

URB401: Systems Approaches for Urban Transitions

**Urban niches and
social innovation**

Maria Anna Hecher

October 15, 2025

Lectures 9:00-11:00

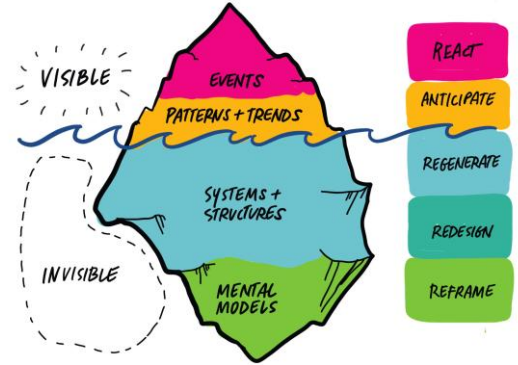
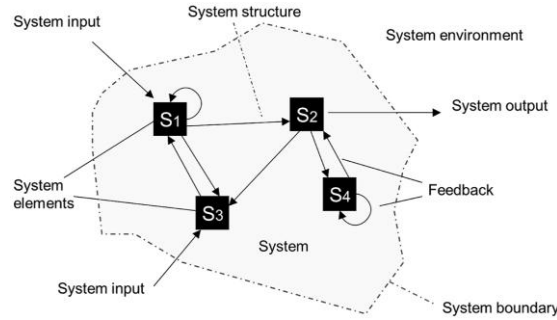
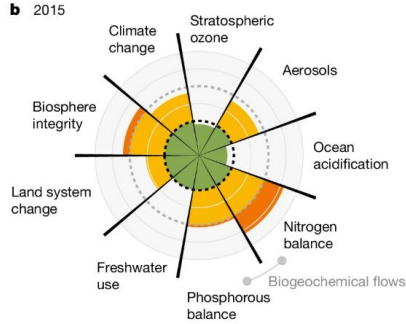
GC D0 386

Part	Week	Date	Teacher	Lecture
Part I: Urban transitions from a systems perspective	1	Sep 10	Hecher	Introduction to the course Special guest: Poetic transitions in the case of a historical architectural and urban design (Darius Karácsony)
	2	Sep 17	Hecher	Systems thinking for sustainable urban transitions
	3	Sep 24	Hecher	Special guest: Leverage points in the housing system (Anna Pagani)
	4	Oct 1	Binder	Transition research in urban systems
	5	Oct 8	Binder	Urban metaphors and urban metabolism
Part II: Social perspectives of urban transitions	6	Oct 15	Hecher	Social innovation and urban niches
	7	Oct 29	Hecher	Social acceptance in cities
Part III: Urban infrastructure and ecology in cities	8	Nov 5	Jessel	Multifunctional approaches through ecosystem services
	9	Nov 12	Jessel	Combining green-blue-grey infrastructures: Large-scale approaches (city level)
	10	Nov 19	Jessel	Combining green-blue-grey infrastructures: Small-scale approaches (building and neighborhood level)
Part IV: Policy and governance for urban transitions	11	Nov 26	Montfort	Multi-level embedding of cities: From global governance to scope for action in cities
	12	Dec 3	Montfort	Climate solutions in different types of cities
	13	Dec 10	All	Special guest: Urban transition processes in practice (Anton Sentic)
	14	Dec 17	All	Presentation City Lab projects



Recap

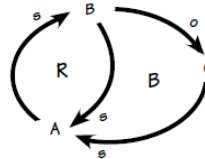
Systems thinking for urban transitions



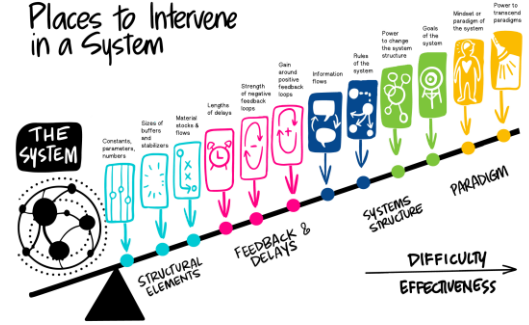
Frameworks Collection by finegood@sfu.ca | Illustrated by sam@drawingchange.com | © CC BY-NC-ND

1. disciplinary problems	2. problems with "broad" subject of investigation	3. problems in between different disciplines	4. cross-disciplinary problems originating from the real world
disciplinary research	multi-disciplinary research	inter-disciplinary research	problem definition independent of disciplinary perspectives; trans-disciplinary research

Causal Loop Diagram

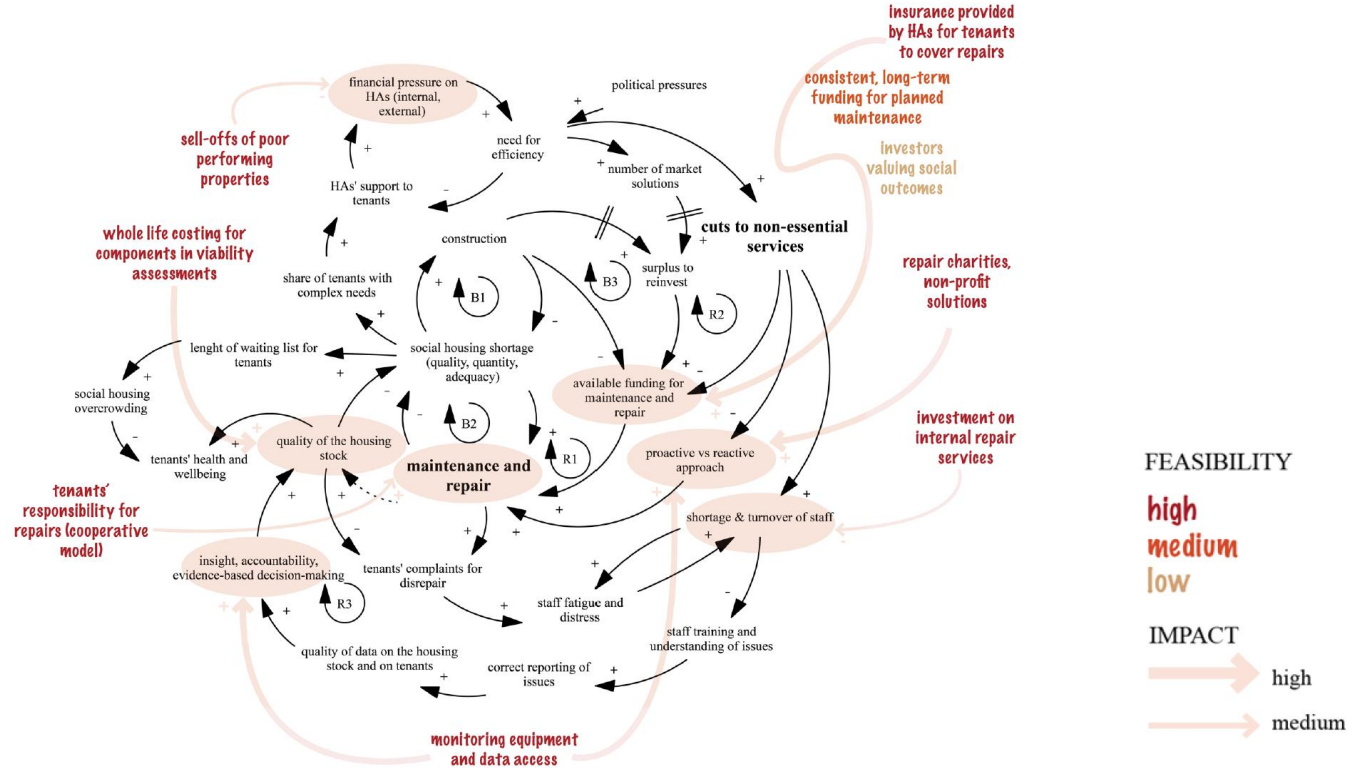


Places to Intervene in a System

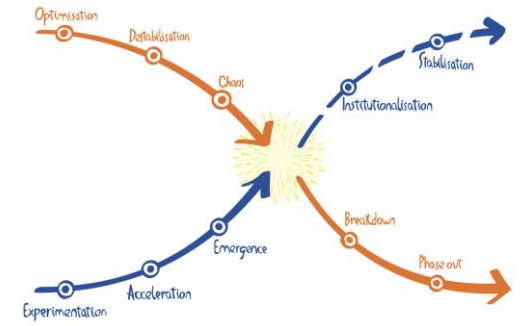
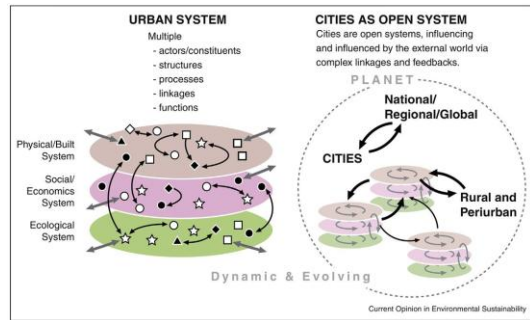
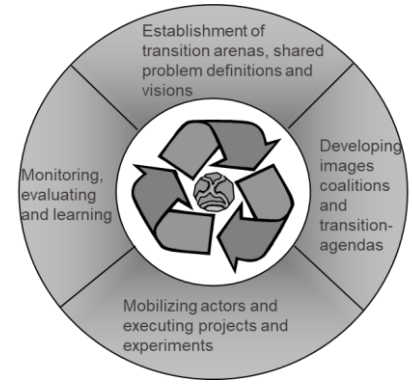
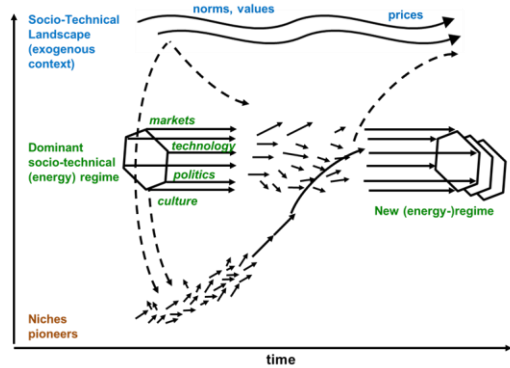
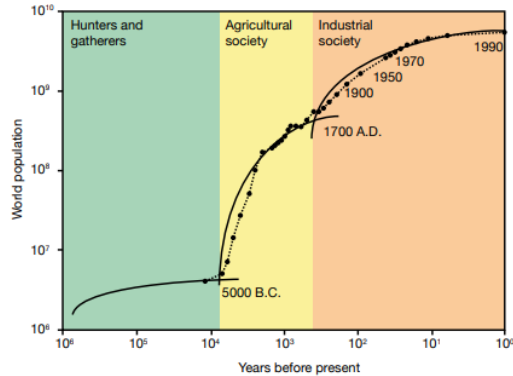
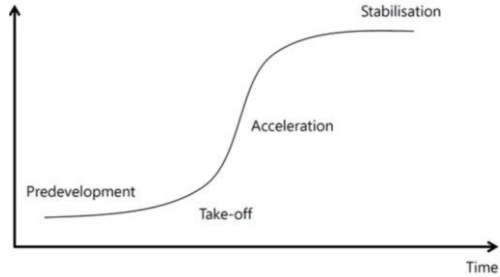


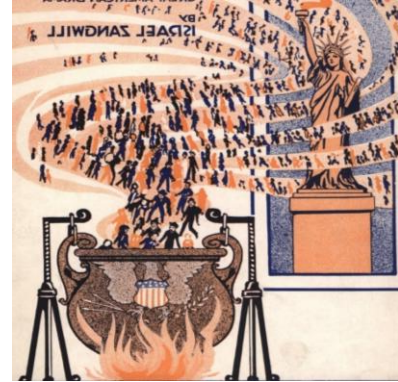
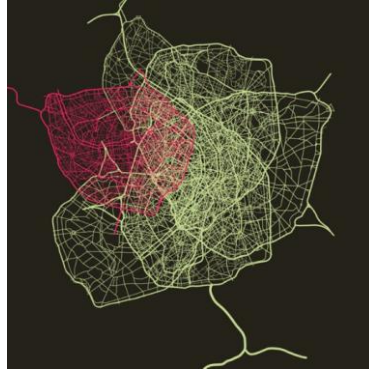
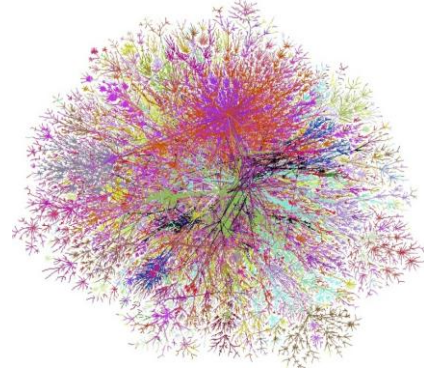
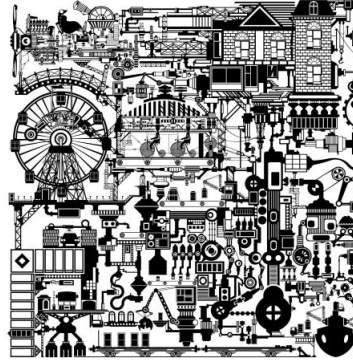
Adapted from Donella Meadows
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Systems thinking in the housing sector



Urban transitions





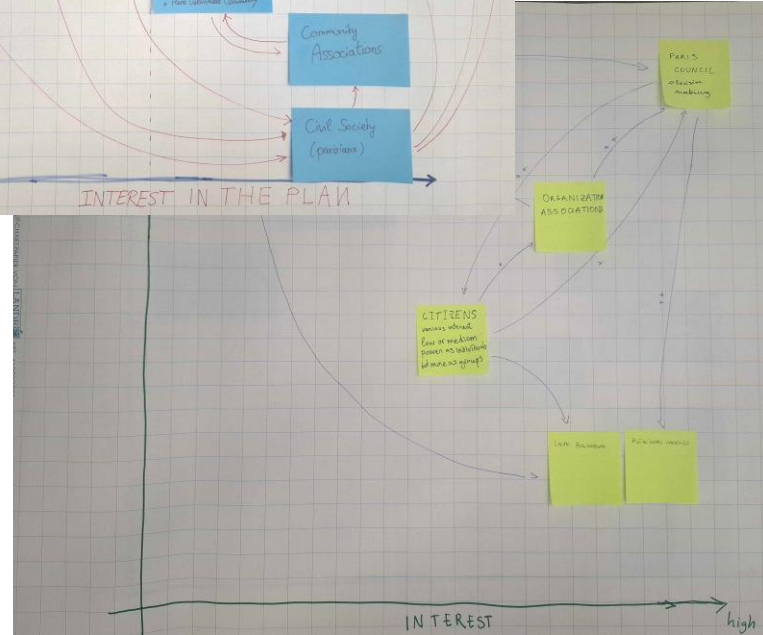
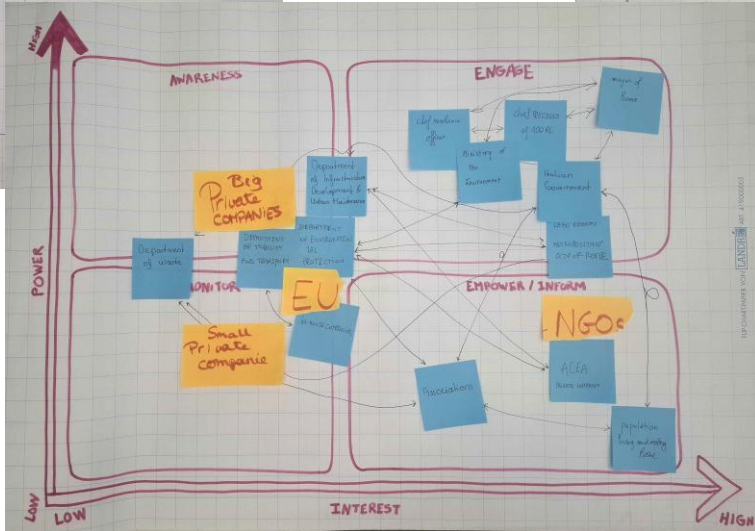
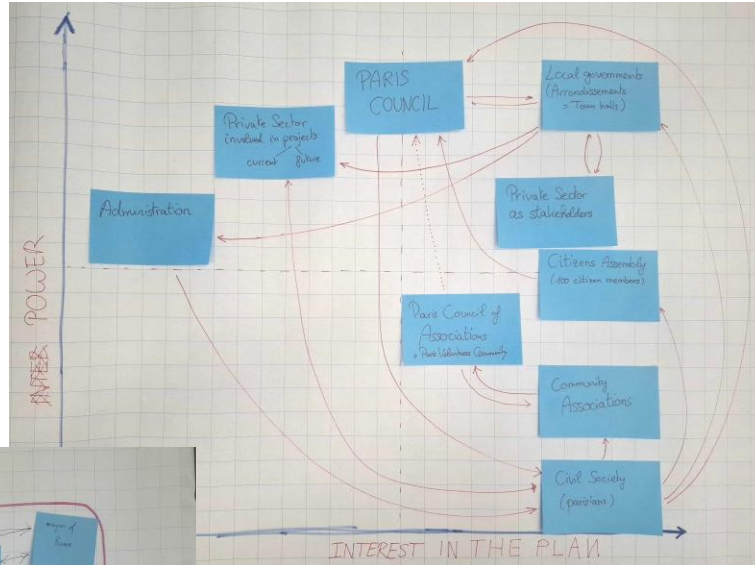
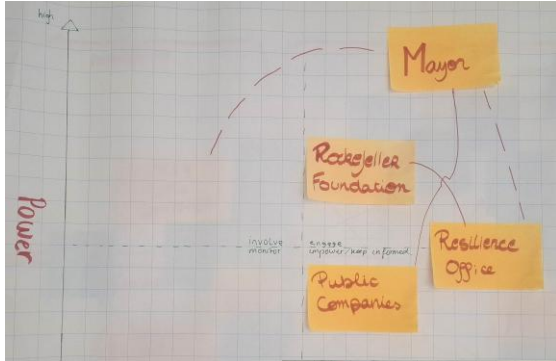


Social perspective of urban transitions

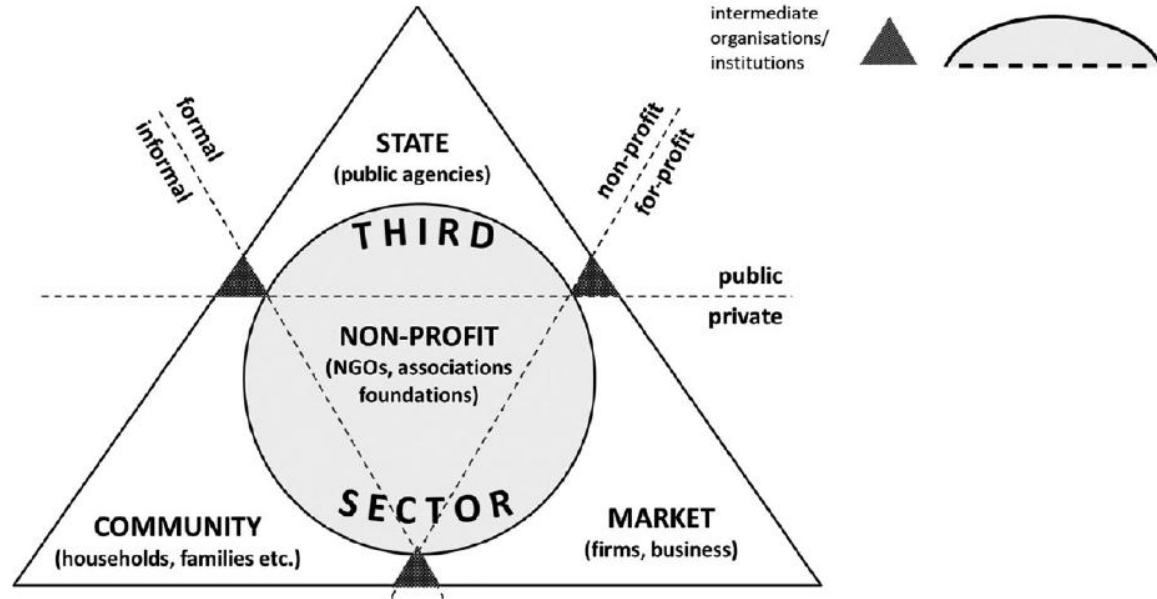
Learning objectives

- To reflect on the **variety of actors** driving urban transitions.
- To explore the theoretical foundation and role of **niche innovations** in sustainability transition research.
- To identify the defining **characteristics of social innovations** and investigate approaches fostering their development in cities.

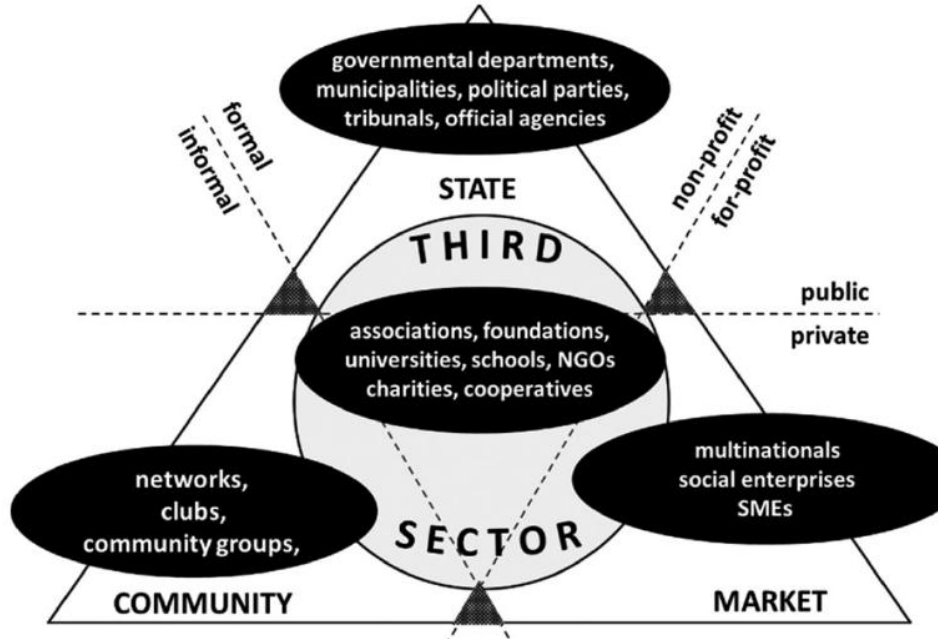
Actors in transitions



Actors in transitions

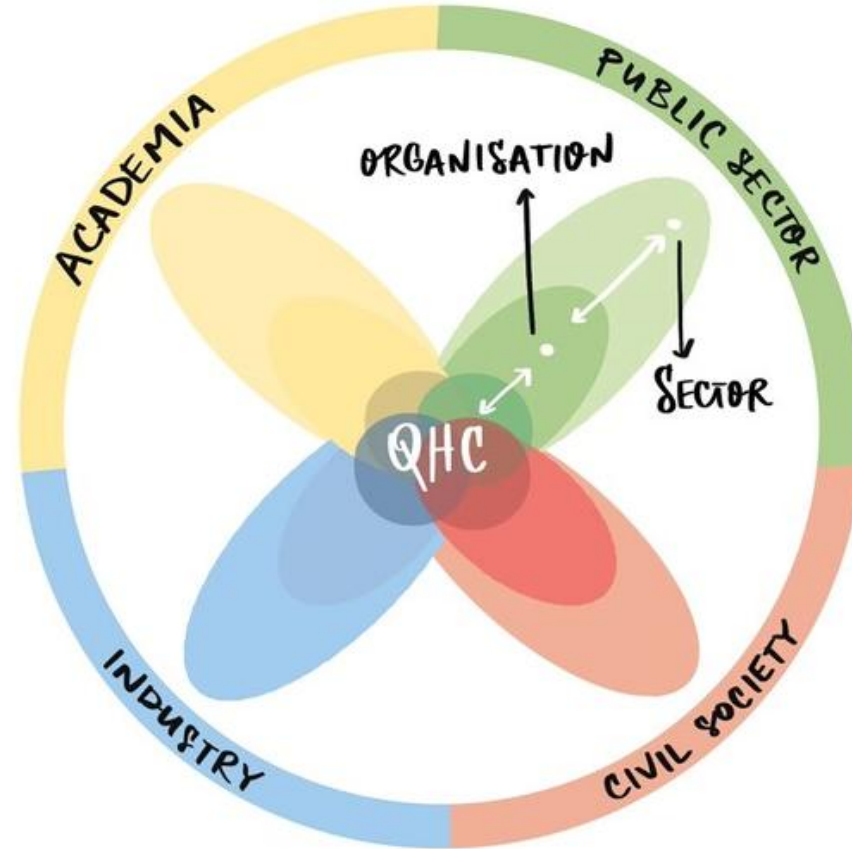


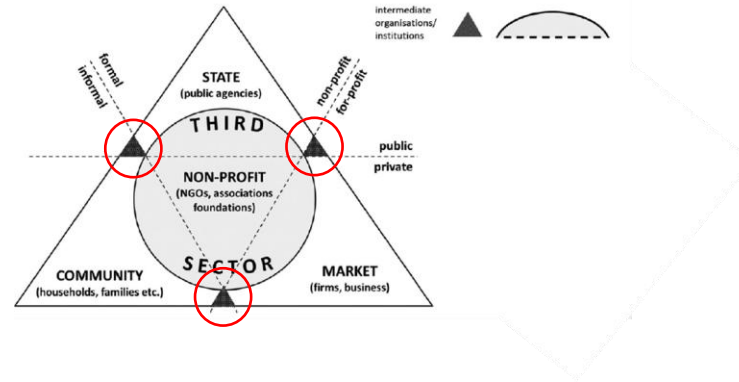
Actors in transitions



Avelino, F., & Wittmayer, J. M. (2016). Shifting power relations in sustainability transitions: A multi-actor perspective. *Journal of Environmental Policy and Planning*, 18(5), 628–649. <https://doi.org/10.1080/1523908X.2015.1112259>

Quadruple helix





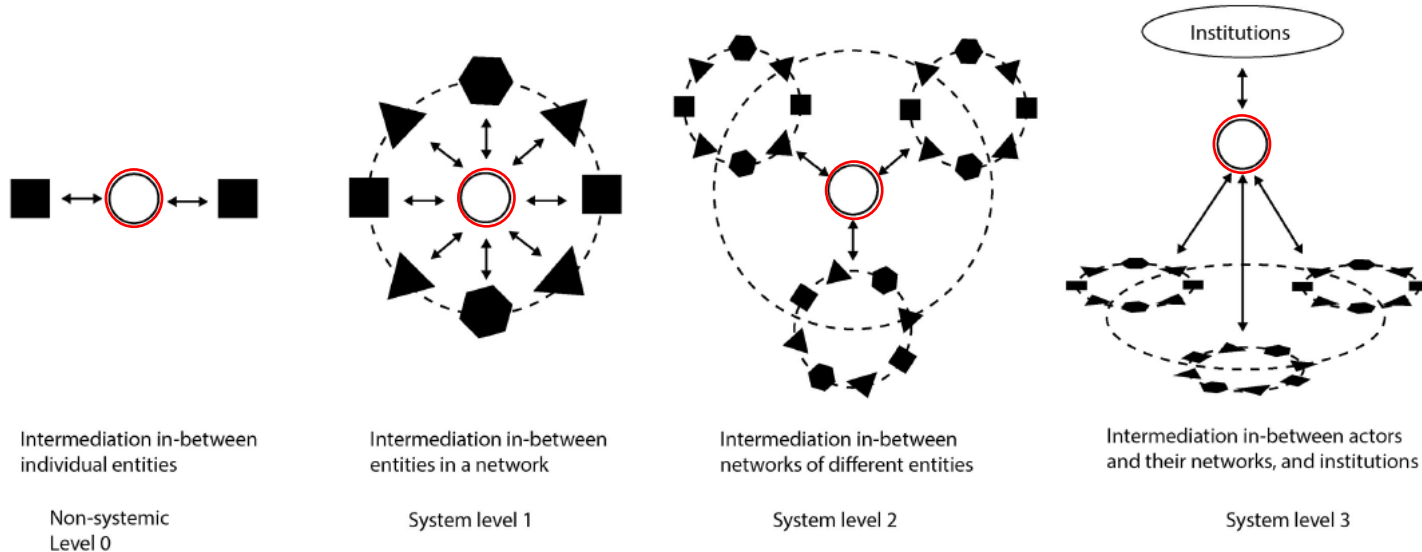
- Whether someone is to be called an intermediary depends not on **who they are, but on what they do** (Bergek, 2020).
- Intermediaries are not a separate “actor category”, in theory any type of actor could perform “intermediary roles”.

Intermediation is about facilitating and coordinating interactions between actors to foster and accelerate transitions towards sustainability

“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., 2019)

Kivimaa, P. et al. (2019). Passing the baton: How intermediaries advance sustainable transitions in different phases and levels. *Environmental Innovation and Societal Transitions*, 31, 110–125. <https://doi.org/10.1016/j.eist.2019.01.001>

System or network perspective



○ Intermediary ■ Other entities ↔ Intermediation ○ Network relation

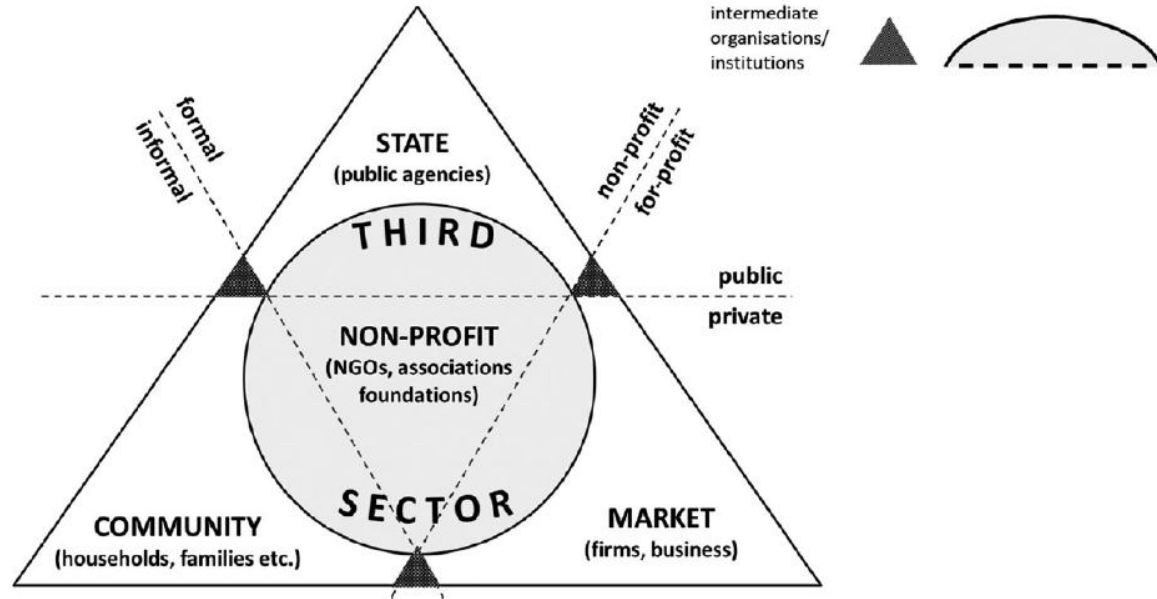
Multi-level perspective (MLP)

Table 1
Transition intermediary types (Kivimaa et al., 2018).

Category	Context/ level of action	Emergence	Examples
Systemic intermediary	Intermediating on system level between multiple actors & interests	Typically established to intermediate	Innovation Network Rural Areas and Agricultural Systems, Netherlands; SITRA, Finnish Independence Fund; Industrial Biotechnology Innovation Centre (IBioIC), Scotland
Regime-based transition intermediary	Intermediating on system level between multiple actors, within mandate given by dominant regime actors	Existing actor subsuming intermediary roles; or established by dominant regime actors to intermediate for transition)	Motiva, Finland; Forest Industries' Water and Air Pollution Research Foundation, Sweden; Greater Manchester Climate Change Agency; Religious congregations (sometimes)
Niche (or grassroots) intermediary	Intermediating between local projects, and/or higher level of aggregation	Often emerging to intermediate when a niche develops	Community energy initiatives, England; Wave Energy Association WAVEC, Portugal; Living Community Challenge, Canada/US; Standardisation committees for new technology
Process intermediary	Intermediating within experimental projects or specific processes contributing to transitions	Typically established/ employed to intermediate day-to-day action in transition projects or processes	Sustainability consultant; Project manager ; Architect
User intermediary	Intermediating between technology (provided) and use, and/or niche technology and dominant configuration	Emerges from amidst users and consumers	Internet discussion forum for heat pumps; Car user clubs (in early phases); Advocacy groups; Building manager (sometimes)

Kivimaa, P. et al. (2019). Passing the baton: How intermediaries advance sustainability transitions in different phases, *Environmental Innovation and Societal Transitions*, 31, 110-125. <https://doi.org/10.1016/j.eist.2019.01.001>.

Actors in transitions

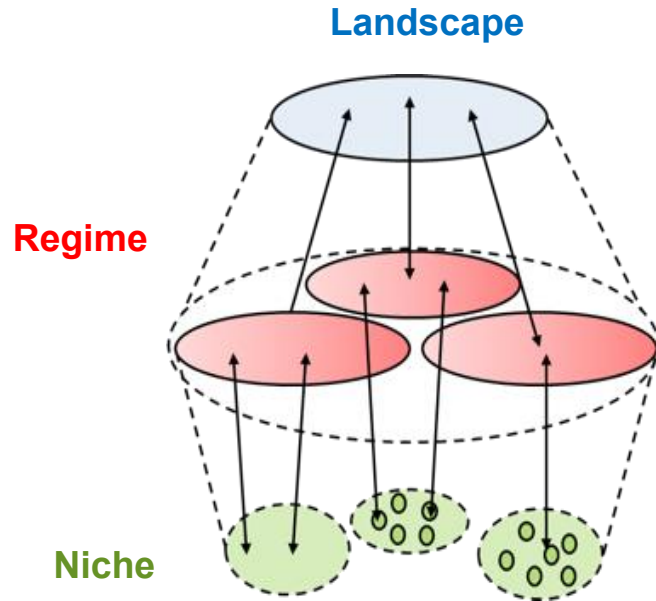


Role of civil society and individuals in urban transitions

- Sustainability transitions literature has increasingly recognized the **importance of civil society, social movements and individuals** in the transformation of energy, transport, or food systems.
- They affect industrial transitions:
 - by building support for transition policies,
 - by providing protective spaces for innovation,
 - by influencing broader cultural values and beliefs.



Niche innovations in sustainability transition research

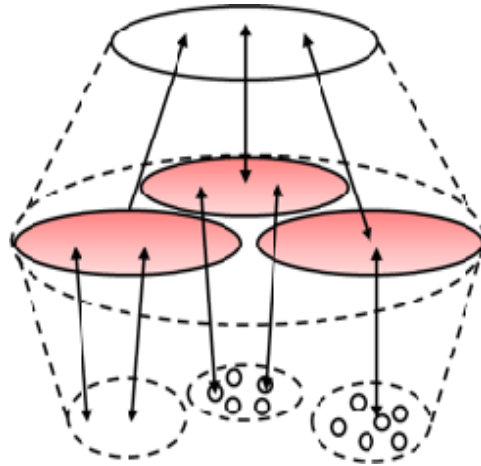


Analytical framework to explain transitions in socio-technical systems.

Transitions come about through dynamic processes within and between **three analytical levels**.

Regime: Meso-level

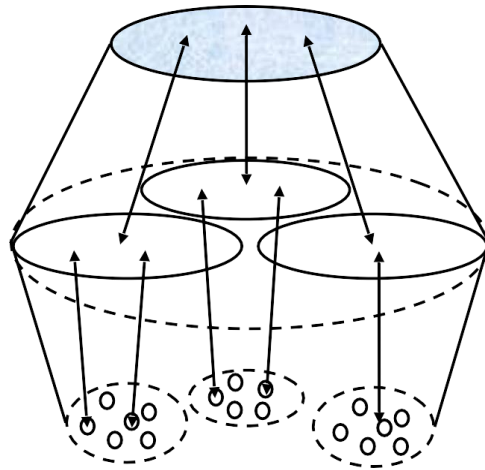
Dominant system of technologies, institutions, and practices that favor incremental change and lead to path dependence.



Fossil-fuel-based mobility system
Gas-based energy system

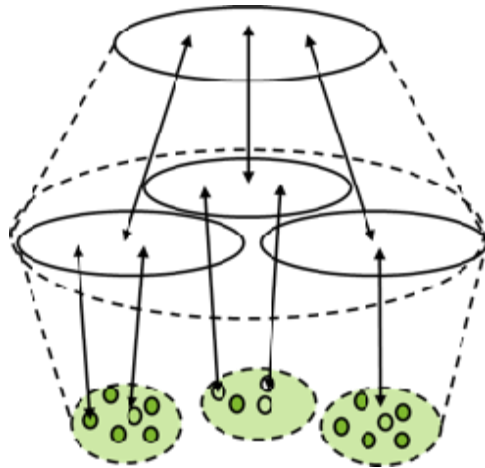
Landscape: Macro-level

Slow-changing contextual factors (e.g., cultural values, macroeconomic trends, and major political shifts) that put pressure on or stabilize regimes and niches.



Climate change (discourse)
Population growth
Urbanization
Financial crisis
Wars

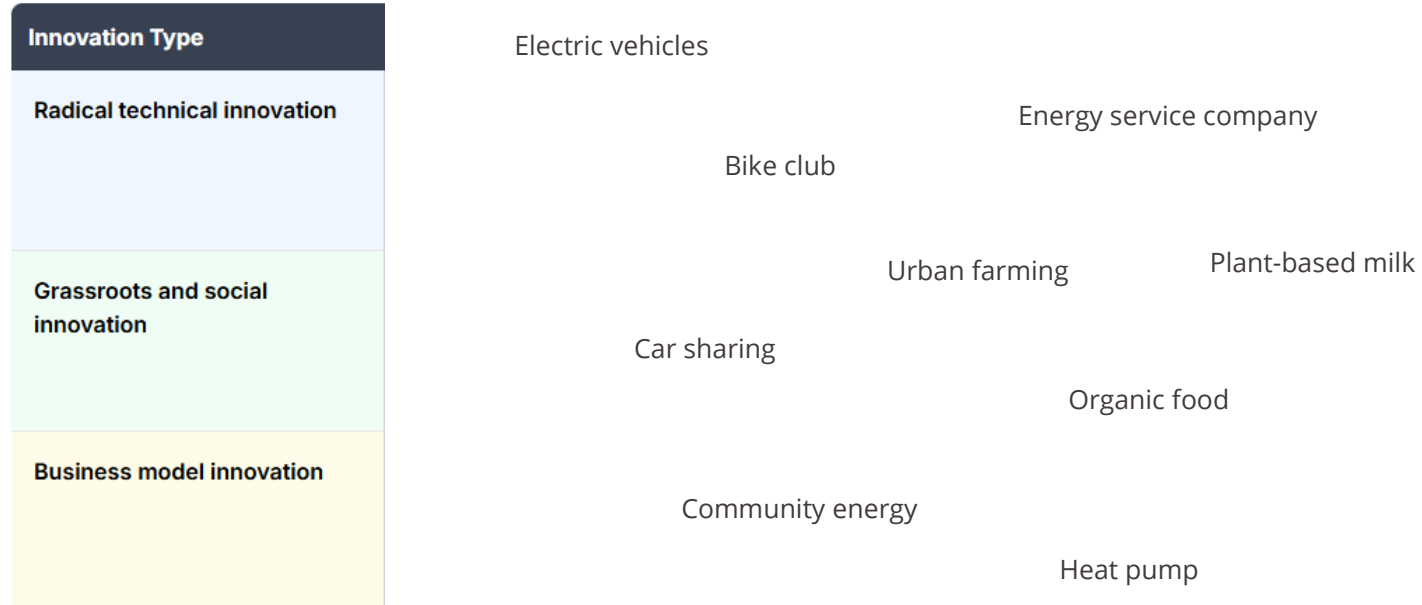
Protected spaces for radical innovations (social and technological innovations) with potential to change regime.



Electric vehicles
Photovoltaic systems
Consumers as energy producers
Low-carbon lifestyles

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*, 31(8), 1257–1274. [https://doi.org/https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/https://doi.org/10.1016/S0048-7333(02)00062-8)

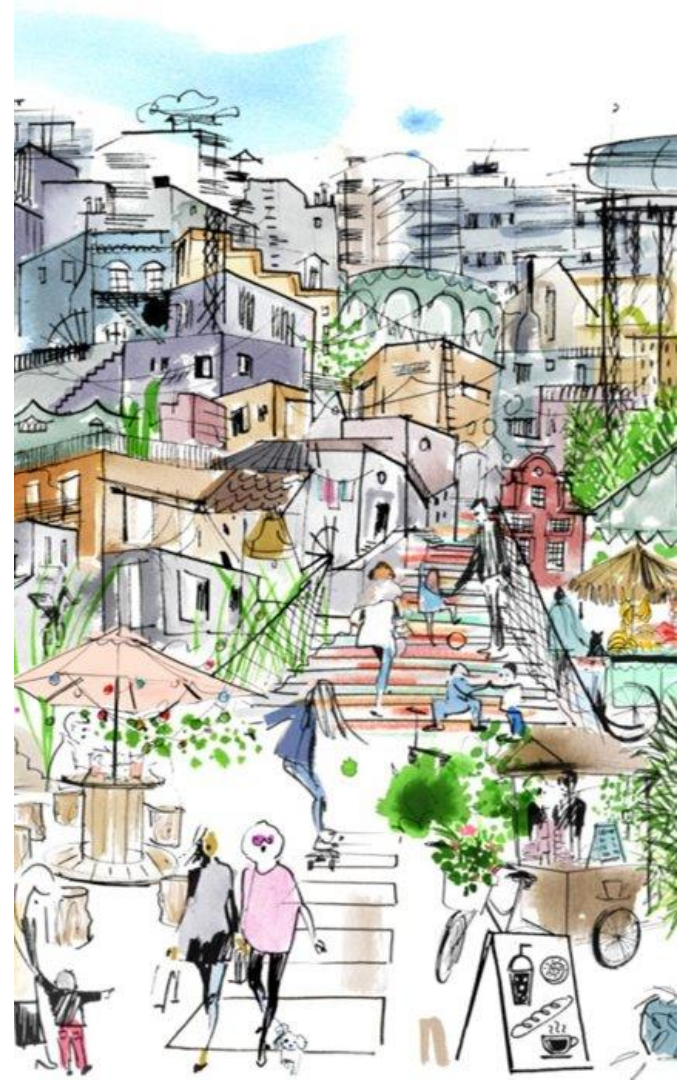
Examples for innovations



Examples for innovations

Innovation Type	Mobility	Agro-food	Energy (Electricity, Heat)
Radical technical innovation	Battery-electric vehicles, (plug-in) hybrid electric vehicles, biofuel cars, hydrogen cars	Permaculture, agro-ecology, artificial meat, plant-based milk, manure digestion	Renewable electricity (wind, solar, biomass, hydro), heat pumps, passive house, biomass stoves, smart meters
Grassroots and social innovation	Car sharing, bike clubs, modal shift to bicycles and buses, tele-working, tele-conferencing	Alternative food networks, organic food, less-meat initiatives, urban farming	Decentralized energy production ('prosumers'), community energy, energy cafés
Business model innovation	Mobility services, car sharing, bike sharing	Alternative food networks, organic food	Energy service companies, back-up capacity for electricity provision, vehicle-to-grid electricity provision

How can we manage niche innovations?



Strategic Niche Management (SNM)



1. Shielding

Protecting novel solutions from the harsh selection pressures of the incumbent regime.



2. Nurturing

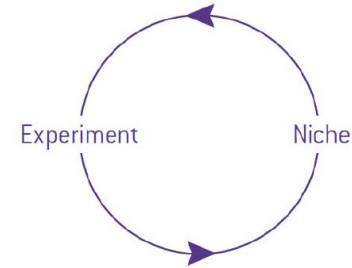
Providing the necessary resources and institutional support to sustain the experimentation process.



3. Learning

Facilitating extensive social and technical learning among various stakeholders to refine the innovation and align expectations.

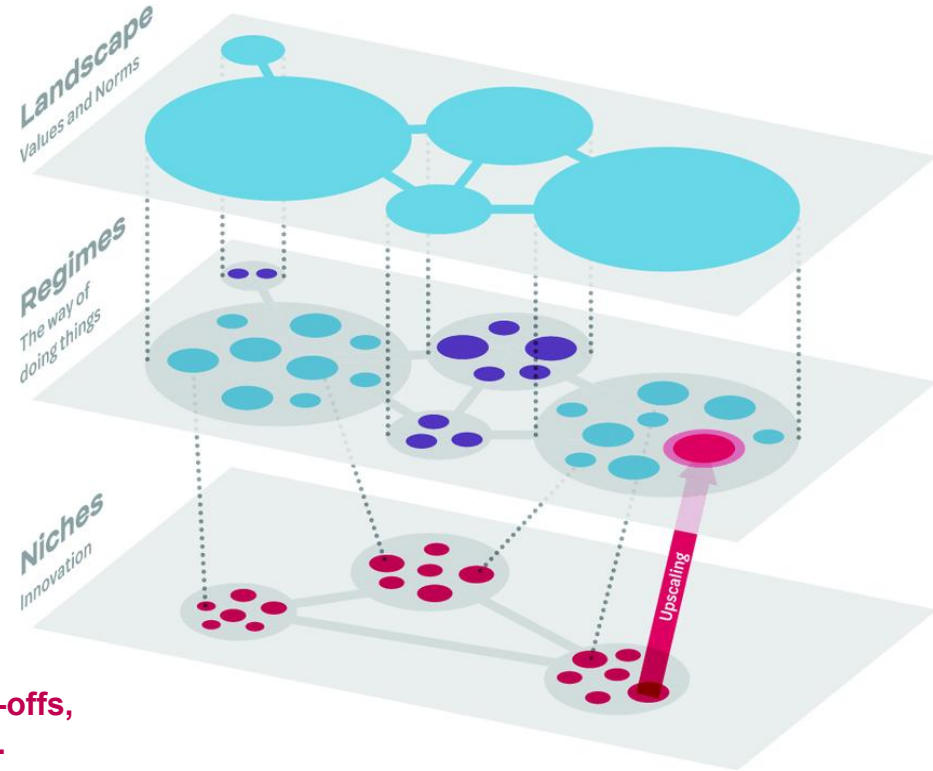
Experiments and scaling-up



- Experiments can take place in **pilot and demonstration programs** and are crucial for internal niche processes.
- Diverse experiments in **different contexts** are necessary to facilitate the diffusion and application of innovation in new domains.
- Single experiments do not shift regimes; **changes in regimes require scaling-up** of niches; from experimentation to mainstream.
- Scaling-up is the process of **translating or embedding the niche innovations** to the regime.

van den Bosch, S., & Rotmans, J., (2008). Deepening, Broadening and Scaling up: A Framework for Steering Transition Experiments. Retrieved from <http://hdl.handle.net/1765/15812>

Niches as protected spaces for technological and **social** **innovation**



**Entrepreneurs, start-ups/spin-offs,
social movements, NGOs, etc.**

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*, 31(8), 1257–1274. [https://doi.org/https://doi.org/10.1016/S0048-7333\(02\)00062-8](https://doi.org/https://doi.org/10.1016/S0048-7333(02)00062-8)



Social innovations

Local Economic and Employment Development (LEED)

Starting, Scaling and Sustaining Social Innovation

Evidence and Impact of the European Social Fund

“... the design and implementation of new solutions that imply conceptual, process, product or organizational change, which ultimately aim to improve the welfare and wellbeing of individuals and communities.”



OECD (2025). Starting, Scaling and Sustaining Social Innovation: Evidence and Impact of the European Social Fund, Local Economic and Employment Development (LEED), OECD Publishing, Paris, <https://doi.org/10.1787/ec1dfb67-en>.

Addresses **social challenges** related to health, education, employment, etc.

Creation and implementation of **novel ideas**, i.e., **products, services and processes**.

Emphasis on **social value and collective impact** ≠ technological and business innovations.

OECD (2025). Starting, Scaling and Sustaining Social Innovation: Evidence and Impact of the European Social Fund, Local Economic and Employment Development (LEED), OECD Publishing, Paris, <https://doi.org/10.1787/ec1dfb67-en>.

Local Economic and Employment Development (LEED)

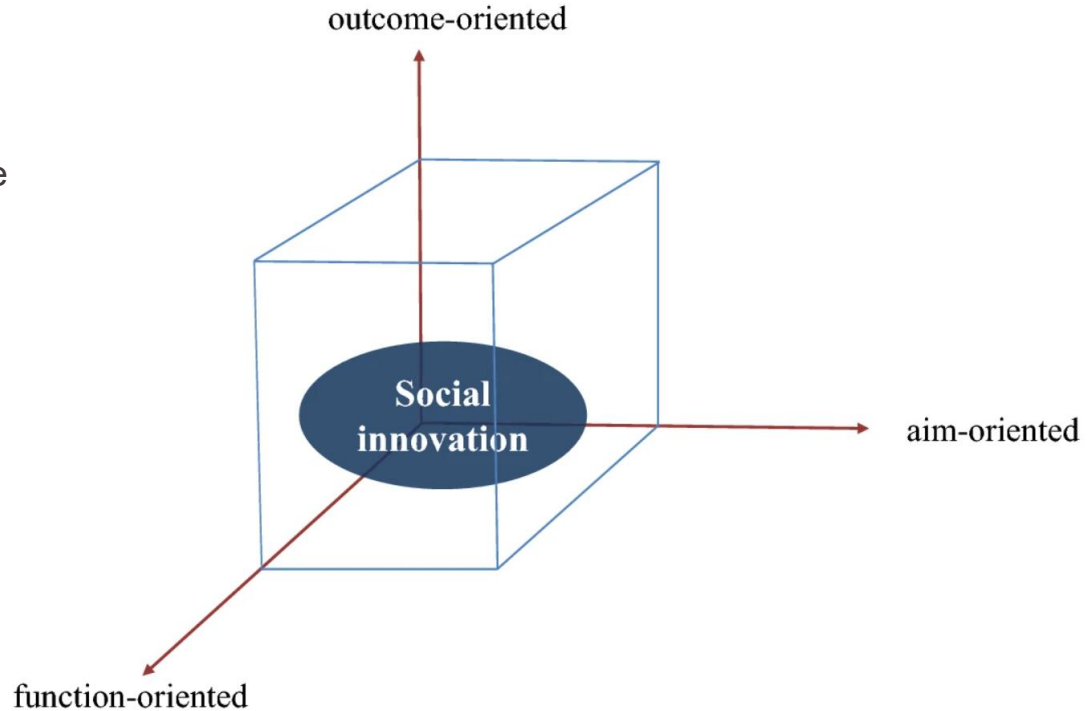
Starting, Scaling and Sustaining Social Innovation

Evidence and Impact of the European Social Fund



Action-oriented 3D framework of social innovation

A holistic view of social innovation considers the solution itself (outcome), the creative process that produced it (process), and the systemic change it aims to achieve (aim).



“Innovations that are social both in their ends and in their means.”

Bureau of European Policy Advisers (BEPA) (2010). Empowering people, driving change: Social innovation in the European Union. European Commission.

Social in their ends.

Address social needs and improve societal well-being.

Social in their means.

Processes are participatory and involve people/communities.

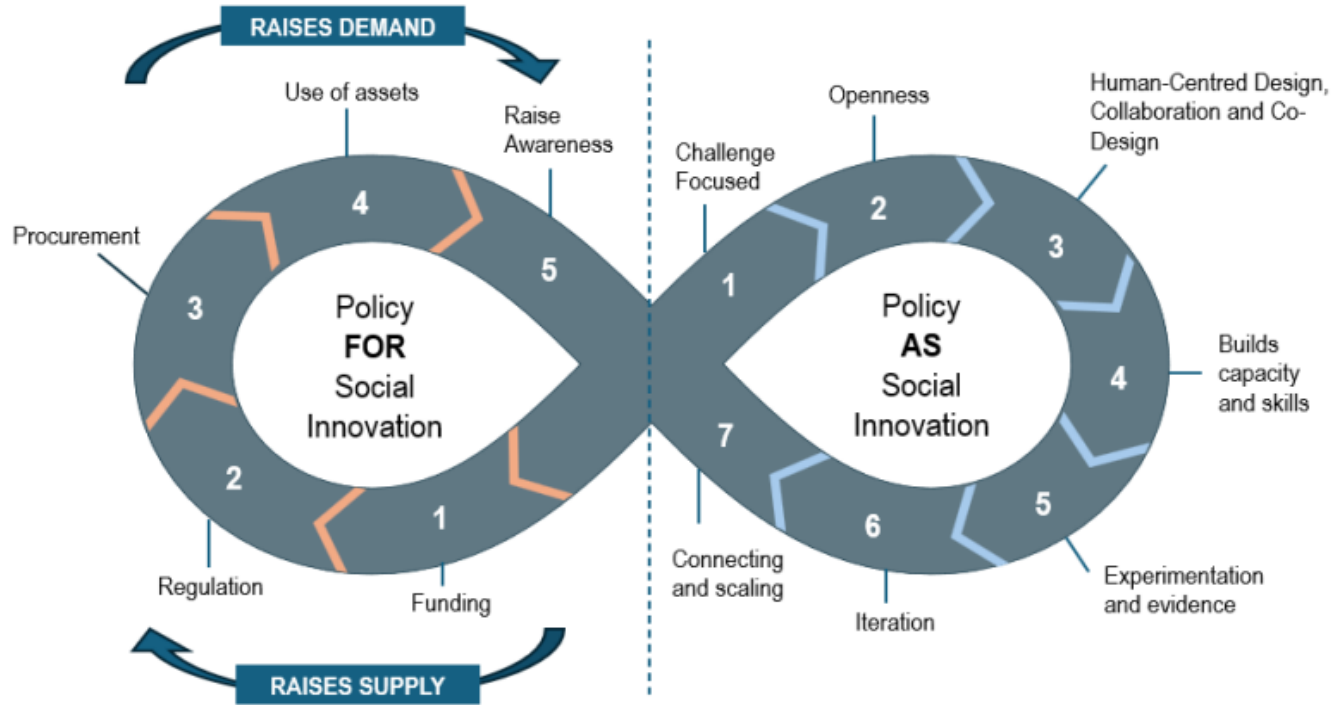
Empowering people.

More agency and control for individuals and communities.

Driving societal change.

Transform existing social systems, practices, and structures to create more positive and equitable outcomes for society as a whole.

Social innovations and two strands of policies



Reynolds et al. (2017). Social innovation policy in Europe: Where next? Nesta.
https://media.nesta.org.uk/documents/social_innovation_policy_in_europe_-_where_next.pdf



Urban rehabilitation

Revitalize older, deindustrialized areas (e.g., jobs, diversity) without causing gentrification.

Co-working spaces and creative hubs

City provided public support for coworking spaces and creative hubs specifically in rehabilitation zones; intervention acted as “co-creation driver” linking urban planning with local communities and creative industries.

Outcome

Demonstrates that effective sustainable urban development is achieved when policy is systematic, targeted, and participatory.

Pinto, H. E. (2021). Urban Rehabilitation, Social Innovation, and New Working Spaces in Lisbon: An Examination of the Urban Planning Culture's Ability to Induce Positive Change. *Sustainability*, 13(21), 11925.

Digital rights in Smart Cities



Digital rights for all

Many Smart Cities prioritize technology, leading to concerns about increased government surveillance, loss of data privacy, and reduction of citizens' digital rights (e.g., protection against discrimination).

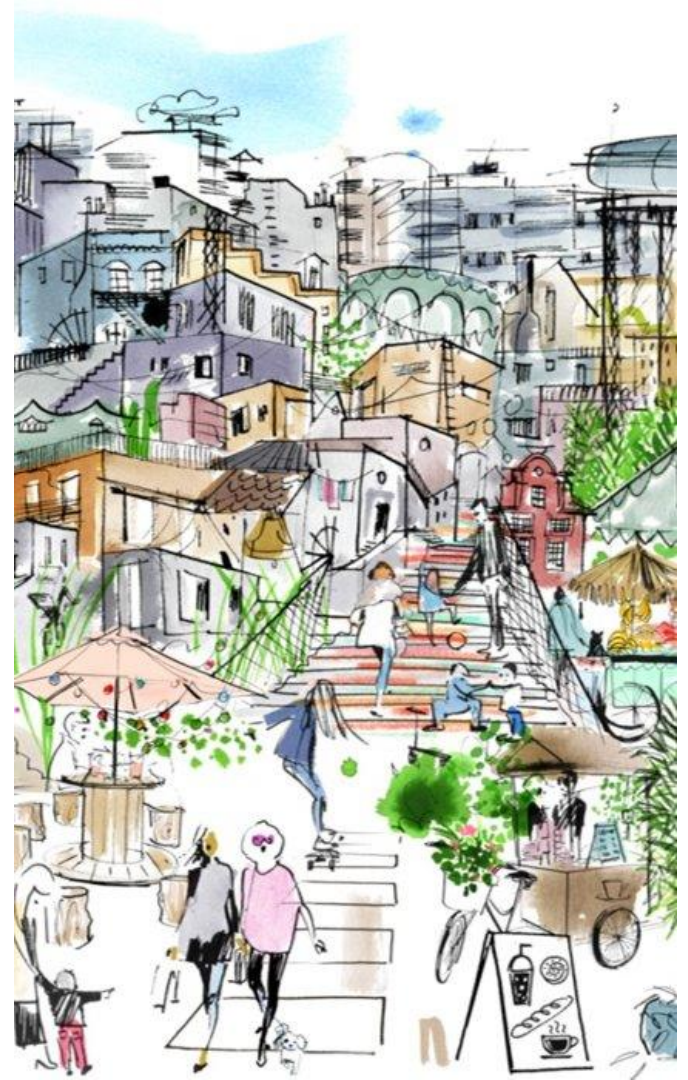
Coalition for digital rights and experimentation

Formation of the Cities' Coalition for Digital Rights as concrete institutional mechanism; policy experiments focused on data governance, data co-operatives, and non-discrimination in algorithmic decision-making.

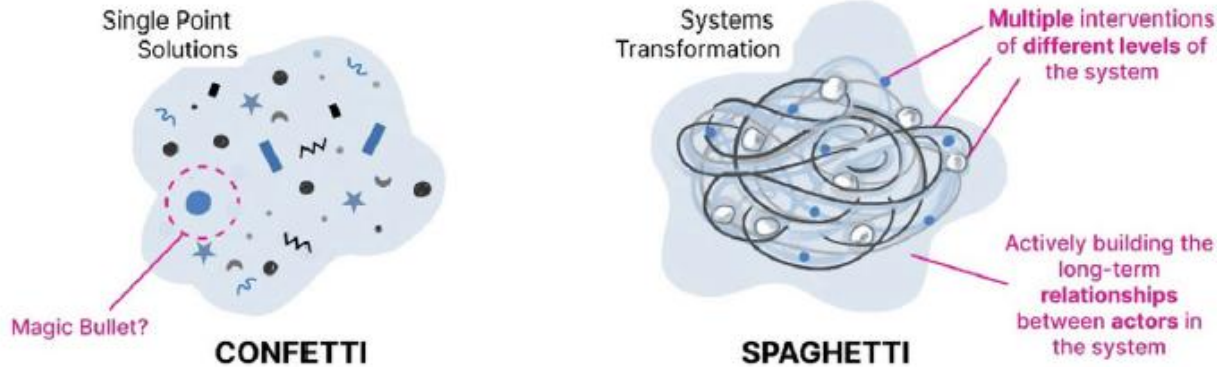
Outcome

Expansion of the Smart City concept to explicitly encompass digital rights, public participation, and digital inclusion.

How can a city foster sustainable urban transitions?



The confetti and spaghetti metaphor



Enabler (low-level)

Provides grants and direct support to grassroots initiatives.

Mediator (mid-level)

Maps and connects existing initiatives, creating an ecosystem.

Visionary (high-level)

Agenda setting and mission orientation (e.g., climate neutrality).

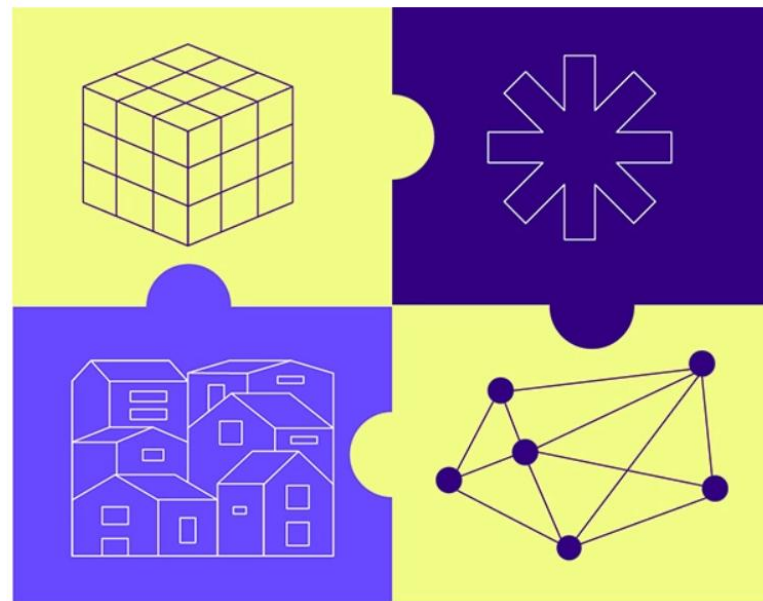
■ URB-401 Systems Approaches for Urban Transitions

Schmidt-Thome, K. & Mesarcik, P. (2025). Integrating Social Innovation in Cities' Portfolios of Action: Building Robust Ecosystems for (of) Collective Action and Social Impact. In: Bresciani, S. (eds) Social Innovation Projects for Climate Neutral Cities. Springer Briefs in Applied Sciences and Technology(). Springer, Cham. https://doi.org/10.1007/978-3-031-87726-1_2

Urban planning needs systems thinking

Four lessons from [15 cities in Eastern Europe and Central Asia](#)
on addressing interconnected civic challenges

1. Understanding root causes through community engagement
2. Building adaptive systems:
Start small, learn fast
3. Transforming government roles:
From regulator to facilitator
4. Smart investment:
Spreading risk, building momentum



Read your case individually 5'

Discuss your case in your group 10'

Present your case to another group 5' (10')

- What is the specific, rigid structural "lock-in" (technical, institutional, or cultural) that the city's current regime is trying to escape?
- What are the key intervention(s) proposed by the city, and are they best classified as primarily a new technology, a new policy, or a new practice?
- Does the city employ a policy "for" social innovation (enabling others) or a policy "as" social innovation (policy is innovation itself)? How is this demonstrated?
- How is the intervention aiming to achieve systemic change, and what evidence leads you to characterize this approach as "invention (confetti)" or "innovation (spaghetti)"?

- **Urban transitions require a variety of actors**, with civil society, social movements, and individuals being key drivers for social innovations.
- **Niches are essential**, protected spaces that foster both social and technological innovations, typically led by entrepreneurs, start-ups, social movements, and NGOs.
- **Social innovations are unique** because they are social in both their goals (ends) and their methods (means).
- **Cities must actively promote social innovation** through diverse approaches, such as living labs, co-creation platforms, and participatory governance.



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