Collective action and social innovation in the energy sector -Between theory and practice

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Collective action and social innovation in the energy sector - Between theory and practice

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Towards an analytical framework to investigate CAs in Energy Transition

Questions

- How Social Innovation practices may be influenced by collective action experiences (CAs) in the energy sector?
- What are the trajectories for the evolution of the energy system? And what is the role of CAs and society at large?
- How can collective action improve the transition towards RES?
- What are the main determinants that characterize and influence the success of CAs?
- How a CA can be supported and its innovative potential be exploited in the incumbent system?
- To what extent can CAs challenge the incumbent system and drive radical change in the energy sector and the wider society?

Framing the topic (1) : rough definitions

A couple of shared definitions for**:**

Energy transition as the transition to a low-carbon and RES-based energy systems. It is a 'systemic' challenge (Unruh 2000) as it is characterized by the co-evolution of energy systems and other important societal subsystems (e.g. transportation, housing, industry) .

Social innovation as **"**new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations. In other words they are innovations that are not only good for society but also enhance society's capacity to act" (BEPA, 2011)

Collective action as 'the action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interests' (Marshall 1998)

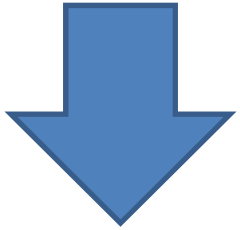
In our perspective, **social innovation in the energy sector** should be characterized by the following dimensions:

- **Empowerment**, with individuals and collectives gaining more control of certain aspects of their life, including energy production and consumption;
- **Fairness and inclusiveness**, meaning that SI fulfils societal needs with lower cost and lower resource use so that a large part of the population is able to share the benefits of social innovation experiments, independently of their social, economic, cultural background or gender;
- **Long-lasting impact:** in terms of change in individual habits, social practices and values.

Framing the topic (2) : mainstream policy and research approach to ET

A. Mainly focused on an experts driven change in *energy and technology* ***inputs*** (i.e. on an expert-driven large scale shift towards renewable energy inputs combined with a more energy efficient provision of these inputs)

B. *Energy and technology* ***outputs*** (i.e. perceptions and uses of technologies by people) are either assumed to remain *mostly unchanged* in the transition *or* to be *under individuals' responsibility*



Supply & Demand

(i.e. inputs and outputs)

are targeted separately

Framing the topic (3) – The neglected SI potential for ET

Collective actions by local communities provide a nexus with supply (inputs/ production) and demand (outputs/ uses)

a. Being highly distributed and ultimately linked to land, **renewable energy sources are an invaluable opportunity to re-compose demand and supply** in new ways through Cas (the active participation of people/users/local communities).

b. Combination of RES and CAs can:
   - allow to **partially or totally (re)conduct consumption-production cycles under the responsibility of people** for whom they are generated.
   - represent the means whereby **social well-being is re-discussed and new strategies to achieve it more sustainably can be devised by communities** managing (energy) supply and demand.

c. By bridging supply/demand CAs can overcome the limit of market economies that cannot guarantee a transformation towards renewables will not serve to boost a multiplication of useless **energy end-uses**.

d. People and society, more than technology, at the center of the energy transition.

Energy Socio-Technical transition: the primacy of social component (1)

Based on historical research (Grin et al. 2010) **transitions in the energy sector are**:

- **co-evolutionary processes** that require contemporary and interacting changes among different levels, components and functions of the system (see, next);
- **multi-actor processes**, involving a large variety of social groups and cutting across established functional specialisations and jurisdictional boundaries;
- **shift from established ways of doing things** that inevitably provokes resistance from groups that fear that their interests will be harmed;
- **are long-term processes** (Solomon and Krishna 2011), as witnessed by historical evidence on past energy transitions not driven by sustainability concerns (Fouquet 2011).

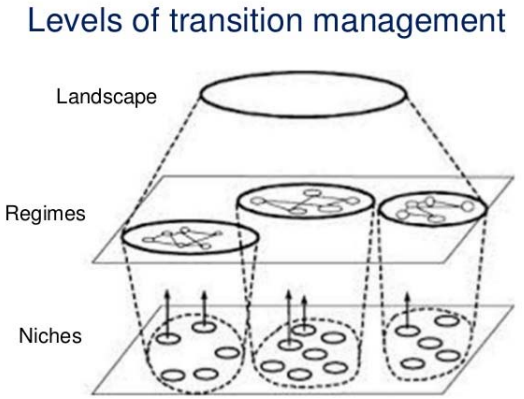
Energy Socio-Technical transition: the primacy of social component (2)

3 models of STS transition based on co-evolution and integration

1. Multi-Level Perspective (MLP) (Geels 2003)

Interacting changes at

- the micro-level of 'niches' (i.e. protected spaces not exposed to the full selective pressures
- the meso-level of 'regimes' (i.e. a dominant set of artefacts, actors and institutions),
- the macro-level of the 'landscape' (i.e. culture, norms);



2. Reflexive Governance (Smith & Sterling 2007)

Co-evolution between the *social appraisal* and *social commitment* processes that characterize the perceptions, the roles and the behaviors of the many diverse actors that compose the energy system. Appraisals evolve with the system itself (*reflexivity)*

3. Hardware/Software (Walker 2007)

Co-evolution and interaction between the *hardware (engineering artefacts performed by people)* and the *software (social organizations and perceptions).* Many different ways of interaction -> many different configurations of regime

Whatever the model, the engagement and empowerement of people (i.e. CA initiatives)is crucial in fostering the dynamics of co-evolution and alignment among different functions (Reflexive governance), levels (MLP) and components (hardware vs software) of the system.

Challenges and tools for CAs exploitation (1)

Challenges associated with CA experience in the energy sector

a. their high level of diversification over geographical areas where they develop makes it difficult to understand **how they can be supported and fostered** systematically.

b. they are typically **innovation niches** (their survival and/or diffusion and/or integration within and/or displacement of incumbent socio-technical regimes depends on a variety of *factors which are often contingent*).

c. their thriving depends principally on questions of **innovation governance.**

d**. they should not be considered as a panacea** (how they can contribute to generate the organised complexity that is needed for a large scale transition to happen?) but instead need to focus on (re)distribution systems beyond the community's boundaries.

Challenges and tools for CAs exploitation (2)

Types of governance for energy transition steering (Loorbach 2007, 2010)

a. **strategic -** concerned with the 'culture' of a societal sub-system as a whole: debates on ethics, long-term vision development, collective goals and norm setting, long-term foresight, etc.

b. **tactical** - concerned with rooting the visions developed in the strategies of various networks, organisations and institutions.

c. **operational** - concerned with translating visions and transition paths into 'transition experiments' (the 'niche') that can make a potentially large innovative contribution to furthering the transition agenda.

d. **reflexive** - concerned with monitoring and evaluating the transition process itself.

Challenges and tools for CAs exploitation (3)

The role of research in making CAs a successful driver of SI in the energy sector

- **Empowerment**: provides insights on the wider context (transition) of the SI experiment and the system perspective; provides useful, easy-to-use, non-commercial tools for participative decision-making processes

- **Fairness and inclusiveness**: detects and communicates trends and risks that jeopardize social fairness, reveals undesired effects of social innovation, provides objective information on sustainability aspects

- **Long-lasting impact:** explains the role that social innovation has played in history and the potential effect of today's actions on future generations

Case studies (1): along the stages of CA development

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Stage 1: Ideas and Actions Commence (Initial Drivers)

	Crisis situation	Unfilled Desires/Unmet needs	Activism and first movers
Cloughjordan, Ireland	-	Lack of options for living sustainably	Group of like-minded citizens
Solar Community Bologna, Italy	-	-	Initial Solar Communities in 6 towns
GoiEner, Spain	-	No voice in the decision of large energy suppliers; energy sovereignty	Initial group of volunteers vital to get the cooperative formed
Qvinnovindar, Sweden	Lack of funds or financing opportunities for women to invest in the energy system	Lack of economic opportunities for women in the energy sector	Wanja Wallemyr

Dedicated grassroots activists focusing on unmet needs are important initiators in forming energy cooperatives

Case studies (1): along the stages of CA development

Stage 2: Actions Bear Fruit (Innovation)

	Governance Innovation	Technological Innovation	Market Innovation
Cloughjordan, Ireland	Viable Systems Model (VSM) management principles; consensus decision making	Wood pellet burners for district heating	-
Solar Community Bologna, Italy	Municipalities and industry enabled the initiative; bottom-up organization of citizens (modeled after consumer associations)	-	Local enterprises have access to a large number of potential clients
GoiEner, Spain	Strong volunteer aspect, neighbor participation	-	A large number of enterprises joined the collective, giving the collective power to trade energy in the Spanish market.
Qvinnovindar, Sweden	Incorporating the gender issue into sustainable energy	-	Economic empowerment of women

- *The challenges are largely non-technical*
- *Collective decision-making processes and education of local community members is key*
- *Participation of local enterprises give legitimacy and enables growth*

Case studies (1): along the stages of CA development

Stage 3: Successful Diffusion (Enabling Factors)

	Change in Perception	Creation of identity/ Sense of belonging	Other
Cloughjordan, Ireland	Sustainability movement	Local voice in decision making at community level	EU Funding
Solar Community Bologna, Italy	Communication to local families to change energy behavior; adult education; building social capital	-	Regional recognition, promotion of RE by Italian government
GoiEner, Spain	Learning from other examples and members gaining expertise in the energy system	Concepts of closeness and community empowerment	-
Qvinnovindar, Sweden	Women can have a voice and be empowered through renewable energy	Gender identity and solidarity	-

Most important elements: perception of sustainability and the identity creation.

Gives the cooperative a sense of purpose as well a growing member base is more important that external funding!

These factors were even able to sustain the success of the cooperatives when the national policy landscapes behaved as barriers

Case studies (2): Along the dimensions of SI: empowerment, fairness, inclusiveness

Co-housing as a catalyst for Collaborative Behaviour that triggers Collaborative Consumption leading urban communities towards Sustainable Lifestyles (Stratmann et al, 2013; Tummers (2017)

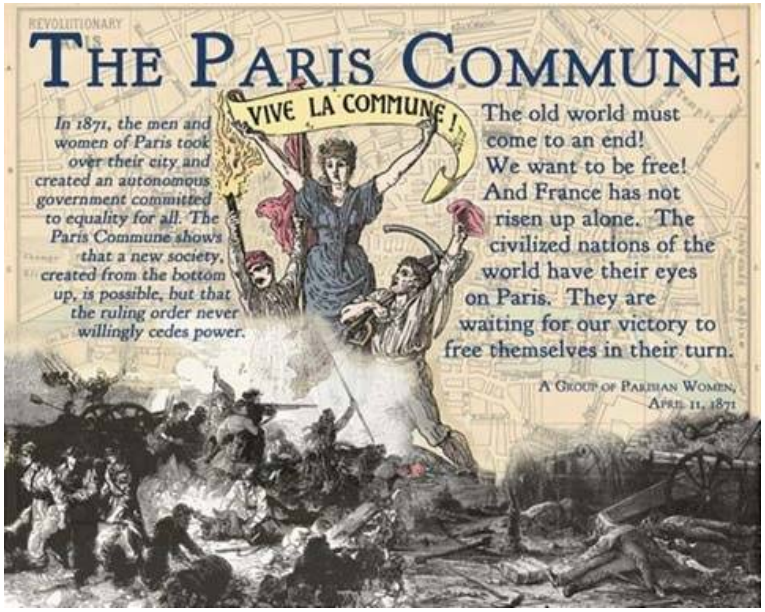
Left: Trabensol, a self-managed co-housing project in Madrid, Spain, using geothermal energy. Monthly cost of flat for 2 persons, incl. overheads: 1,200€

Left: Findhorn Ecovillage, UK, using sustainable construction and renewable energy sources – link to transition town movement

Case studies (2): Along the dimensions of SI: empowerment, fairness, inclusiveness

Growing nexus between agriculture, water management and renewable energy (wind and solar) in rural or semi-urban communities – not only in Europe – link to women's struggle for independence

Left: Solar Sister campaign in Nigeria



To summarize: provisional conclusions (1)

A. A successful CA initiative in the energy sector may bring Social Innovation with respect to Empowerment, Fairness and inclusiveness, Long-lasting impact

B. The challenges are largely non-technical

- relevance of the initiators of the initiatives that could be intermediaries (embedded in the incumbent system) or catalytic innovators*
- need for proper governance tool to steer the transition including proper collective decision-making processes
- education of local community members
- Participation of local enterprises give legitimacy, enabling growth
- the perception of sustainability and the identity creation

These factors were able to sustain the success of the CAs when the policy and financial issues may behave as barriers

C. Current research and policy are focused on energy inputs while attention has to be payed also to energy outputs (demand / uses) . RES are an invaluable opportunity to re-compose demand and supply thus overcoming limits of economic markets

(*) a substance capable of accelerating or decelerating a chemical reaction, without itself being changed in the process. That is, a catalyst intervenes in reality, recognizes specific targets, triggers effects, causes encounters that would not have taken place without it, and yet it is not consumed or permanently changed in these interactions (De Landa)

To summarize: provisional conclusions (2)

C. An analytical framework to investigate and support CAs in Energy Transition

Domain		Aspect	Discipline
A. Context/landscape		Geography, Environment and Energy Resource Legislation framework Energy conflict Energy Market structure Technology/Infrastructure Environmental and Climate Policy	History Law Political Science Economics System engineering
B. Collective Action	*Properties*	Organizational configuration(e.g. cooperatives, local or interest community, consortium, purchasing group, etc…) Mission, values, goals Used technology and position in the energy chain Social issues (gender, poverty, inclusion…)	Sociology Economics Complexity Science Policy analysis
	Behaviors	Type of CA(position in the energy chain): production, distribution, consumption with what resources Decision making style and resilience tools Business models Adaptation to context	
	Actors	Trust Reciprocity Economic issues (cost of energy, income and profits) Practices, Ordinary life and allocation of times Motivation Initiator : intermediary or catalytic innovator	Sociology Anthropology History Psychology

D. Keep the question open about the potential for changing the incumbent energy system (and wider social system) that can be formulated as follows:

when innovation leaves the niche, is its normalization unavoidable?

Thank you for your attention !

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