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*Jennifer Hauck, Ines Omann, Ines Thronicker, Wouter Spekkink,*

*Alberto Díaz Ayude, Fridanna Maricchiolo, Mirijam Mock,*

*Jaco Quist, Vlad Pandur*

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# Understanding actor roles in sustainability initiatives: an exploratory study in five European countries

**Jennifer Hauck[1,2], Ines Omann[2,3] , Ines Thronicker[2], Wouter Spekkink[4], Alberto Díaz Ayude[5], Fridanna Maricchiolo[6], Mirijam Mock[2,7], Jaco Quist[8] and Vlad Pandur[9]**

1   CoKnow Consulting, Germany, jennifer.hauck@coknow.de
2   Helmholtz Centre for Environmental Research, Germany
3   Sustainable Quality of Life – Research and Facilitation, Austria
4   Erasmus University Rotterdam, The Netherlands
5   Universidade da Coruna, Spain
6   Universita degli Studi Roma Tre, Italy
7   Vienna University of Economics and Business, Austria
8   Technische Universiteit Delft, Faculty of Technology, Policy, Management, The Netherlands
9   Universitatea de Vest din Timisoara, Romania

**Abstract:** Several strands of literature have developed around the ambition to influence or bring about transitions toward greater sustainability. In this context researchers have come to be interested in the types of actors involved in sustainability transitions and the roles these actors play. However, there is a lack of clear definitions of actors, and their roles. Our research takes an exploratory approach and is designed to describe and analyse the actors concerned and to identify their roles in sustainability initiatives. Our aim in doing so is to contribute to the body of scientific knowledge on transitions and to provide sustainability initiatives themselves with helpful information. Data were collected using the Net-Map tool, a well-established method in actor and stakeholder analysis. In our results we identify and define six actor roles: catalysts, opponents, intermediaries, frontrunners, drivers and visionaries. In the literature, particular roles are connected to common actor categories (civil society, governmental actors, private sector, etc.). Our results imply that sustainability initiatives are neither necessarily hindered by the absence of certain actors, nor are they hindered per se by the presence of an actor – rather, a broad mix seems to be helpful.

**Keywords:** transdisciplinarity; stakeholder analysis; social networks; local experiments; intermediaries

**1 Introduction**

There is a growing interest in transitions at the local level and in understanding how local citizen-led sustainability initiatives can contribute and what roles they can play (e.g. Loorbach et al. 2017). Sustainability transitions can be understood as "long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption" (Loorbach et al. 2017; Markard et al. 2012). An important topic in sustainability transitions is niche formation, as niches can be seen as first steps in an emerging transition (Caniëls and Romijn 2008; Kemp et al. 1998; Raven 2005). Whereas niche formation initially focussed on sustainable technological innovations, there has developed a growing interest in the potential of social innovation and grassroots innovations (Seyfang 2011; Seyfang and Haxeltine 2012; Seyfang and Smith 2007), in particular in the role that citizen-led and bottom-up initiatives and civil society can have. In the field of sustainability transitions there is also a considerable interest in the types of actors involved in these transitions and the roles they play. More specifically, the focus in local settings is on the role and potential of local citizen groups such as eco-villages, energy co-operatives and organic food groups. A central assumption underlying this interest is that individual and collective actors are participants in purposive attempts to prevent or generate change (Bos et al. 2013). So actors are not "passive rule-followers but active rule users and makers" (Geels and Schot 2007: 403, also Flanagan and Uyarra 2016). Mossberg et al. (2018) emphasise that it is indispensable to analyse actors, their roles and agency in order to understand their contribution to transition. A growing number of studies can be found that seek to "unpack" the different actor roles related to actors' behaviour and to change. For example, Fischer and Newig (2016) scanned 386 journal articles in the field of transition studies for their focus on actors. Although they found a number of papers with a general focus on actors (e.g. Farla et al. 2012; Wittmayer et al. 2017), they also highlighted a lack of clear definitions of actors and actor roles (see Avelino and Wittmayer 2016; Nasiritousi et al. 2016; Wittmayer et al. 2017 for similar observations).

In the Green Lifestyles, Alternative Economic Models, and Upscaling Regional Sustainability (acronym Glamurs) project, actor dynamics and roles were studied when working closely with local sustainability initiatives in several countries in Europe, which focussed on transitions to sustainable lifestyles and a green economy at a regional level (10Dumitru and García Mira 2017). Although a transdisciplinary approach was adopted and an intensive collaboration with the initiatives was developed (see Omann et al. 2015), in this paper we report on work carried out at the beginning of the project, when we refined an existing participatory network method called Net-Map (Schiffer and Hauck 2010). The method allowed us to identify the actors and their roles in and around local sustainability initiatives in an efficient way, while also making comparisons between different initiatives in five European countries. This enabled us to conduct an aggregated analysis based on all the cases explored. The latter included repair cafés, food cooperatives, a local energy initiative, and a Transition Town initiative.

Based on the lack of clear or at least consistent definitions of actors, and actor roles, we decided to adopt an exploratory research approach (Stebbins 2001), designed to describe and analyse actors and their roles in sustainability initiatives. In doing so, we focus on individual and collective actors, such as the sustainability initiatives themselves, as well as public organisations, businesses, educational organisations, and other organisations that the sustainability initiatives interact with. In this paper we aim to contribute to the body of scientific knowledge on transitions and, more specifically, to the

definition of roles that promote or hinder the potential of local citizen-led sustainability initiatives in transitions at the local and regional level. More precisely, our paper contributes to an improved understanding of actors in sustainability initiatives.

In section 2 we discuss the extent to which actor roles have already been addressed in literature on sustainability transitions. In section 3 we provide a detailed description of the methods used in our research and introduce the sustainability initiatives involved in the study. We provide insights into the process of data collection and analysis. The results of our analysis are presented in section 4, structured in line with our research questions. Section 5 revisits the three questions and discusses our findings against the background of the diverse literature. We also reflect here on the usefulness of the method as well as on its limitations. We present our conclusions in section 6 and offer an outlook on further research opportunities.


## 2 Background

A key interest in our study are is the concerns the roles played by various actors involved in sustainability initiatives. Our main source of inspiration for understanding the concept of roles is network theory (Wasserman and Faust 1994), which describes roles in terms of "patterns or associations among relations that link actors or positions [in networks]" (p. 563). This is quite close to other conceptualizations of roles, such as the one used by Wittmayer et al. (2017), which also emphasise the importance of interactions or relationships between actors for role understandings. As observed in the introduction, there has been relatively little detailed attention for different actor roles in grassroots innovations and sustainability transitions more generally. However, roles have been discussed in the relevant literature so far that they tend to refer to how actors relate to each other in transition processes. In what follows, we discuss some role typologies that have been introduced previously. Our overview is not exhaustive, and serves primarily to highlight how the concept of roles has been used in literature on sustainability transitions so far.

The use of the Multi-Level Perspective (MLP) occasionally leads to rough role distinctions between niche actors and regime actors (e.g. Fudge et al. 2016; Geels 2014; Raven 2005; Raven 2007; Schot and Geels 2008). To these roles one might add that of outsiders, who play a more marginal role in transformation processes, but may well trigger radical changes by working outside the rules of existing regimes (Van De Poel 2000). This simplified role division is closely related to the archetypical way of conceptualizing transition as 'systemic fight' (de Haan and Rotmans 2018), where niche actors develop radical innovations that diverge from the regime (Geels 2011), and regime actors tend to resist against fundamental change (Geels 2014).

Recently, several authors have suggested more specific role divisions. One role for collective actors that has received relatively much attention is that of intermediaries. The concept of intermediaries has been used extensively in the wider literature on innovation (Howells 2006), and a wide range of understandings of what intermediaries are exist (Howells 2006). When the role of intermediaries is brought up in literature on sustainability transitions, there is often a reference to the work of Hargreaves et al. (Hargreaves et al. 2013; also see Seyfang et al. 2014; Geels and Deuten 2006), who suggest that intermediary organizations tend to be created in emerging communities with the purpose of (1) aggregating knowledge produced by initiatives within these communities, (2) creating an institutional infrastructure that helps to store, exchange and circulate this knowledge, and (3) to use this

infrastructure to guide the development of new projects in new localities. Rather than being intermediaries between bilateral relationships (Geels and Deuten 2006; Küçüksayraç et al. 2015), the intermediaries of Hargreaves et al. (Hargreaves et al. 2013) operate on a network or system level, and thus can be understood as an example of what Van Lente et al. (2003) call systemic intermediaries.

In the specific context of energy transitions, Schot et al. (2016) suggest that the users of innovations (in the form of, for example, user clubs and associations) can also be understood to fulfill the role of systemic intermediaries. They suggest that this role is enacted through facilitation (facilitating spaces for actors to meet), configuring (tinkering with the design of technologies and settings rules and regulations on its use), and brokering (representing people and communities and acting on their behalf). Schot et al. (2016) make a further subdivision of user roles: User-producers invent, develop and work with radical technologies themselves, user-legitimators provide meaning, purpose and rationale for the activities of niche actors, user-intermediaries perform the relational work required for up-scaling of niche practices and technologies, user-citizens engage in regime-shift politics by lobbying against established regimes and in favour of niche alternatives, and user-consumers buy niche products and embedded them in their daily lifestyles.

The role of intermediary is typically associated with collective actors (e.g. organizations) involved in transition processes. Most other role typologies that have been suggested usually assign roles to individuals (cf. Wittmayer et al. 2017). For example, De Haan and Rotmans (2018) develop a typology of four roles that individuals can take in transition processes, consisting out of frontrunners that make innovations known and available early on, connectors that institutionalize innovations and connect actors with each other, topplers that attempt to change and phase out existing institutions to make way for innovative alternatives, and supporters that are not actively involved in the development of innovations, but whose support facilitates the transformations that are made possible by innovations. Wittmayer et al. (2017) mention roles such as frontrunner, change agent, champion, and policy entrepreneur.

As can be seen in the discussion above, the existing literature on sustainability transitions is not devoid of role descriptions, and has occasionally moved beyond the simplified distinction between niche actors and regime actors. In the interpretation of the empirical material that we have gathered for our own study, the role typologies discussed in the foregoing provide useful starting points. However, as becomes clear in the presentation (chapter 4) and discussion (chapter 5) of our findings, it was necessary for us to expand on these existing typologies, to explore the following questions:

- Which roles do actors play in sustainability initiatives?
- What is the connection between actor roles and actor characteristics (e.g. different actor categories, individual vs. collective actors)?
- What is the connection between actor roles and initiative characteristics?

**3 Methods**

*3.1 Data collection and Net-Mapping*

Net-Map is a well-established method used to analyse actors and stakeholders in an exploratory way (e.g. Hauck et al. 2015; Latynskiy and Berger 2016; Schröter et al. 2018). More specifically, Net-Map is a participatory method in which researchers and respondents jointly reconstruct and visualize the networks of relationships in which the respondents are embedded. Beyond mapping the networks of relationships themselves, the Net-Map method typically involves exploring the needs, goals and/or motivations of actors in the network, and how these are connected with the relationships observed. The tool can be used not only for individual interviews but also for facilitation purposes in group interviews to jointly analyse the stakeholders' situation, e.g. by clarifying their own needs and goals toward other stakeholders. More specifically, the method allows us to explore the following issues:

- Which actors are involved in a given network and the roles they play
- How and why different actors are linked to one another (e.g. via flows of information or money)
- The kinds of influence different actors exert
- The degree to which different actors have influence
- The respective interests and motivations of different actors

Since there are already many descriptions of data collection processes using the Net-Map tool (e.g. Aberman et al. 2012; Bell et al. 2013; Campbell et al. 2014; Hauck 2010; Hauck et al. 2015; Schiffer and Hauck 2010; Stein et al. 2014), we will describe in the following how the Net-Map tool was used specifically to aid our research. Taking Schiffer and Hauck (2010) as our starting point, we jointly developed Net-Map guidelines in a workshop and did a few "dry runs" together to ensure that everyone was going through the steps in a similar way. 10 Net-Map workshops (see Table 1) were then organized in five countries, focusing on 10 sustainability initiatives, which were part of the GLAMURS project.

Table 2 illustrates the Net-Map method as intended to be applied in this study across all 10 workshops. While we tried to conduct the research in the cases as similar as possible, the character of our research (aimed at making it useful to stakeholders) required some flexibility, including adaptation of the key questions (Table 1) or skipping steps in the procedure due to a lack of time.

**Table 1: Contexts of the 1 Net-Map workshops.**

| Country | Initiatives | Level of initiation | Domains addressed in the case | Question guiding the focus of the case study during the Net-Map workshops |
|---|---|---|---|---|
| Austria | BioRegion Mühlviertel | Treetop | Multiple domains: food, consumption, production | Who has influenced the development of the initiative Bioregion in the last 5 years? |
| Austria | Klimaenergie-modellregion | Treetop | Multiple domains: energy, mobility | Who has influenced the development of the initiative Climate- and Energy model region in the last 5 years? |
| Germany | Transition Town Movement | Grass-roots | Multiple domains: food, consumption | Who has influenced the development of the Transition Town Halle initiative in the last 3 years? |
| Italy | CoRAgGio, agricultural cooperative | Grass-roots | Multiple domains: food, consumption | Who has influenced the origin and the development of CoRAgGio in the last 4 years? |
| Spain | Zocamiñoca, Responsible ConsumptionC ooperative | Grass-roots | Single domain: consumption | Who has influenced the development of Zocamiñoca in relation to the consumption of organic food in the last 3 years? |
| Spain | Amarante Setem | Grass-roots | Single domain: consumption | Who has influenced the development of Amarante Setem in relation to the consumption of sustainable clothing in the last 3 years? |
| The Nether-lands | Repair café: Delft | Grass-roots | Single domain: consumption | Which actors have influenced the start and development of your Repair Café in the past 5 years? |
| The Nether-lands | Repair café: The Hague | Grass-roots | Single domain: consumption | Which actors have influenced the start and development of your Repair Café in the past 5 years? |
| The Nether-lands | Repair café: Schiedam | Grass-roots | Single domain: consumption | Which actors have influenced the start and development of your Repair Café in the past 5 years? |
| The Nether-lands | Vogelwijk Energie(k) | Grass-roots | Multiple domains: food, consumption Energy, mobility, housing | Which actors have influenced the development of the Vogelwijk district towards climate neutrality, and the Vogelwijk Energie(k) initiative in the past 5 years? |

**Table 2: Methodological approach and process of the Net-Map workshops.**

| Methodology | Method used | Process | Timetable |
|---|---|---|---|
| Step 1: Draw up an initial list of key actors in the region connected to the issue concerned | Desktop research, interviews with key informants, snowball technique | Search for actors via regional media, project brochures, leaflets, internet and talk to 1-2 key informants to get an initial list of key actors | December 2014 |
| Step 2: Select key actors and invite them to the Net-Map workshops | Discussion in the research team | Selection session; call potential participants and send out invitation letter | December 2014 to February 2015 |
| Step 3: Net-Map workshops (about 4 hours) | Workshops | Group discussion during the workshop along the following structure: Eliciting influential actors (see Table 1) and their characteristics Identifying relations between actors by drawing links: "In terms of support [or another relational content] what does this actor receive from whom and provide to whom?" Asking about the overall level of influence of actors on the sustainability initiative | December 2014 to March 2015 |

Three types of data were recorded:

- Detailed notes taken during the workshops to capture the qualitative information provided during the development of the network map on actors, their categories and roles.
- Actor influence ratings and network data based on the network maps drawn during the Net-Map workshops, i.e. number of incoming and outgoing relations (headed arrows) per actor.
- Observational data: Immediately after the workshop the interviewers wrote down their personal impressions and observations.

All the data, qualitative and quantitative, were entered in a joint data entry form (see appendix 2).

*3.2 Data analysis approach*

The data analysis proceeded via three steps: (1) Identification of common actor roles, (2) assigning actors to roles, common actor categories, and characteristics of initiatives and (3) descriptive analysis of relationships between variables (e.g. actor categories, actor roles, influence). These steps are explained in detail below.

In a first step, each of the five country research teams identified and described in detail a number of actor roles from the qualitative data on actor characteristics as well as from the descriptions of the relations between the actors. While there are different understandings of the concept of roles as pointed out in chapter 2, we developed our understanding of roles from our qualitative material, defining it as a set of activities or functions (Frantzeskaki et al. 2014) an actor performs in the (wider) context of a sustainability initiative, with an emphasis on what these activities meant for the relationships that actors built up with each other (see appendix 3 for a summary of types of networks and qualitative information on relations that were provided during the 10 workshops). 18 roles were identified by the different country teams. We then organized several group discussions with all the teams, compared the descriptions of roles in order to identify overlapping roles, consolidating them into a joint set of 6 roles.

Next, the individual actors from all the network maps were matched to roles. We also assigned the actors to commonly known actor categories (e.g. civil society, governmental actors, business, etc.) and initiative characteristics mentioned below. While each actor was matched to a category, not all the actors were matched to roles, as some actors did not play a particular role (or at least no information about the role was recorded during the workshop). Roles were matched to 106 actors. This matching of actors to categories and roles, where applicable, was cross-validated in each case by members of the initiatives. At the end of this step we integrated the data from the 10 cases into a single statistical data set yielding 205 single actors.

The third analytical step was based on the data set derived from the first step. We plotted the 106 actors for which a specific role was identified, into a scatterplot indicating these actors' case, role, and influence (Graph 1). The continuous variable influence was transferred into an ordinal variable with three levels (low, medium, and high influence). Scatter plots are a useful way to depict larger numbers of data points in their frequency and overall relation to one another, and thus to help discover patterns in data sets that can guide further investigation.

Forth, and last we used qualitative data, i.e. we identify narratives provided by the workshop participants that could help to explore and describe differences in connections between actor roles, actor characteristics and characteristics of initiatives.

### 3.3 Characteristics of initiatives

In a first step in the GLAMURS Project initiatives were identified in the GLAMURS study regions, which fit to one or several domains to be studied by the project: mobility, housing, food, consumption, energy, work-life balance. Initiatives were then contacted and asked, whether they want to join such a transdisciplinary research project. Of those initiatives ready to join the project, we involved them in the Net-Map workshops (see Table 1). The involved initiatives can be further classified as either grassroots/citizen-led initiatives or treetop initiatives, initiated by governmental actors (e.g. initiated by LEADER regions). As shown in figures 1, the initiatives can further be classified based on their foci. About half of the initiatives focus on one lifestyle domain, e.g. food or consumption. The other half of the initiatives take a broader perspective and focus on multiple domains, e.g. energy and mobility (see figure 1) (more information on the initiatives can be found in appendix 1 and 20).
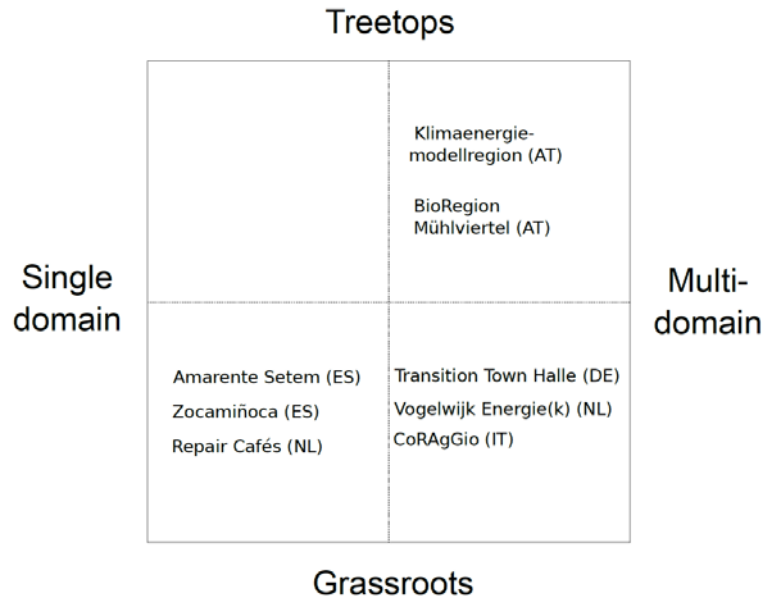
*Figure 1: Characteristics of the 10 sustainability initiatives.*

**4 Results**

Following our research questions, the results are structured to report first on the roles we identified. Second and third, we explore how actor characteristics and initiative characteristics are connected to these roles.

*4.1 Actor roles*

Table 3 provides a description of actor roles and shows the frequencies with which they were mentioned by workshop participants. Figure 2 shows how the roles are distributed across the 10 cases.

**Table 3: The roles that emerged in the cases analysed**

| Actor role | Description of actor role |
|---|---|
| Catalyst | Actor accelerating and supporting certain initial developments, and individuals (e.g. frontrunners) with knowledge, experience, and/or money |
| Opponent | Actor plays the role as the antagonist of an initiative |
| Intermediary | Actor who builds and maintains networks, connecting different actors |
| Frontrunner | Pioneers acting in niches, starting to implement innovative ideas |
| Driver | Actors who are very active and keep initiatives alive over time by providing continuous support |
| Visionary | Actors with visions, who are opinion leaders and who, due to their spirit, idealism, authenticity and charisma, influence the initiative beyond their niche in a positive way |

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**Table 4: The roles that emerged in the cases analysed**

| | Catalyst | Opponent | Inter-mediary | Front-runner | Driver | Visionary | Sum |
|---|---|---|---|---|---|---|---|
| Spain Zocamiñoca | 6 | 6 | 1 | 3 | 0 | 0 | 16 |
| Spain Amarante Setem | 3 | 8 | 0 | 2 | 1 | 0 | 14 |
| Netherlands RepairCafé Delft | 4 | 0 | 2 | 0 | 3 | 0 | 9 |
| Netherlands RepairCafé Schiedam | 3 | 0 | 2 | 0 | 3 | 0 | 8 |
| Netherlands RepairCafé The Hague | 2 | 1 | 1 | 0 | 4 | 0 | 8 |
| Austria BioRegion | 1 | 3 | 3 | 1 | 1 | 1 | 10 |
| Austria KEM | 4 | 0 | 3 | 0 | 1 | 2 | 10 |
| Netherlands Vodelwijk Energie(k) | 2 | 0 | 3 | 1 | 1 | 0 | 7 |
| Germany TTM | 1 | 0 | 3 | 5 | 1 | 5 | 13 |
| Italy CoRAgGio | 2 | 2 | 3 | 1 | 2 | 1 | 11 |
| Sum | 28 | 20 | 21 | 13 | 17 | 9 | 106 |

Table 4 provides an overview of the initiatives and how the roles are distributed there. According to table 4 catalysts are present in each case but appear to be particularly important in Zocamiñoca. Here several representatives of mass media were described by the workshop participants as actors accelerating and supporting the initiatives' development by distributing information to a wider range of actors motivating them to join the initiative. Actors acting as opponents and with high influence were mentioned most often by workshop participants in the Spanish and Italian cases. One example given during the workshop in Italy was the Municipality of Rome. Participants explained that bureaucracy makes agricultural work and fundraising difficult for younger farmers. For several reasons, the construction industry was perceived by workshop participants as an opponent to CoRAgGio as well. The goal of CoRAgGio is to save public land from becoming abandoned and degraded by using it to produce food sustainably and to provide green areas and sustainable services to local people. In doing so, CoRAgGio competes with the construction industry for concessions for public land. A similar example was given in the Spanish case: big food producers and distributors were described by

workshop participants as exerting a negative influence on the transition to sustainable consumption and also as obstacles to the activities of more positively perceived actors such as farmers or neighbourhood shops. Qualitative data suggest that the influence of these actors (see figure 2) stems from their huge monetary, infrastructural, knowledge-based, communicational and legal power.

Intermediaries were identified from the qualitative material in all cases but Amarante Setem in Spain, often holding medium to high influence (see Figure 2). In CoRAgGio, several different actors where introduced by workshop participants, which were then classified as intermediaries. One example, which was highlighted is the Forum, a web community aimed at preserving the Rome urban area, promoting meetings between agricultural producers, cooperatives, associations, families, universities, government departments and local authorities and social services. The Forum also facilitates the exchange of information and the construction of a network of relationships.
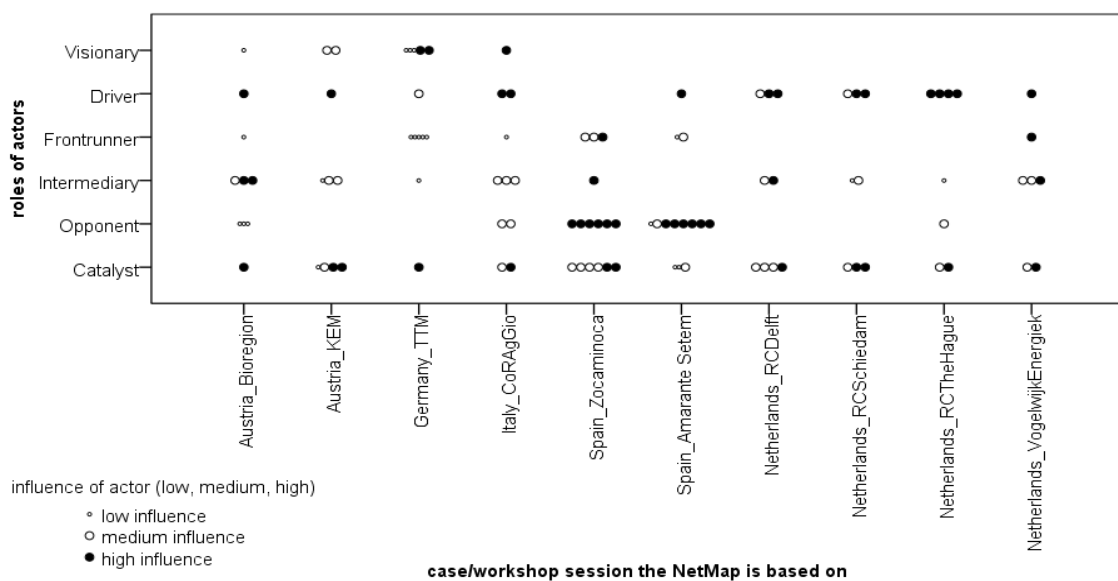


*Figure 2: Frequency of actor roles as identified in the 10 Net-Map cases.*
*Each data point represents a single actor (N=106). The low, medium, or high influence*
*of the actor in its network is marked by a small dot, an empty and full circle.*

While many cases lack frontrunners according to the definition given in Table 3, actors performing activities and functions related to the frontrunners were particularly often mentioned by workshop participants in the German case. The German case was also described by participants as a network consisting of many different projects and initiatives. Many of them were started by particular people, so called frontrunners, who began by holding an event and looking for others who wanted to join. However, participants also highlighted that these actors do not necessarily seek to extend their activities beyond a small niche. During the workshops actors where described by the participants to influence the initiative to think beyond their niches. These actors were classified as visionaries, i.e. actors with visions, who are opinion leaders and who, due to their spirit, idealism, authenticity and charisma. Only few of these visionaries can be found, and with a mixed influence.

Drivers, where particularly vital in the context of the Repair Cafés. According to the explanations they gave during the workshops, they can be considered as drivers in the sense that they help spread and enact ideas envisioned and pioneered by Martine Postma. In other words, they are not frontrunners or visionaries themselves, since they are basically implementing a 'template' that they didn't invent or

pioneer. However, they are vital for keeping the vision underlying the Repair Café movement alive. The volunteers of the RepairCafés, i.e. the people coming to repair stuff (and sometimes visitors) are drivers in the sense that sustaining the local initiatives themselves depends almost entirely on their commitment over time. The organizers of the initiative put a lot of emphasis on their relationships with those volunteers and highlighted their dependency on these volunteers during the Net-Map workshop.

*4.2 Actor characteristics*

For table 5 we used broad, commonly known actor categories to further characterise the actors mentioned by workshop participants.

**Table 5: Actor categories.**

| Actor category | Description of actor category |
|---|---|
| Private sector | Actors representing the private sector, e.g. as a company or a network of companies |
| Civil society | Initiatives, organisations or other groupings representing different interest of (parts of) the civil society |
| Governance | Any form of governance institution, local, national, European as well as political parties, or representatives from political parties, mayors, ministers, etc. |
| Media | Any form, print and online, self-organized or mass media |
| Education & knowledge | Any actor related to education, research and consultancy |

**Table 6: Frequency of actor categories as identified in the 10 Net-Map cases (N=205).**

| | Private sector | Civil society | Governance | Media | Education & knowledge | Sum |
|---|---|---|---|---|---|---|
| Spain Zocamiñoca | 6 | 4 | 7 | 4 | 1 | 22 |
| Spain Amarante Setem | 4 | 15 | 4 | 4 | 1 | 28 |
| Netherlands RepairCafé Delft | 2 | 6 | 2 | 1 | 2 | 13 |
| Netherlands RepairCafé Schiedam | 0 | 6 | 1 | 2 | 0 | 9 |
| Netherlands RepairCafé The Hague | 2 | 7 | 0 | 1 | 0 | 10 |
| Austria BioRegion | 11 | 3 | 6 | 0 | 1 | 21 |
| Austria KEM | 6 | 11 | 8 | 0 | 1 | 26 |
| Netherlands VodelwijkEnergie(k) | 7 | 5 | 0 | 0 | 1 | 13 |
| Germany TTM | 5 | 26 | 2 | 4 | 4 | 41 |
| Italy CoRAgGio | 1 | 12 | 4 | 1 | 4 | 22 |
| Sum | 44 | 95 | 34 | 17 | 15 | 205 |

Only the category civil society occurs in every case. Actors representing the private sector were mentioned in all cases except one. They are of course particularly important in those cases that have an economic character, such as consumer/producer cooperatives or the Bioregion in Austria, an initiative whose members are mainly food processing companies (dairy, bakery, restaurants, breweries, farms and herb gardeners). The Bioregion brings together different companies and farms with the aim of implementing organic agriculture in the whole area. Companies were considered important here by workshop participants as they organize events, awareness raising and educational activities, and support the marketing and dissemination of products. In the Dutch energy initiative, companies were important partners, for example in providing access to the electricity grid. As pointed out in the description of the roles above, in the Spanish cases, companies were considered important for negative reasons, i.e. as opponents (see table 7). For example, big companies, including multinationals, were reported by workshop participants as having a negative impact on the initiatives.

**Table 7: Frequency of actor categories and actor roles (N=106).**

|  | Private sector | Civil society | Governance | Media | Education & knowledge |
|---|---|---|---|---|---|
| Catalyst | 4 | 8 | 8 | 6 | 2 |
| Opponent | 8 | 0 | 9 | 3 | 0 |
| Intermediary | 2 | 8 | 3 | 4 | 2 |
| Frontrunner | 3 | 10 | 0 | 0 | 0 |
| Driver | 0 | 17 | 0 | 0 | 0 |
| Visionary | 1 | 6 | 1 | 1 | 0 |

Media is a frequently occurring actor in Germany and Spain and exists as an actor in all the other cases except in Austria and the Dutch energy cooperative. An analysis of the qualitative material from the Spanish initiatives reveals that although many issues and decisions are dealt with informally within the initiative, the mass media are seen as an opportunity to disseminate ideas about sustainability among a wider audience. By contrast, the Austrian cases appear to involve no connections to media. One explanation offered by workshop participants, is that the development of the Austrian initiatives depends largely on informal talks, meetings and encounters that take place outside the realm of the media. As the qualitative data reveal, the importance of media stems, first, from their flexibility in space, time, content and use. Within the initiatives, media actors contribute to a number of functions, e.g. internal and semi-public communication, networking, meeting, working/collaboration, exchange and production. The flexibility of the functions seems to be especially important for the younger and less structured initiatives in the German and Spanish case study, where participants attributed a high level of influence to media, and less so in the older and far more structured case studies in the Netherlands and Austria, where participants attributed a low level of influence or did not even mention media as an influencing actor. Second, media potentially provide an enormous reach at minimal cost. Participants reported that the potential of media to make contact with the world outside the initiative for purposes of, say, publicity, visibility, networking and external communication is a definite advantage. Thirdly,

the variety of media available enables independence. Some of the networks run or use alternative internet platforms, radio channels, print media and other channels. This applies, for example, in the German and Spanish case studies, where the participants are clearly striving to achieve autonomy and independence. Hence, media here take on the role of a frontrunner.

We did not systematically characterise actors according to whether they are individuals of collective actors. However, when looking at the data we found that some roles, such as that of frontrunner, have so far in the literature been used primarily to describe the roles of individuals, whereas we found that the role can also be usefully applied to collective actors.

*4.3 Characteristics of initiatives*

Governance actors appear independent of whether they are classified as grass roots or treetops initiatives. However, what we found is that the Austrian, government-led initiatives governance actors are perceived as catalysts or intermediaries. Typical intermediaries in these cases include LEADER offices, regional planning offices, respected individuals in local areas such as teachers, administrative figures on the local council, heads of associations (sport, culture, social), and suchlike. Governance actors were also frequently mentioned in the Spanish and Italian cases, where several governance actors where perceived by workshop participants as opponents. The only case lacking a governance actor is the repair café in The Hague. Not all repair cafés necessarily maintain strong ties to municipalities, as the resources vital for their survival (locations and volunteers) can be drawn from sources other than the municipality.

Table 4 suggests that in initiatives with multiple domains intermediaries are frequently present, to relate the different domains with each other. Less frequent but still present are the visionaries, need to see the different domains coming together, and see beyond one topic in a nice. This seems of no relevance to initiatives dealing with only a single domain.

**5 Discussion**

We first discuss, which roles we found in our case studies as presented in results section 4.1. We than discuss, how actor characteristics and initiative characteristics could help to explore the roles present in each case.

*5.1 Actor roles*

Based on our understanding of intermediaries laid out in chapter 2, the actors, which we described as intermediaries are a bit different than the systematic intermediaries of Hargreaves et al. (2013). The authors describe actors, who are concerned with aggregating knowledge developed in initiatives, translating these into (new) institutional infrastructures, and using these infrastructures to start new initiatives elsewhere. Instead, the intermediaries as they appear in our networks are much closer to how they are typically understood in innovation studies (Howells 2006), or how De Haan and Rotmans (2018) describe connectors. Arguably, the systemic intermediaries of Hargreaves et al. (2013) appear in our networks more often in the guise of catalysts (e.g. the Repair Café Foundation in the cases of Repair Cafés). This also has something to do with the level of analysis of our work: The catalysts that we identify in the networks around particular initiatives on a rather local level, might actually by systemic intermediaries if we 'zoom out' to the systems level. The fact that the Repair Café Foundation appears

as a catalyst in multiple networks suggests that they indeed play an important role in starting new initiatives.

Our typology of roles also helps to further unpack different roles for niche actors. Our frontrunner and visionary roles are probably closest to how people intuitively tend to think about niche actors, given their role in envisioning and pioneering innovative ideas. Both roles are often taken by the initiatives themselves, which makes sense, as they are often initiated precisely in order to try something new. From our empirical material we noted, that there is a difference between visionaries and frontrunners. It is not necessary for the frontrunners to come up with entirely new ideas; they can also pick them up from other sources (e.g. visionaries) and implement them. Similarly, frontrunners are not necessarily the actors that promote the ideas or their achievements beyond their niche to the broader public.

In this sense the role of driver is also interesting because, even though they might not contribute directly to inventing of new ideas, they are vital to sustaining, promoting and spreading them, and thus contributing to the viability of the niches they exist in.

### 5.1.1 Connections between actor roles and actor characteristics

In terms of actor characteristics, we found that while roles identified in literature so far (see chapter 2) are mostly assigned to individuals (except for the 'intermediaries' role), roles mentioned in our cases were often also taken by collective actors. Even though our stakeholders, attending our 10 workshops, were free to mention individual as well as collective actors, they tended to think of the actors in networks surrounding the initiatives in terms of collective actors (of course with several exceptions). This has implications for how we understand some of the roles that overlap with roles used in previous literature. For example, frontrunners are typically thought of as individuals (e.g. Hargreaves et al. 2013). We found that the pioneering role in making innovations known and available early on can equally well be understood to be played by (primarily) sustainability initiatives, seeing the frontrunner role as something that the members of these initiatives enact collectively.

Another role which is often taken by sustainability initiatives and civil society more general is the role of drivers. This role can also be associated with the function of diffusion of innovative niche ideas and practices, which successfully compete with regime practices and so become widely adopted. Seyfang et al. (2010) associate these functions with civil society. In our cases, it was indeed the initiatives themselves as well as consumers and citizens in a broader sense that were classified as the drivers of sustainability initiatives over time.

In some cases, the role of intermediaries is assigned to a particular actor category (Hamann and April 2013). Spekkink and Boons (2016) found that governmental organizations are in a position to have an overview of what is going on in the region, and to see where actors might share common ground. The governmental actors are in the best position to bring the different building blocks together to start a broader collaboration. We found only few governmental actors in intermediary positions, but rather civil society connecting different actors by establishing and maintaining relations of support or media, relaying flows of information. Therefore, we agree with Story et al. (2011) and suggest that it is unwise to associate a particular actor category with an actor role, as it diminishes the opportunities for other actors to perform this role.

*5.1.2 Connections between actor roles initiative characteristics*

While there are intermediaries in the single domain initiatives, unsurprisingly most of them are found in multiple domain initiatives connecting different domains. Regime actors can be associated with governments and incumbent firms as a core regime level alliance, which often resists fundamental change (e.g. Geels 2014). Findings particularly from our cases in Spain and Italy confirm that governments and incumbent firms can act as opponents to change. We also found cases, where developments are different. In the Austrian cases change is even initiated by governmental actors and representatives of the private sector play a role, e.g. in catalyzing these developments.

*5.2 Reflections on methods: usefulness and limitations for research and practice*

In a last step of our research process, we reflected on the usefulness and limitations of our results for sustainability initiatives themselves, as well as on the extent to which we had been able to contribute to the body of scientific knowledge on transitions and, more specifically, to the definition of actor categories and roles that typically promote or hinder transitions.

The benefits for the immediate study participants and for sustainability initiatives in a broader sense are described more systematically for the German case study in Lelong et al. (2016). The participants felt that creating an overview of who they considered to be involved in the transition town initiative and how the different actors involved are linked was a good experience and provided a number of insights. For example, one of the most important points for the participants was a visualization of the importance of their one and only meeting place. This meeting place was considered to play the hugely important role of intermediary and as a key means to connect actors. However, it was also seen as being vulnerable to closure. As a result of this insight, they immediately started to establish an alternative place to meet.

Most of the researchers in the five case study regions stated that eliciting the views of the Net-Map workshop participants regarding, for example, administrative settings such as rules and regulations as well as supporting or hindering conditions, partners, opponents and related conflicts, etc., was particularly helpful in organizing the subsequent project work.

However, there are also some limitations to the study method. In particular, the insights gained into the actors and their roles and networks are limited by the insights the participants themselves have. While the Net-Map workshop participants were carefully selected and the network maps yielded a large range of additional actors, inviting a different set of participants would have undoubtedly resulted in different Net-Maps.

Our flexibility in adapting the data collection process, including the questions, types of actors, etc. to the interests of the participants proved to be highly beneficial for the participants and also for the subsequent project work. At the same time, however, this flexibility has brought about another limitation in that it makes a cross-study comparison difficult and means that the results will remain largely qualitative and exploratory. The quantitative elements of our results need to be dealt with more carefully, including particularly the ascription of roles to actors based on the qualitative material, a process that is influenced by the researcher's subjectivity.

Another limitation is that networks of relationships and the role divisions that have resulted from our study are inevitably snapshots that do not give much insight in the ways that these networks of relationships and roles change over time. Thus, our study does not overcome a limitation highlighted by Wittmayer et al. (2017which is that there has been little attention so far for "understanding the

changing interaction and relations of actors on a more general basis and how these are indicative for and part of transitions" (p. 47). Based on our findings we might even add, that the roles do not only change over time, but might also change depending on the scale at which they work. Again, using the example for the Repair Café Foundation. At the scale of local initiatives they are a catalyst, and at a higher systems level they can be understood as a systemic intermediary a la Hargreaves et al. (2013) due to their role in aggregating knowledge, influencing institutional infrastructures, and using their knowledge to help start local initiatives in various places.

## 6 Conclusions

The aim of our research was to explore actor roles in sustainability initiatives in order to further contribute to the knowledge base regarding obstacles and prospects for transition processes. We found a variety of definitions of actor roles in the literature reviewed, and often activities and functions are lumped together under the label "intermediaries". In our research we found it helpful to pay closer attention and to separate the connecting function of intermediary from that of frontrunner, visionary, and catalyst.

From a practical point of view, the understandings gleaned from the study may prove useful in terms of supporting strategic thinking to further the development of initiatives and transitions. Our research suggests, for example, that analysing and identifying ways of bringing economic and governance actors as well as the media on board is crucial, as they are also powerful actors and can thus exert a strong influence. Winning their support in terms of finances or publicity and mitigating negative relationships can be highly beneficial for initiatives. It is not helpful, however, to focus on one particular type of actor category or a limited number of actor categories. Different actors can adopt different roles, which can also develop and hence change over time.

A number of recommendations for further research can be developed on the basis of our efforts. We have offered a typology of actor roles that can be very useful for studies in transition research. In other words, future research on this topic can build on the deepened understanding of roles and how they are connected to actor characteristics and initiative characteristics. These exploratory findings can provide useful conceptual input for quantitative network studies that take these conceptual categories as starting points, and that can translate some of our tentative findings into hypotheses in order to test them more rigorously.

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**Appendix 1: Overview of the sustainability initiatives analysed in this study**

| Initiative | Domain | Objectives | Methods/approaches/activities | Structure |
|---|---|---|---|---|
| BioRegion Mühlenviertel (AT) | food | become the leading region in Europe concerning organic agriculture; increase share of organic agriculture; strengthen regional economy | education, in organic farming; connecting processors and marketers of organic products; strengthening the position of organic products in tourism, gastronomy, handcraft, industry and service, | network of 125 companies (e.g. farmers, restaurants, producers) for organic consumption and production, installed by country government |
| Klimaenergie-modellregion (AT) | energy, mobility | regional energy autarky with renewable energy | development and implementation of numerous projects, e.g. decentralised energy production and smart grids, car-sharing, energy cooperatives and use of renewable raw materials for construction and local heating | national programme; manager financed by LEADER; Integration of citizens, administration and companies |
| Transition Town Movement (DE) | food, consumption | establishment of local environmental resilience and a sustainable lifestyle | deals with subjects such as local food production, food sharing, local currencies, community supported agriculture, non-violent communication workshops and open space art projects | part of the international transition town movement; umbrella group for different initiatives |
| CoRAgGio, agricultural cooperative (IT) | food | development of an agricultural urban model that is healthy, organic and multi-functional; replace the degraded concrete buildings with a proposed new way of living, based on environmental concerns, on respecting the dignity of labour and on the social value and meaning of agriculture | production and distribution of food as well as offering services (agricultural training and experimentation, didactics, workshops, urban gardening, food services, restoration, green tourism, and outdoor sports). | farmers, agronomists, chefs, architects, day workers, anthropologists, educators with a passion for sustainable agriculture, healthy food production, environment and landscape preservation. |

| Zocamiñoca, Responsible Consumption Cooperative (ES) | consumption | facilitate access to organic products and to encourage environmentally responsible consumption in a framework of fairness in the treatment of small producers of organic and local food | the initiative works as an intermediary between local organic producers and consumers in the province of A Coruña. | around 300 members, constantly growing in membership and maintaining a lively engagement with other sustainability actors in the local community |
|---|---|---|---|---|
| Amarante Setem | consumption | achieve a change in the production system of clothing by changing both consumption and production patterns. | organisation of campaigns to encourage the textile industry to improve working conditions and reduce its impacts on the environment. As part of the efforts, a key contribution was made in the creation of a platform for sustainable clothing and fashion, called MOV3 Campaign | Amarante Setem is a non-governmental organisation that promotes fair and responsible consumption and trade, relationships of solidarity among producers and consumers |
| 3 repair cafés (NL) | consumption | support in repairing goods, reduction of waste, strengthening social relations | freely accessible meeting places where people gather to fix broken objects, share knowledge and experience on repairing, offering a pleasant environment for people to meet and build up or strengthen social contacts | started with one repair café in Amsterdam, but currently a global network of 1500 repair cafés; individual repair cafés are mostly independent and locally embedded and an international repair café foundation addresses issues for the movement as a whole. |
| Vogelwijk Energie(k) (NL) | energy, mobility, housing | make the neighbourhood free of emissions (carbon neutral) by 2040 | different projects (insulation of houses, smart energy meters, private photo voltaic plants etc.); providing of information to residents of the district about energy-related improvements; information campaign | a cooperative association with 250 members and led by 8 board members; a separate cooperation exists for the solar roofs project. |

## Appendix 2: Data entry form

**Attributes**

| Actors in alphabetical order | Description of/qualitative information on actors provided during the workshop | Influence: height of the tower | Actor categories | Actor role |
|---|---|---|---|---|
| Actor A | | | | |
| Actor B | | | | |
| Actor C | | | | |
| … | | | | |

**Network Data 0_1**

| Actors in alphabetical order | Actor A | Actor B | Actor C | … |
|---|---|---|---|---|
| Actor A | | | | |
| Actor B | | | | |
| Actor C | | | | |
| … | | | | |

Enter 1 if there was a connection from actor A to actor B; enter 0 or nothing, if there is no connection

**Network Data: Qualitative Information**

| Actors in alphabetical order | Actor A | Actor B | Actor C | … |
|---|---|---|---|---|
| Actor A | | | | |
| Actor B | | | | |
| Actor C | | | | |
| … | | | | |

If there is a connection from actor A to actor B, please enter the information on this connection provided by the interview parters during the workshop

## Appendix 3: The relations in the cases

In step 2 of the Net-Map tool (see table 2) usually certain types of relations between actors are drawn using different colours. The table below shows, which relations were drawn in which case.

| Country | Initiative | Relations of support flow | Relations of information flow | Negative relations | Relations of personal acquaintance |
|---|---|---|---|---|---|
| Austria | Bioregion Mühlviertel | 1 | | 1 | 1 |
| Austria | Climate-energy model region | 1 | | | 1 |
| Germany | Transition Town Movement (TTM) | 1 | | | |
| Italy | CoRAgGio, agricultural cooperative | 1 | 1 | 1 | 1 |
| Spain | Zocamiñoca Responsible Consumption Cooperative | 1 | 1 | 1 | 1 |
| Spain | AmaranteSetem NGO | 1 | 1 | 1 | 1 |
| The Netherlands | Repair café: Delft | 1 | 1 | | |
| The Netherlands | Repair café: The Hague | 1 | 1 | 1 | |
| The Netherlands | Repair café: Schiedam | 1 | 1 | | |
| The Netherlands | Vogelwijk Energie(k) | 1 | 1 | 1 | |
| Total | | 10 | 7 | 6 | 5 |

In all 10 workshops, the participants decided to draw relations of support flows. The definitions of support were, however, rather different. In the Spanish cases support meant primarily financial flows. Mentioned here were buying and selling products from initiative actors, but also promoting them and in this context also having opportunities for publicity in media and financial support for exhibitions, conferences, or fairs. Other means of financial support mentioned covered research grants, subsidies, or paying taxes. In Austria, financial support was only one of many ways of support. Other ways of supporting were the exchange of advices and tips, material support or the exchange of tools, providing infrastructure, and providing meeting spaces. Other common features with the Austrian Net-Map groups were the exchange of advice, and provision of infrastructure. Similar to the Spanish cases, getting opportunities for publicity and distributing information were also mentioned in the German case, in addition to organisational support and the help of volunteers. In addition to the support

mentioned above, the Dutch cases also found that moral support, knowledge and skills were important for the functioning of the repair cafés. In this direction the Italian cases also mentioned training on top of the other ways to support each other.

Information flows were drawn in seven cases. Information exchanged covered a broad range of different topics. In the repair cafés information on ideas, technical knowledge and experience and organization, news items and interviews, information on defects of products, information about national developments, hot topics, new developments were discussed. In the Spanish cases information concerns producers and consumer groups that exist in different cities, issues on responsible consumption dissemination to other audiences; organisational expertise, "flow" of laws, information on employment or labour conditions, conflicts or problems. In the Italian case know-how on sustainable good practices, such as information about new seeds, new methods of organic food production, or about the competence for qualify people to become professionals in the field of agriculture. Like in Spain, awareness raising also played an important role here.

In 6 of the 10 cases negative relations were highlighted as rather important, too. The Austrian and Italian groups reported negative publicity to be a harmful relation. Similar to Austria, in the Dutch cases the lack of subsidies, the stop of paying subsidies, or support in the ongoing process was mentioned to be harmful. In the case of the repair café The Hague a negative relation was drawn from manufacturers that make it difficult or impossible for the actors of the café to repair products. The Italian group also mentioned (political) obstructionism, social pressure, and land use conflicts as problem. While in the Spanish cases, the link was not called explicitly "negative" the qualitative information of the link called "Utopia", revealed rather negative influence. These were relations they wished were there to support their initiative, such as improved information flows, supportive policies and in terms of providing goods e.g. to school canteens. However, the actors involved decide to not provide this support.

Personal relations, often but not exclusively defined as friendships or acquaintanceships, were drawn by 5 groups. Highlighted with these relations were the shared values and interests, trust, and moral support that provided stability to the network.