Processes
  - Facilitating individual building projects
  - Creating niche markets for low energy buildings
  - Facilitating business model creation
  - Implementing novel practices in social housing stock
  - Lobbying for or implementing policy change
  - Creating visions of what sustainable living looks like
- Added value of intermediaries
  1. **Networking** across the board and towards policymakers
  2. **Policy influence**; particularly on change and learning associated with planning processes
  3. **New market creation**; could act as keystone players in emerging ecosystems

# Initial findings: Intermediation in different stages of project development (Grantham Rd)



Source: Martiskainen & Kivimaa, 2016

# Flemish Passive House Platform

Established in 2002 as a group of innovative companies in highly energy-efficient housing with funding from Flemish Agency for Innovation.

A range of activities comprising innovation studies, pooling together companies to operate on joint concepts, assisting in finding and applying for funding.



Long-term intermediary, focused specifically on stimulating research and innovation for the passive house concept and demand generation for passive houses.

# Finnish Independence Fund Sitra – an example of systemic intermediary

Foundation, established by the Finnish government in 1967, aiming to promote sustainable well-being in Finland. Tasks set in law and supervised by the Parliament. Funding based on endowment capital and return on investments

Operated an energy programme 2008-2012 with a range of activities on building energy use: policy renewal, piloting in new build and renovation, guidelines, ERA17 etc.



“Systemic” but temporary intermediary, focused on articulation of visions and expectations, and piloting (short-term influence, need to generate system ‘shocks’)

# Peapody Trust in London – a systemic intermediary?

A social housing fund established in 1870s by an American banker to house the working poor. Currently has 27,000 dwellings to manage, operating on the basis of rental income.



In building energy efficiency, a fairly new but innovation-oriented actor with policy to achieve improved EPC. Engaged in piloting new retrofit and new build measures but current activities curtailed by recent policy changes.

Potentially a city-level systemic intermediary with potential to pilot and carry out building energy efficiency in a larger scale.

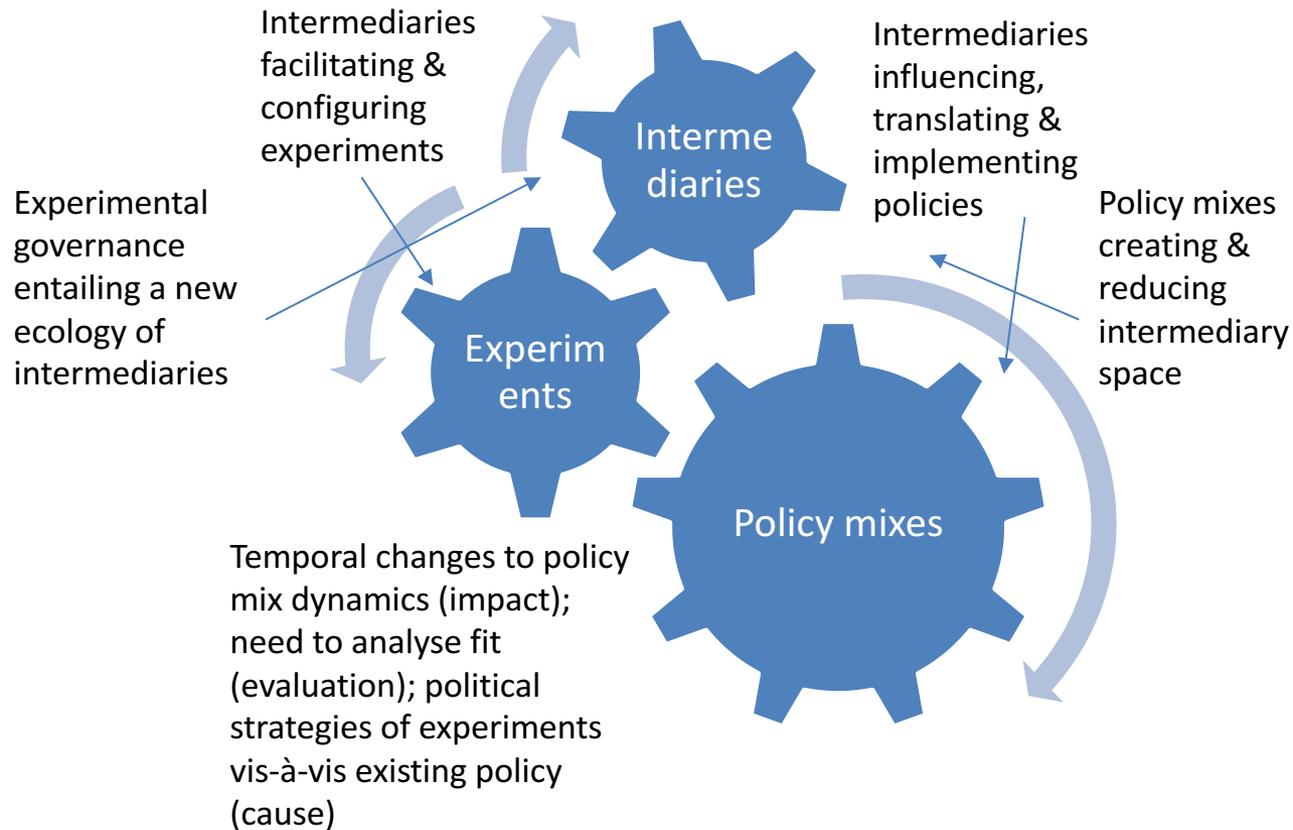
# Interplay between politics/policy & low energy building intermediation

- **Intermediary action in low carbon / low energy often addressing gaps in policy or in organisational landscape**
  - Missed policy areas, e.g. market for energy efficient buildings
  - Lack of organisations operating in a field, e.g. energy efficiency retrofits
- **Intermediary action may also emerge in response to policy**
  - Merging companies/innovators to create new products for an emerging market
- **Changed policy can curtail intermediary opportunities (even at the absence of direct financial or political dependence on the government)**
  - Lack of direct opportunities (when subsidy schemes have been scrapped)
  - Indirect effects from other policy domains (e.g. rent caps on housing funds)

# Interesting questions pertaining to intermediaries

- **Innovation intermediaries in transformative innovation governance**
  - How do they originate, what is their importance for lock-in and lock-out?
  - Potential role in changing policy and institutions; implementing and translating policies; replacing policy?
- **Links to other concepts**
  - policy entrepreneurs (Huitema & Meijerink 2010, Huitema et al. 2011; Ingold & Christopoulos 2015) and knowledge brokers (Reinecke 2015); advocacy coalitions (Markard et al. 2015)
- **Innovation intermediaries in transitions**
  - What distinguishes intermediaries from other actors and what is their importance to transformative governance?
  - When purposefully setting intermediary organisations to advance cause, what should policymakers take into account in different phases?
  - What are the ecologies and dynamics of intermediaries in transitions when comparing different sectoral changes?

# Interplay between experiments, intermediaries and policy mixes



# Concluding remarks

- **Global and local challenges require new governance approaches**
  - Insights can be gained by drawing on a combination of policy studies, transition studies & innovation studies
  - Several issues are arising: policy mixes, experiments and intermediaries cover only some of these
- **Experiments and intermediaries provide interesting complements to more traditional forms of governance**
  - Yet through what mechanisms can they lead to transformative change is still uncertain
  - Their importance and dynamics poses needs for future research and idea exchange between practitioners and academics
- **Intermediary action in low carbon / low energy transition often addressed gaps in policy or in organisational landscape**
  - What are the dynamics in other sectors' transformative change?
- **Changed policy mixes can both create and curtail intermediary opportunities for innovation governance**