

The grassroots of sustainable transition

A generic approach to describe Local Energy Initiatives in the Northern Netherlands.

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1. Introduction: The problem of grassroots sustainability transition

There is growing realisation amongst local communities that the organizations and societies within which they live and work need to become more sustainable in order to secure their social, environmental and economic futures (Coyle 2011, Müller et al. 2011). The underlying motivations vary but are often traceable to an increased need for certainty or security. The search for solutions is in part practically orientated towards resilience to different forces of decline. Whilst sometimes manifested in individuals it is more often evident within local initiatives seeking common ground and related to perceived needs for local independence or increased self-determination (Musall & Kuik 2011, Seyfang & Haxeltine 2012).

In our project and in this paper, our focus is on local initiatives as opposed to developments at regional or strategic scales. In the Northern Netherlands such local initiatives are often comprised of village residents or more heterogeneous groups from the wider rural community, with local initiatives co-existent in urban areas and cities. Local initiatives may focus on different sustainability issues (or a combination of them), such as transportation, energy, water, natural environment, food production, solid waste or the local economy (Coyle, 2011). However, many of these local initiatives focus on energy issues and solutions, while they might expand their interests to other issues after a prolonged existence. Therefore, in this paper we refer to these local or communal activities as Local Energy Initiatives (LEI's) that are at the grassroots of sustainable transitions.

The problem at the heart of our research project is that local energy initiatives are struggling to realize their goals or are sometimes even struggling to survive. Several of the local energy initiatives that currently exist in the Northern Netherlands fall idle or are unsure of how to continue. This may be after a first and often successful project with solar energy stemming from the installation of photovoltaic (PV) panels. What seems to be lacking for these local energy initiatives is adequate perspective on what to do and how to develop in the long-run.

Our project sets out to assist Local Energy Initiatives (LEI's) by finding a program of action most suited to particular localities. In order to realize this, we need to formulate a generic structure of the process that each LEI goes through including the several instances for options or specific actions that they may choose to focus on. Our methodology is inherently multidisciplinary since it involves actor perspectives from engineering, energy infrastructure, local politics, commerce, environmental groups, citizens, local farmers, housing associations etc.

We are interested in how LEI's organize themselves and how they embark on their 'Local Energy Program of action'. The **main research question** of this paper is: How can we generically describe the process of transition in local energy initiatives in the northern Netherlands? We will answer this research question in three parts. First, based on two short case descriptions of existing LEI's in the Northern Netherlands we start to explore the individual local

processes of organisation and action. Next, we will suggest a possible theoretical grounding for this process. Thirdly, based on the practical experiences learnt from several LEI's, we present a generic active approach to the way in which they may choose to organize themselves and their activities in the formulation of their own "Local Energy Plan of Action".

2. Two cases of existing LEI's in the Northern Netherlands

Local Energy Initiative 'Groenkerk' (www.groenkerk.nl)

The village of Oenkerk in the north of the Netherlands consists of 1768 inhabitants, and is located 13 kilometres north east of the Frisian capital city of Leeuwarden. In 2011 a group of 7 village inhabitants started a local sustainability initiative called 'Groenkerk'. A first meeting of a number of village inhabitants who share the same vision and drive has led to a chain reaction and snowball effect. The local network has extended to include farmers, housings agencies, private homeowners, local entrepreneurs, and the local churches. Some of the individual qualities and backgrounds of the 7 initiators have been noteworthy for the success of the LEI: director of a local communication agency, regional government, and council member of local government. As the initiative progresses the right organizational form for realizing the projects still needs to be found. The goal of this LEI is to "make the world more sustainable, starting in Groenkerk". The LEI wants to generate "contagious examples for others being fellow neighbours, other generations, other villages, and the rest of the world." (www.groenkerk.nl). The future goals of Groenkerk for 2050 are to:

- Supply their own sustainable energy for houses and businesses
- Produce a considerable part of their food needs within the village area
- Minimize flows of waste
- Create a healthy living and working environment for all inhabitants
- Care for each other
- Organize sustainable transport for village inhabitants

The initiative is focussed on raising awareness that through bottom-up initiatives people are empowered to create a sustainable world. Through self-management of a community, people become increasingly empowered as citizens and less dependent on local or national governments. LEI Groenkerk has repeatedly received press coverage and various requests to share their knowledge with other LEI's. In 2011 a survey of local inhabitants was organized to assess community needs and support for the initiative. The assessment results showed that the inhabitants were supportive of green energy, experiencing few shortcomings in social cohesion, they had mixed opinions regarding organic food production and were generally actively supportive of the LEI. The LEI communicates extensively with the local inhabitants through information evenings, workshops about local sustainability, local energy gatherings, and a

neighbours-for-sustainability day. The local municipality supports the initiative, which may be best exemplified by the realization of an Energy Information Desk (*energieloket*) located in a house that was previously vacant and for sale. Now the house is a "living lab" for the people where solutions regarding sustainable building, sustainable energy and energy use are presented. It is also, where state-of-the-art knowledge is exhibited and where (local) companies can inform people about their solutions and products.

The main projects so far include collective purchase of PV panels; an energy savings project focusing on insulation (both with the help of several local companies); contributing to local primary school education; and local support of inhabitants. The project 'Local Energy Ahead!' is a collaboration with the Frisian Environmental Federation (FMF - Friese Milieu Federatie) and within which the inhabitants of the village Oenkerk are planning to establish their own cooperative Energy Company.

Local Energy Initiative 'Hooghalen Duurzaam' (hooghalenduurzaam.nl)

The village of Hooghalen is located in the forests and heather fields of the province of Drenthe in the Northern Netherlands, and consists of approximately 900 residents and a further 1400 within its rural surroundings.

The LEI has been organized as a foundation with a board that consist of 7 members. The foundation has initiated several projects and task forces in the field of insulation, energy savings, PV panels, collective purchasing of energy, and collective production of green energy. For the coming period the LEI is preparing a communication plan to continue to inform the village inhabitants and to secure their future support.

The ambition of this LEI is to realise an energy neutral village by the year 2020. Practically, the current focus of this LEI is on energy reduction, as expressed in their statement: "It is expected that through a joint approach the accomplishment of the objectives will be accelerated, because knowledge and commitment in the village is bundled. Sustainability is not just energy but it includes several aspects such as waste recycling, sustainable mobility, lifestyle (consumer activity) and water. For the sake of the scope of this initiative we will primarily focus on the reduction of energy use. The other aspects will be dealt with at a later stage." Current activities are mainly individual at this moment. The consequence is that savings are achieved relatively slowly. Inhabitants need to reinvent the wheel for their own particular situation. For each house or business the solutions differ and that makes it difficult for the individual citizen to determine the best course of action. Lack of technical knowledge and the ability to draft good financial evaluations often result in "no action at all". Therefore, joining efforts and expertise is at the heart of this initiative, and should lead to an acceleration of the sustainability transition in Hooghalen. The residents of Hooghalen are sympathetic towards realizing a sustainable village community. The people perceive the initiative as an opportunity to increase the quality of life in the village, and it gives a boost to local employment and social cohesion. Local companies are intended to be involved in the projects initiated by this LEI,

however exploration of new solutions that are not offered by these local companies will be sought in the external environment.

3. Theoretical background

The assertion that sustainability transition is often approached from the top-down is taken as the contextual starting point, focussing on international programs (such as the Kyoto protocol or Rio agreement), national policies, the importance of action by governments, the 'crucial' involvement of multinational energy and water companies and so forth. Whilst the global or top-down approach has led to some results and will eventually be necessary at all scales it must be accepted that its short to medium-term effectiveness in creating or enabling widespread transition within local communities appears to be limited (Bäckstrand 2006).

It is at this scale that the negative impacts of unsustainable trends are more immediately experienced and finding the most effective means of empowering local communities would currently seem to be of the utmost importance. The effectiveness of empowerment has been specifically researched in the context of sustainable environmental management in disparate case studies (Fraser et al 2006).

The potential of emerging local energy initiatives is crucial for both research and policy making (Hielscher 2011, Thøgersen 2005). They are seen as an important first step in active citizenship that can be promoted as a solution to shrinkage of public budgets (Hajer 2011, Hajer 2012). They are also a sign that society is changing under the influence of individualisation and digitalisation (Castells 1996). People expect and demand more influence as a result of increasing individualism (Bang & Sørensen 1999). Parallel to processes of government, governance processes are appearing (Bogason & Musso 2006). In governance processes diverse actors may form coalitions and partnerships - which may or may not include government - to realize public goals. The direct involvement of a government actor is thus no longer a necessity. In the government model, the role of citizens was limited to test policy and co-produce policy at special determined moments during the procedures. However, in governance processes, the openness in policy formulating has increased considerably and citizens are able to become involved in the processes as an equal actor. This leads to a networked society in which local organisation processes can be increasingly accommodated within the overall system.

The number of local renewable energy initiatives is increasing dramatically. To illustrate this: in the Netherlands there were about 50 of them in 2011, halfway through 2012 there were 300 and by the end of 2012 there were 1500 known initiatives and nascent initiativesⁱ and their number is still growing rapidly. More initiatives in other EU member states can be found on the website of the European Rescoop project (www.rescoop.eu).

The current, apparent incapability of the international community to find a global solution to the need for sustainable development could be the motivation behind

the emergent trend of localised initiatives. Reasons to start local initiatives are (Oostra & Jablonska 2013):

- concern about energy prices or exploitation costs dwellings in the future
- to improve the quality of the community
- to improve social cohesion (especially in areas with declining population)
- the urge to do something together
- a means to jointly save energy
- control over own energy supply
- concern about the environment
- dissatisfaction with large energy companies
- a group has more power than an individual and organizing the energy supply for a group can be more efficient.

Theory development around these local energy initiatives is still in its infancy. An overview of what is available has been made as part of the Rescoop project (Hielscher 2011).

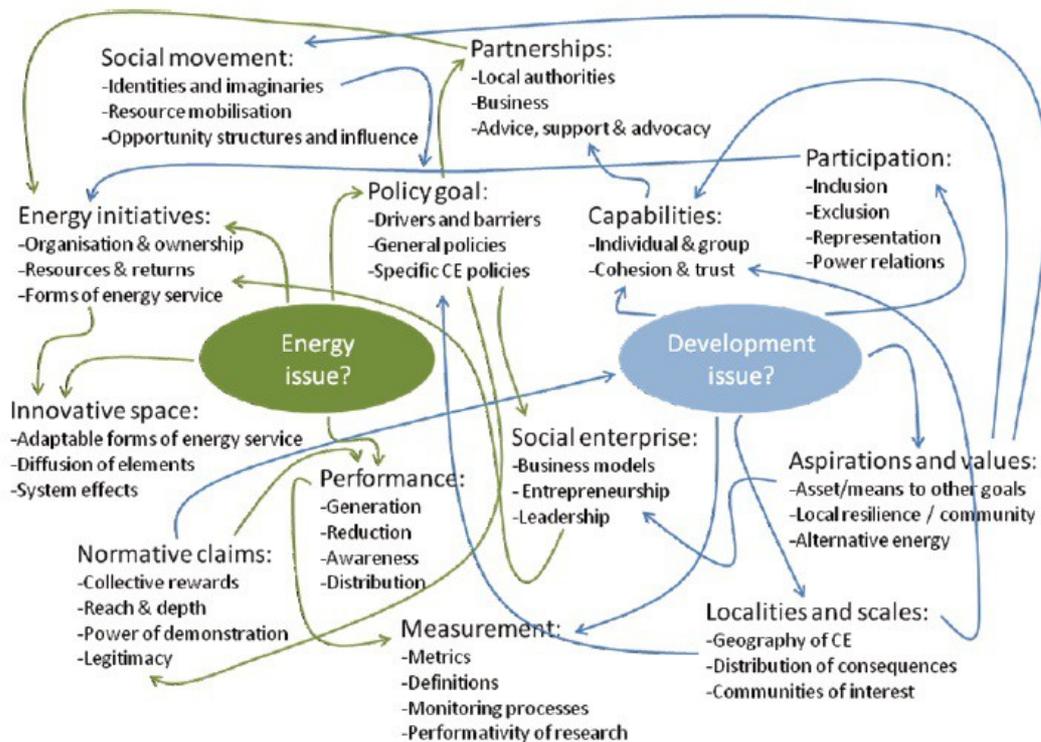


Figure 1. Overview of analytical themes in community energy research literature (Hielscher 2011)

Rifkin has described a proposal of how the future of our energy system could appear. Rifkin (2011) argues that conjoining internet communication technology and renewable energies is giving rise to a Third Industrial Revolution. The creation of a renewable energy regime, loaded by buildings, partially stored in the form of hydrogen, distributed via an energy internet - a smart *intergrid* - and connected to plug in zero emission transport, opens the door to a Third Industrial Revolution. The entire system will be interactive, integrated and seamless. This interconnectedness creates entirely new opportunities for cross-industry relationships. Furthermore, Rifkin argues, the Third Industrial Revolution brings with it a new era of “distributed capitalism” in which millions of existing and new businesses and homeowners become energy players (or prosumers?). Therefore it is important to know what homeowners, tenants and other end-users of energy need in order to become active players in our energy systems.

Instead of approaching sustainability transition from a top-down perspective and focussing on political and global actors, we propose a bottom-up perspective that starts with an analysis of the local network of actors in a community or village. This mapping out of the local network for sustainability transition is based on literature from science and technology studies, and more specifically actor network theory (ANT) (Latour 2005) and the social construction of technology (SCOT) approach (van der Blonk 2002, Pinch and Bijker 1987). Rooted in this strand of literature we propose to approach a Local Energy Initiative as a social process of a network of actors aiming to achieve a community purpose.

The actors who are involved in this social process are people who have invested time and energy together in order to reach a shared set of meanings attached to the local sustainability transition. Actors are active in local energy initiatives, aspiring to direct the energy network in their own community towards sustainable futures. However, the energy network is not easily changed; it may display ‘obduracy’ or resistance to change. The local energy initiatives also face the challenge of gaining permission to produce their own energy. For the past few decades all energy has been produced and governed in centralized systems. The transition to systems with many decentralized, sustainable producers, mostly feeding into the electricity grid, is meeting considerable political resistance in the Netherlands. Regulations and taxes have been used to discourage small producers in a number of ways; taxes for used energy are much higher for consumers and feed-in tariffs are lower or even non-existent. Local energy production seems to be hampered by juridical, financial and organizational obduracy. The centralized governance of energy infrastructure in the majority of situations sets the limits of the scope of action at local level. Identifying the strategies used by local energy initiatives to overcome, change or work-around the present centralized energy system is therefore essential. What is needed to make these LEI’s flourish?

The interpretations that people have, or the meanings that people hold within a certain LEI can be used to explain particular developmental paths (Pinch and Bijker 1987). Moreover, it might even be used to identify successful routes for future activities within the LEI or identify less promising routes. The multiple

meanings that can be attached to the local sustainability transition can be radically different, which means that people within the LEI may have very different interpretations of what exactly is going on or for what purpose. Different actors may see different issues or problems for which they seek different types of solutions. A chosen course of action or an existing solar energy project within the LEI is thus open to be interpreted in different ways, and is itself also the result of an interpretation (a realized solution to a subjectively defined problem).

During the developmental process of a local sustainability transition the emergence of several frames of thinking may be discerned. A frame of thinking structures the interaction of the members of any relevant social group and it leads to the attribution of meanings. A frame of thinking is not a characteristic of an individual or a system, but built up when interaction around a local sustainability transition begins, and when these interactions move members of an emerging, relevant social group in the same direction. Frames of thinking “provide the goals, the ideas, and the tools needed for action. They guide thinking and interaction. A [...] frame offers both the central problems and the related strategies for solving them [...] Within a frame not everything is possible anymore (the structure and tradition aspect), but the remaining possibilities are relatively clearly and readily available to all members of the relevant social group (the actor and innovation aspect)” (Pinch and Bijker 1987, p191/2).

A frame of thinking thus predefines the meanings attached to the local sustainability transition and the interaction between the people within and between the actor groups. A frame of thinking may include (and thus predefine) elements like: the goals of the local sustainability transition, the key problems, the problem-solving strategies, the requirements to be met by problem solutions, current knowledge and theories, tacit knowledge, design methods and criteria, user’s practice, guiding examples of other local sustainability transitions or Local Energy Initiatives (van der Blonk 2002).

4. Sustainable community development program - a generic approach to describe LEI's

The problem at the heart of our research project is that local energy initiatives are struggling to realize their goals or are sometimes even struggling to survive. What seems to be lacking for these local energy initiatives is adequate perspective on what to do and how to develop in the long-run. Based on the described theoretical background combined with practical experiences from several LEI's we will present a generic approach of how LEI's may choose to organize themselves and their activities in order to formulate their 'Local Energy Program of action'.

The Sustainable community development program consists of 4 groups of activities that are part of an effective route towards informed, collective decision making and creative discussion. The entire program is therefore a combination of information gathering, analysis, discussion, (en)visioning and scenario building in several incremental spheres of development. The prescribed order is not rigid and can be easily adapted. The omission of any part of the program would be inadvisable since the completeness of the entire process has been carefully thought through on the basis of experience.

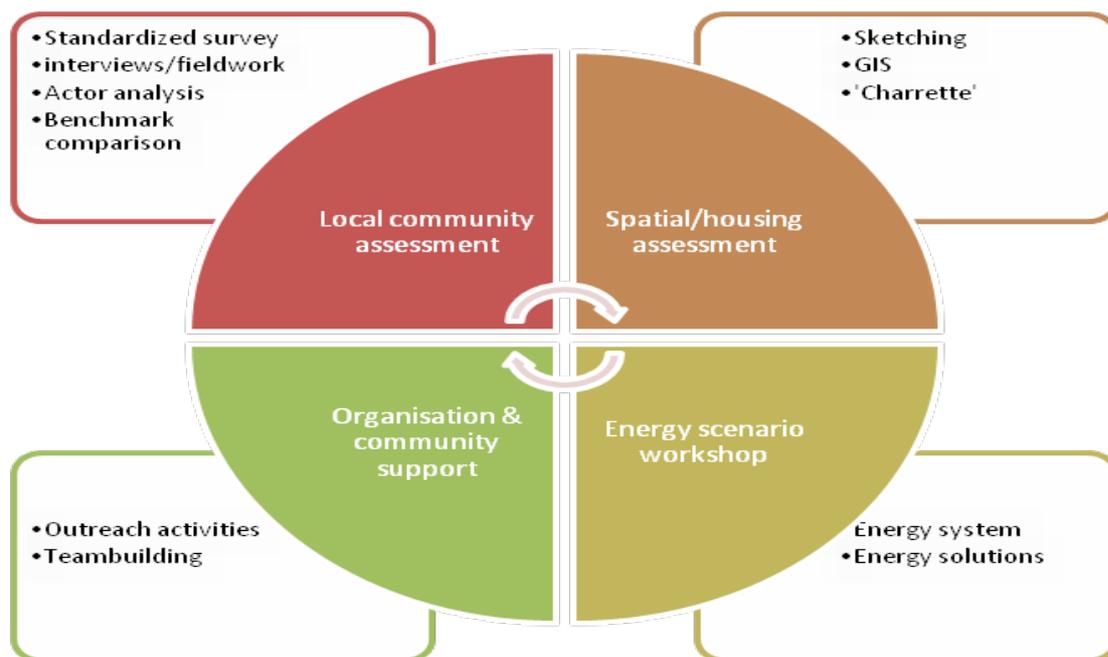


Figure 2. Sustainable community development program

Local community assessment (or village assessment)

For each local energy initiative we start with a structured description of the locality (such as a village, community or region) to determine the current situation and to compare the current situation of the locality to other localities (benchmarking). During this stage of assessment we have the following tools available:

- Standardized survey to map the local desires and existing support (the survey is conducted in cooperation with the LEI)
- The survey maybe complemented by a number of unstructured interviews, or other forms of descriptive data collection – depending on the specific locality.
- Analysis of local actors, interests and frames of thinking. Using a standardised tool (see figure 3 below) local actors, interests, and frames of thinking are observed and registered using the tool. After registration, the data for the locality can be compared to other localities, in order to identify similarities and differences which likewise help to identify successful strategies and risks, further helping to identify potential issues to work on.
- Organizational model for the LEI
- When all descriptive data is collected we are able to compare the specifics of the locality under investigation to other localities that we have already studied and are included in our database of LEI's.

| Actor/Social Group | Interests/power | Perceived problems | Proposed solutions | Meaning |
|--|---|--|---|--|
| Describes the persons or groups that are involved in the local sustainability transition | Describes the interests and power position of the actor or social group | Describes the way the social group perceives the central problem | Describes what the social group sees as desired solutions | Describes the meaning that the local sustainability transition holds for this actor/social group |

Figure 3. Actors groups in local sustainability transition

Spatial/housing assessment (or analysis of current spatial situation)

In collaboration with the local energy initiative we organize a workshop that focuses on the landscape, land use and management, the historical spatial development, the natural environment (within and surrounding the locality), the built environment and the urban planning of the locality. What opportunities and threats do the workshop participants identify? The available activities for this stage are:

- Analysing (historical) maps of the locality and landscape
- Sketching the alternatives and possibilities
- Assessment of housing construction and insulation
- Using GIS touchscreen technology to visualize and disclose important spatial information
- Charette (creative “pressure cooker” discussion) workshop, including experts

Energy scenario workshop (or future energy potential)

In this subsequent step we co-organize a workshop with the LEI to present different energy scenarios that we have prepared based on the local community

assessment and on the spatial/housing assessment. The involvement of experts in energy technology might be called upon. Besides the available technical energy solutions, the focus of the workshop will be on trying to achieve consensus within the LEI (and the local community) regarding choice for future actions or programs. What is the discernible energy potential? The available activities for this stage are:

- Systematic analysis of energy (and material-resource) flows
- Identifying the energy potential for the locality
- Assessment of energy production alternatives
- Formulating alternative (viable and feasible) proposals for the LEI
- Organizing a workshop to present the above

Organisation and Community support

We adjust to the cycle of meetings that are organized in the local initiative where the LEI is active. The available group of activities are:

- Manual/script for communication within a local community.
- Expertise and consultancy on organizational forms suitable for the LEI
- Organization of an event (research seminar, poster presentation or networking event) during the ESEW (European Sustainable Energy Week) in our own university venue.

5. Conclusion

In this paper we wanted to outline a generic approach to describe the process of grassroots sustainable transition for local energy initiatives in the northern Netherlands. It is significant that all initiatives start with a group of people, or a small network of actors, who want to develop and realize their local agenda of sustainability and sustainable energy aims. Village residents and locally involved citizens usually initiate these local energy initiatives, not government bodies or political movements (even though they may support the LEI). The actor network that is at the basis of the LEI may subsequently expand to include local businesses, farmers, housing agencies, and so on. With the growth of the network the number of ideas and projects increase as well, which may lead to a diffused and fragmented set of interests and activities by the LEI. In our generic approach we propose a complete assessment of the local actor network including all interests and ideas within the locality in order to generate a complete overview of the social context. Besides this, in our generic approach a further assessment will be generated regarding the spatial situation in the locality. A thorough analysis of the landscape and spatial surroundings of the village, combined with an analysis of the housing and built environment in the locality could reveal both possibilities and obstacles for the development of a local energy plan of action. During this spatial assessment phase, local knowledge

might be combined with external expertise, which further expands the network of actors, interests and ideas. The social as well as the spatial assessment is necessary to identify the energy potential for the locality. This potential might be identified by the actors involved in the LEI themselves, for example through workshops, however, the LEI may also decide to use external expertise to investigate the full energy potential. A fourth and last part of the generic approach to grassroots sustainable transitions is the organization of the local network and its activities and to find support within the locality and the actor network of the LEI. Communication plays an important role at this stage and affects the foundation and form, underlying principles, scope, early agreements and establishment of objectives. All of these aspects could be determining factors, not only in the LEI's ability to find support and funding but also in the longevity and ultimate success of the transition towards a sustainable local community.

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