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## Social enterprise based transition movements between transformation and reform. The case of transition initiatives in local food networks

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### Research highlights

- Develops the role of consumers/environmental/food movements in transition theory
- Analyses a structured questionnaire amongst 104 collective food buying groups in Belgium
- Shows the contribution of hybrid social movement/social enterprise strategies to fostering transition
- Argues in favour of regional network bridging organisations that address these hybrid strategies

### Abstract

Direct consumer-producer partnerships such as community supported agriculture, contract-based regional agriculture or solidarity agriculture, have emerged throughout the world as an important and fast growing social innovation for promoting more sustainable agri-food systems. These niche initiatives seek to bring about social change. They do so, however, not merely through protest or interest-based lobbying, but also by providing non-profit services that create alternatives to the mainstream marketing channels and thus make an original contribution to a strategy for social change. This paper aims to analyse the governance features of this strategy by comparing 104 food buying groups in 5 city regions in Belgium. The main finding of the analysis is the difference in the governance needs of the *social movement* component of these consumer-producer partnerships versus those with a non-profit service component. On the one hand, partnerships with that focus more heavily on the social movement component rely to a larger extent on social networking with agri-food transition movements, the building of political legitimacy and active/inclusive governance processes. On the other hand, those focusing more heavily the non-profit service component rely to a larger extent on administrative support, social networking with a variety of environmental and social associations and members' collaboration for the provision of non-profit services. These results hint to the importance of addressing the needs of both these components in the network bridging organisations (regional platforms, umbrella organisations or knowledge hubs) that are currently being developed in support of sustainability transition processes.

**Key-words:** Alternative food networks, social enterprises, network bridging organisations, community supported agriculture

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## 1. The challenge of social and ecological transition in agri-food systems

Together, the provision of agricultural inputs, and the production, packaging, processing, transport, and distribution of food, represent 19-29 % of greenhouse gas emissions worldwide (Vermeulen et al., 2012); and they exert an important pressure on natural resources, water, nitrogen and phosphate, and arable land in particular. Reforming food systems towards greater sustainability is therefore essential for a transition towards a low-carbon and resource-efficient society (De Schutter, 2014). Increasingly broad segments of society demand such a switch, and appear to search for alternatives. As a result, the consensus on increased production as the key objective of agri-food policies, which emerged after the Second World War, has lost much of its appeal and is partly replaced by a variety of new approaches and value orientations. Economic efficiency and technological rationalisation remain important, but they are accompanied by concerns about nutritional quality, food safety, environmental impacts, resource efficiency and equity issues as equally important “organizing principles” around which product innovation and new consumption practices evolve (Spaargaren et al., 2012).

A key problem for society, however, is that many of the issues involved in the transition towards sustainable food systems, such as climate change mitigation and decreasing the ecological degradation of agricultural landscapes, involve the production of collective goods, each of which can provide benefits at different scales (Perrings, 2012, p. 54). Therefore, it is only when societies can organise a legitimate and effective set of collective action strategies at local, regional, national and transnational level that such a transition can succeed: this puts the question of governance at centre stage, and redefines ecological transition as an issue that is not of a solely technocratic nature.

Conventional public policy tools based on market incentives, technological innovation policy and direct regulation increasingly take into account these new collective concerns. However, these conventional tools have failed at present to accelerate the transition towards more sustainable food systems at the required pace. In response to this failure, various actors of the food system have set up non-state-driven collective action initiatives, which provide collective goods, often in combination with market-driven and public initiatives (Fonte, 2013; Hinrichs, 2014). This citizen-led movement for sustainability transitions is reflected in the proliferation of various types of non-profit initiatives such as collaborative sharing practices in cities, direct consumer-producer partnerships or open source innovation in farmers’ seed networks (Derojeda et al. 2013; AEIDL 2013). In support of these initiatives, policy makers and entrepreneurs in various countries have increasingly developed new types of governance arrangements, which are based on the fostering of collaborative arrangements involving governmental, private for-profit and private non-profit organisations that have come to play a key role in the provision of collective goods. Prominent initiatives along these lines are support for local food systems, Local Action Groups under the Leader Program of the EU Common Agricultural Policy, or innovative product labelling schemes with retailers (Mathijs et al., 2006).

However, in spite of these new opportunities that emerge from consumer and citizen activism, scholars of transition theory have hitherto largely neglected the demand-side factors of transition. As emphasized by Grin, Rotmans and Schot in a self-assessment of the research agenda of transition

theory, the role of consumers and citizen initiatives in transition is underrated and under-conceptualized (2010, p. 331; see also UNEP, 2011). For instance, one of the major challenges for sustainability transitions is how to trigger intrinsic motivation amongst individuals for sustainability practices, rather than only resorting to mechanisms that reinforce extrinsically motivated behaviour (e.g., restrictive regulations, pricing policies, etc.): social psychology has amply demonstrated that change that is motivated by the values individuals hold or grounded in their self-image, is far more persistent than change that is directed top-down (Ryan and Deci, 2000a and 2000b). Another important question is how to transform the social practices of individual citizens and consumers (like cooking, driving, etc.) which are co-constitutive of the socio-technological pathways in which the agri-food system evolve (Spaargaren et al., 2006). Further, how to give consumer and citizens an active role in the transformation of these social practices, based on their knowledge of the specific contexts of transition (Seyfang and Smith, 2007)?

To contribute to these research questions, this paper focuses on one prominent case of non-profit service providing organisations where consumer involvement plays an important role, which are the consumer-producer partnerships in local food networks for sustainable agriculture. Our hypothesis is that the success of these initiatives in contributing to the provision of collective goods results from a combination of collaborative networking with other non-profit actors – especially through sharing resources – and the building of partnerships around a core social norm, which is the solidarity with a producer or a selected list of producers. By testing this hypothesis for this specific example of non-profit enterprise, our goal is to better understand the role of collaborative networking and social enterprise in sustainability transitions.

The paper is structured as follows. The second section discusses the emergence of local consumer-producer partnerships and their possible contribution to sustainability transitions. The third section reviews the concept of niche innovations in transition theory and addresses the contribution of social innovations to transitions, before applying these concepts to the role of the social enterprises. The fourth and fifth sections present a survey and a comparative analysis of collective food buying groups in Belgium, as an important example of consumer-producer partnerships for sustainability. The sixth section discusses the results and highlights some policy recommendations that result from the analysis.

## 2. The contribution of sustainable consumer-producer partnerships to transition processes

While awareness about the global sustainability crisis is growing, there remains a considerable gap between that awareness and individual lifestyle choices (UNEP, 2011). There also remains a troubling disconnect between the emerging transition initiatives, that broaden the range of alternatives individuals may choose from, and the broader lifestyle choices of the majority of the population.

To identify the key areas where consumers' choice can have the highest impact on agri-food transition, researchers conducted a life cycle analysis of the key ingredients of typical food portions in Finland (Virtanen et al., 2011). The results indicate that rewarding certain agronomic choices linked to sustainable agriculture and reducing meat consumption have the highest impact. The choice of agricultural production method has a major impact on the reduction of greenhouse gases

responsible for climate change. Even for imported products this impact outweighs by far the role of international transport. Choosing products that are grown with a low use of external inputs has therefore a key role to play in reducing the ecological footprint of food consumption, whether the foods are locally sourced or have travelled long distances.

The second area of important improvement is the increase of the share of vegetables in the diet, as compared to meat, especially of vegetables that grow well in the local climate. Some scholars have also analysed the possible role of local food networks in the change in dietary habits of consumers (Cembalo et al., 2012), although systematic comparative studies are fewer (see however, for a study of 54 community-supported agricultural schemes in California, Galt, 2013). Single case studies show that participation in community gardens and school gardens has a clear positive effect on greater fruit and vegetable intake (Alaimo et al. 2008; Litt et al. 2011). Moreover, sourcing food locally increases the freshness and overall improves the nutritional content of the food. Further, most studies underline also the social benefits of the local food networks, such as the contribution to social cohesion in cities and the promotion of food traditions and culture (Schlicht et al., 2012; Foodmeters, 2014)

The promotion of sustainably grown products through the involvement of citizens and consumers in sustainable local and regional food networks therefore may be seen as part of a panoply of strategies for supporting the agri-food transition. Early initiatives of Community Supported Agriculture and Collective Food Buying groups already developed in Japan, Germany and Switzerland in the 1960s (Schlicht et al., 2012). In Japan, in particular, women took the lead and founded Teikeis, which are family-farmer partnerships (David-Leroy and Girou, 2009; Schwartz, 2011). More recently, consumer-producer partnerships for sustainable agri-food production have developed also in other countries, with over 1700 farmers involved in the US (Groh and McFadden, 2004) and over 1500 consumer associations for the support to peasant agriculture (AMAP: Association pour le Maintien d'une Agriculture Paysanne) in France (Schlicht et al., 2012).

The main motivation for these initiatives are environmental concerns, concerns about food safety and an interest in circumventing the mainstream channels of food distribution, to create direct links with the producers based on values of solidarity. For instance, in many of the initiatives analysed through the survey below, the consumer partnerships play a key role in supporting local producers to move from conventional high-input production systems to low-input and/or organic farming systems.

As can be seen from the broad variety of alternative food networks, the benefits expected from consumer-producer partnerships are not purely environmental. While the impacts vary strongly from one type of initiative to another, other societal benefits that play a role are increased transparency of decisions within the food chain, viability of food culture, social cohesion, public health or reduction of packaging and food loss. Indeed, a study by scientific experts, regional stakeholders and practitioners of local food networks within five metropolitan areas in Europe shows that, whereas short and regional food chains generally perform better than the conventional global long food chains as regards environmental sustainability, this is not necessarily true for all type of short and regional food chains: instead of rewarding producers with the most sustainable agronomic practices and thus providing benefits to the collectivity as a whole, some short and regional food chains in fact respond to the preferences of individual consumers for "good food" linked to local food cultures (Foodmetres, 2014).<sup>1</sup>

In addition, the environmental benefits from local and regional food chains are often offset by poor infrastructure and inefficiency of distribution channels. In such cases, efforts of umbrella organisations or public authorities can improve the overall environmental balance, for instance by linking local small-scale producers to the consumers in a more efficient way (such as the case of Voedselteams studied below). According to the EU study, the combined environmental sustainability and economic sustainability of these collective food buying groups is highest if they are situated close to the consumers (to improve efficiency of transport) and if they support the profitability of the local farm (by reducing distribution and packaging costs, by circumventing intermediaries thus allowing the producer to capture a larger portion of the sales value, etc.). At the present stage of our understanding, collective food buying groups and community supported agriculture therefore seem to be the most promising social innovations in current attempts to transition to sustainable food systems: they provide an economic niche that has proven to be attractive to a growing number of consumers, while allowing for experimentation and learning from new production, consumption and distribution patterns in a way that is relevant for other actors and initiatives within the food chain.

However, as long as the price of food shall not reflect the negative environmental externalities of conventional farming, the growth and further development of the collective food buying groups will continue to depend strongly on the voluntary contributions of citizens and consumers. Indeed, without the collective action practices of the consumers and citizens, which allow to circumvent some intermediaries, products from sustainable farming that are distributed through the short food chains would not be in a position to reasonably attractive as compared to the products from the conventional system. Some of the main reasons are that, in spite of the environmental benefits, the labour costs per unit of production in the sustainable farming systems remain generally higher (MacRae et al., 2007), and these systems are generally less able to achieve economies of scale (diversified farming systems that allow to use less external inputs can less easily be mechanized).

### 3. Combining a social enterprise and a social movement strategy for transition

The direct consumer-producer partnerships established through the collective food buying groups organize a broad variety of activities, some of which are of a not-for-profit nature (such as the voluntary contribution by the members to collection, distribution and sale; or the support for the development of the local food networks by umbrella organisations) and some of a for profit nature (such as the activities of the producers and small transport enterprises). This combination of not-for-profit and for profit activities nature can play a crucial role in achieving the economic sustainability of the local and regional food networks (Pinchot, 2014; Dunning, 2013). For instance, although the participation in local and regional food networks require some investment for the farmer related to on-farm processing and local distribution of the farm products, sustainable consumer-producer partnerships have shown to yield producer shares of the final price paid by the consumer that are 70 to 80 percent higher than what they would receive if they were selling through large retailers (King et al., 2011). At the same time, the consumers participating in the system also achieve significant cost savings, as shown by studies of organic produce distributed through local food buying groups (Cooley and Lass, 1998; Brumauld et Bolazzi, 2014).

Based on this combination of not-for profit and for profit activities, and an explicit objective of contributing to societal benefits, the sustainable consumer-producer partnerships share some

important features with social enterprises (Borzaga et al., 2001). Nevertheless, in spite of these important economic features, many scholars argue that it would be mistaken to consider the sustainable consumer-producer partnerships only through the lens of the non-profit service enterprise aspect (Connelly et al., 2011; Foodmeters, 2014). Indeed, as seen above, many alternative food networks see themselves as part of a broader social movement that strives to promote a transition towards low-input, low-carbon agri-food systems. They do so, however, not merely through protest or interest-based lobbying, but also by providing non-profit services that create alternatives to the mainstream marketing channels and thus make an original contribution to a strategy for social change. In particular, the networks seek to promote a transition not to one, reconstructed and improved food system, but to multiple alternative food networks, that are less trapped in the path dependencies that lock the mainstream food system into an unsustainable development trajectory.

This section aims to review some of the literature on the emergence of these so-called hybrid organisations – in between non-profit service enterprises and social movements – and discusses some of the challenges they face.

### 3.1 Social enterprise based transition movements

Scholars of socio-ecological transition have shown an increasing interest in the contributions of social enterprises to sustainable development (Seyfang and Smith, 2007; Johanisova, Crabtree, Frankova, 2013). In this context, they consider social enterprises not just as a possible tool for fixing social problems created by market failures, but in a broad sense as a social innovation that can provide an alternative organisational model to the prevailing economic system, that they see as unsustainable. More specifically, by accessing a series of non-market capitals (such as voluntary labour, affordable small loans, lower-than-market rent for premises, various sharing arrangements for the use of resources), social enterprises can provide an effective survival strategy for transition initiatives, which would otherwise not be able to survive in increasingly competitive markets focused on satisfying the short term expectations of shareholders.

In this broad sense, social enterprises can be defined as organisations involved at least to some extent in the market; with a clear social, cultural and/or environmental purpose; rooted in and serving primarily a community or members' group and ideally having a democratic ownership structure (one-member-one-vote rather than one-euro-one-vote) (Johanisova, Crabtree, Frankova, 2013, p. 11). As such, social enterprises are part of the so-called third sector (as it is labelled in the US literature) or the social economy (in the EU literature), which encompasses various forms of non-profit and not-only-for-profit organisations, while participating to some extent to market activities.

Sustainable consumer-producer partnerships illustrate the emerging role of social enterprises in the transition to more sustainable consumption and productions patterns. Indeed, although often not explicitly conceptualised as such, they provide various non-profit services to the local and regional food economy, based on the voluntary contributions of their members, while at the same time participating in market activities and sometimes generating a small income (such as a small percentage on the sale of the products) which is reinvested to further the objectives of the organisation. In many countries the partnerships are still at the level of small niche innovations, but in some countries they have grown to large and established organisations (cf. table 2.1 above),



which rely on many of the organisational forms of the social enterprises sector such as social cooperatives, community interest companies or voluntary associations.

This role of social enterprises in socio-ecological transitions is supported by the insights of scholars of transition theory, who show the importance of experimental niche innovations in so-called “protected” environments, where these innovations are not exposed to an increasingly globalized market competition (Grin, Rotmans and Schot, 2010: chapter 5 of part I). Such protected niches can provide the necessary space for a path breaking technology or a radical social innovation to evolve into a more mature form and eventually pollinate and inspire other transition actors.

The overly strong focus on the role of experimental niches has been criticised within transition theory, however. It seems to pay scant attention to the need for the broader political and regime to co-evolve with the innovative practice to overcome the lock-in in unsustainable development paths (Schot and Geels, 2008). Indeed, niches can only thrive if the political and legal regime opens up opportunities for societal change. At the same time, changes in the political and legal regimes depend also on broader socio-cultural changes. This is especially true in the context of agri-food systems, where transition theory has underlined the need to give a greater attention to the “demand” side of transition, such as the role of consumers’ and citizens’ initiatives (Grin et al., 2010, p. 331). In particular, the “supply” of niche innovations can only further develop if it is matched with a “demand” that comes from a long-term transformation of the social practices of the individual citizens and consumers (Spaargaren et al. 2012).

### 3.2 The challenge of co-evolution of the social enterprise niches and broader social transformation

The need to promote both experimental niches that can provide collective goods, without being fully exposed to the global market competition, and a broader reform of the legal and political regime, has led to the emergence of social enterprise organisations with a strong social transformation agenda. Indeed, the emergence of many social innovations for socio-ecological transition, such as energy cooperatives, community currencies, land trusts, urban gardens or the sustainable consumer-producer partnerships established by the collective food buying groups, has been fostered by the broader social movements of which these initiatives are part to various degrees. Notable amongst these are the Transition Towns movement in Northern Europe, the Città-slow movement in the South and the global organic farming movement (Kunze and Becker, 2015, p. 433).

Unlike the more restricted notion of community enterprises or local economies, these social enterprise based transition movements are not necessarily local or oriented in priority to a specific community. Rather, they combine innovative forms of non-state collective action to deliver collective goods and services (such as logistic support to sustainable food chains) with explicit aspirations for broader societal transformations (Kunze and Becker, 2015, p. 435). Even though some might not include among their explicit aims to contribute to change beyond their core activities at a micro-level, what is common between these movements is their commitment to develop alternatives to the existing (unsustainable) consumption and production practices (Seyfang and Smith, 2007, p. 592). Regime change can result from their activities in an indirect way, through their aggregate impact on the system (Church and Elster, 2002, p. 25), through their capacity to inspire social innovation of mainstream actors (Seyfang and Smith, 2007, p. 595), or through their ability to act as “norm entrepreneurs” transforming social norms (Sunstein 1996). Change can also result more

directly from their activities, through connecting with higher-level policies through umbrella organisations which aggregate and disseminate the lessons learned (Geels and Deuten, 2006). Therefore, even though these initiatives seek to bring about social change, this is not necessarily through protest or interest-based lobbying: their strategy for social change is to provide services, thus opening up new possibilities for collective action.

The emergence of the hybrid social enterprise/transition movement organisations give rise to a set of new research questions. Indeed, key issues such as the mobilisation of resources for their functioning and the mechanisms to enlist and commit members have hardly been assessed empirically in a systematic manner. One notable exception is the study of hybrids between non-profits and social movements for peace and reconciliation in South Africa (Hasenfeld and Gidron, 2005, p. 105-107). In this case, researchers have shown that members of hybrids typically gather around common social values, mobilize resources through accessing social networks and connecting with organisations that control important resources (including members, funds, legitimacy, and technical expertise) and build social capital by responding to the expressive and social identity needs of their members. The qualitative assessment of sustainable food chains in major EU city areas (Foodmeters, 2014) also highlighted the importance of these features, even though the “social capital” aspects appear to be less important in the case of the development of sustainable food chains (Berehm and Eisenhauer, 2008).

## 4. Data collection, empirical model and methodology

### 4.1 Survey of collective food buying groups

Between December 2014 and July 2015, we conducted field interviews across 104 collective food buying groups in selected regions throughout Belgium. The sample was built to have a broad diversity of urban and non-urban regions, including 3 large urban regions, 2 small-size urban regions and 2 non-urban regions. For each region, a number of food buying groups within a radius of 30 km were chosen to be able to explore potential network effects. Further, as illustrated in table 4.1., a broad variety of organisational types that are representative of the main categories of local and sustainable producer-consumer partnerships was chosen. The questionnaire checked for the viability of the organisations: all the organisations that were surveyed have an economically stable partnership relation with the producer, show a stable or growing membership and the main reason for leaving the group is house moving.

During the fields visit, a structured questionnaire was administered, containing 3 open questions and 28 closed questions with pre-defined multiple-choice options (cf. questionnaire in Annex C). With the exception of 4 interviews with the “Ruches”, and 4 interviews with the “GAC”, which were conducted by phone, all the interviews were done face to face and lasted between 45 minutes and 2 hours.

**Table 4.1.** Overview of the survey sample

	Brussels	Antwerp	Liège	Leuven	Ottignies-LLN	Non-urban (Limburg)	Non-urban (Walloon Region)	TOTAL
Number of interviews	14	15	17	21	12	6	14	104

	Key features	Number of interviews	Total number of organisations in Belgium
Voedselteams (Leuven, Antwerp, non-urban(Limburg))	System of weakly orders, strong umbrella organisation that provides support for software and identification of new producers (membership fee of 15 euro/year)	35	175 (octobre 2015)
GAC : Groupes d'achat collectif (Brussels, Ottignies-LLN, non-urban(Walloon Region))	System of weakly orders, lose federation	42	148 (including AMAP, oct 2015)
GASAP : Groupes d'achat solidaires de l'agriculture paysanne (Brussels)	System of solidarity contract with the farmer (usually 1 year contract), strong umbrella organization, no membership fee	10	74 (juin 2014)
CSA: Community-supported agriculture (Antwerp, Leuven)	System of solidarity contract with the farmer (usually 1 year contract), lose federation, members also contribute to harvesting	8	31 (octobre 2015)
Ruches : La ruche qui dit oui (Brussels, Ottignies-LLN, non-urban (Walloon Region))	System of weakly orders, strong umbrella organisation structured as a social enterprise (Entreprise Solidaire d'Utilité Sociale), 8,35% of the price paid by the consumer goes to the umbrella	7	53 (octobre 2015)
AMAP : Association pour le maintien de l'agriculture paysanne (Ottignies-LLN, non-urban (Walloon Region))	System of solidarity contract with the farmer (usually 1 year contract), lose federation, no membership fee	2	(included above)
TOTAL		104	481

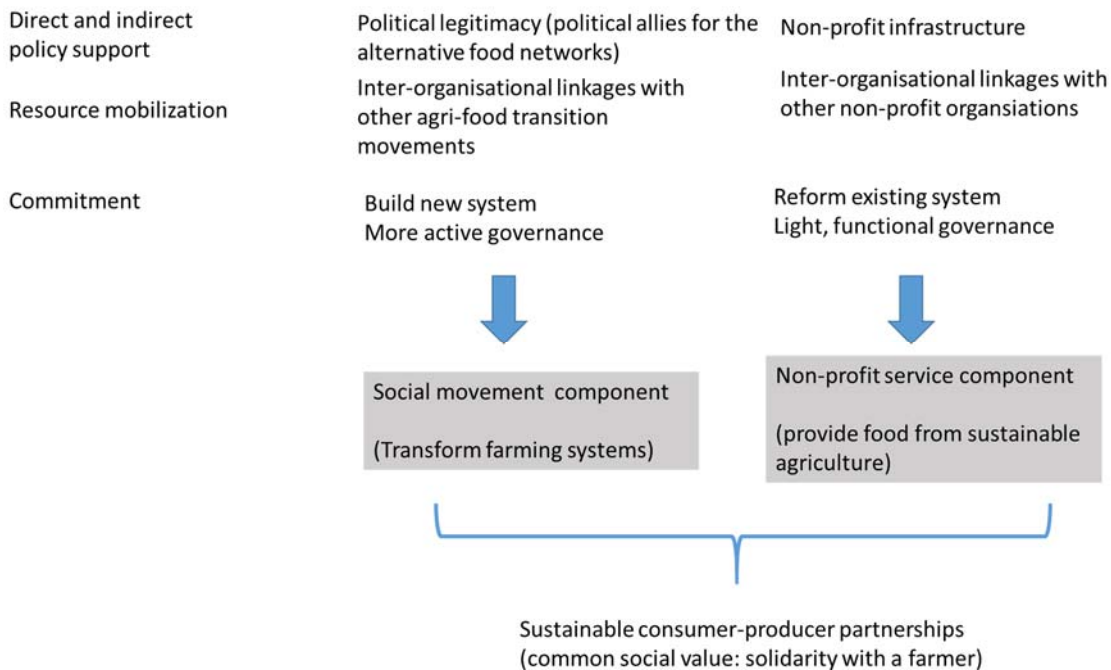
## 4.2 Specification of the hypothesis and empirical model

The key hypothesis of the paper is that the transition strategies of the alternative food networks is based on combining two components. As such the networks include both organisations that actively promote the goals of changing the agri-food systems (the social movement component, oriented towards the transition towards more sustainable farming systems) and organisations that have a more functional orientation, geared towards the provision of services (through the non-profit service component, oriented towards enlisting consumers in more sustainable consumption patterns). In the sample of collective food buying groups that was surveyed, the social movement component is represented by organisations that give higher priority to the transformation of the farming systems, while the non-profit service component is represented by organisations that give higher priority to providing tasty and healthy food from sustainable agriculture to the consumers. As shown in table 4.2. these two orientations are more or less equally represented in our research sample.

**Table 4.2.** Hybrid nature of the alternative food networks (table based on the answers on question 28, which offered to indicate what objective is the first priority of the group, amongst the three options described in the first column).

	Voedsel-teams	CSA	GASAP	GACs	Ruches	Amap
Total number in sample : 104	35	8	10	42	7	2
First priority/3: supporting the farmers that supply the FBG (q28a) (average: 41%)	31%	38%	60%	38%	71%	100%
First priority/3: providing tasty, healthy, sustainable and affordable food to the members of the FBG (q28b) (average: 52%)	63%	50%	30%	55%	29%	0%
First priority/3: creating a participatory dynamics around food for the FBG members (q28c) (average: 7%)	6%	12%	10%	7%	0%	0%

As discussed in section three above, scholars of non-state collective action highlight the key role of three conditions for the emergence of hybrid voluntary organisations: various forms of direct/indirect policy support, the mobilisation of non-market resources in support of their activities and the development of specific strategies to register and commit members. Although it is beyond the scope of this paper to analyse each of these three categories of explanatory variables in depth, a sufficient number of variables within each of these categories has been included in our analysis.



**Figure 4.1.** Sustainable consumer-producer partnerships as a hybrid social enterprise/social movement organisational form

Figure 4.1 schematically represents the explanatory variables that have been addressed in the survey to better understand the contrasting features of these two components. For the social movement component, both the variables related to supporting the transition by certain political elites and mobilisation of resources through linkages with other social movements that promote radical change are expected to be significant. Indeed, social movements are more likely to emerge when the political system is open to a diversity of social movements and when the organisations have access to some elite allies that support their cause. In the same time, support from other social

movements active in the field of the agri-food transition will be necessary to guarantee sufficient autonomy from an overly strong political interference, for example through enhancing their financial autonomy by kind sharing of resources with other organisations (in terms of sharing of staff, sharing of buildings, etc. ).

In contrast, the non-profit service enterprise component is more likely to depend on generic non-profit sector public infrastructure components, such as technical or administrative support for the development of the voluntary service activities related to the packaging, distribution and selling of the sustainable food products. Further, resources in support of these activities can be mobilised through networking in a pragmatic with a variety of environmental and social organisations that are not necessarily focused on the agri-food transition, but which reflect other societal concerns of consumer groups (such as educational associations, other social enterprises, fair trade etc.).

The two components of the alternative food networks are also likely to show contrasting features in relation to membership commitment. Although face to face contacts are likely to be important in both components, members' meetings and information on the activities are likely to be more actively promoted in the social movement component. This is in line with the social movements' literature, which highlights the importance of the building of common frames' amongst the members of the movement. In the non-profit service component, membership contacts are likely to be important as well, but probably more related to the organisation of the voluntary services by the food buying group.

To assess the role of these variables in the explanation of the specificities of these two components, two regression models were developed, based on the responses to the multiple choice options of the close-end structured questionnaire. The first regression model focuses on resource mobilisation and commitment, while the second model focuses on direct and indirect policy support.

More specifically the first model tests if giving priority to "Transforming farming systems" as compared to "Sustainable food distribution" in the overall organisations' mission is significantly correlated with (details on the exact definition of the variables is given in annex 1):

- Resource mobilisation
  - the use of shared buildings for food deposit from food transition related associations (variable: Resources food transition assoc)
  - the use of shared economic and knowledge resources from other environmental/social associations (variable: Resources other assoc),
  - self-organisation for technical advice on the functional activities (variable: Members consulted for practical advice)
  - Social networking with other, nearby, FBG's (variable: FBG social networking)
- Commitment
  - the organisation of convivial events (variable: Convivial events)
  - the distribution of a newsletter (variable: Newsletter)
  - social networking with transition towns, which have also a prominent social movement agenda for changing the agri-food system (variable: Netw transition towns)
- Control
  - My organization struggles against the existing food system (variable: Reform of the food system), as opposed to two other options presented in the questionnaire:

building a different food system (that is: creating alternatives to the mainstream marketing channels) and improving the existing food system.

The second model tests if giving priority to “Supporting the sustainable farming practices” as compared to “Supporting the local circuits” as the most important objective for building relationship to the farmers is significantly correlated with (details on the exact definition of the variables is given in annex 1):

- Support needed for the emergence/development of the alternative food networks
  - Political support for assigning higher priority to the FBG in the food system (variable: Political legitimacy)
  - Technical support in terms of software, logistic advise, etc. (variable: Technical support)
  - Political support by organising a specific administrative service (variable: Administrative service)
- Resource mobilisation
  - The use of shared economic and knowledge resources from food transition associations (variable: Resources food transition assoc),
  - Distribution of the organisational tasks for the functional activities amongst the members (variable: Members mobilised for functional activities)
  - Absence of social networking with other, nearby, FBG’s (variable: No FBG social networking)
- Control
  - My own FBG builds a different food system (variable: Building different food system)

Control variables pertaining to the influence of the location of the initiative in one of the 7 regions, the organisational types and the role of the interviewee (as a core manager in the Food Buying Group) were included in the analysis.

### 4.3 Data analysis method

The outcome variables can reasonably be represented by binary response variables (closed questions 28 and 29 of the questionnaire). We therefore estimated the correlations with the outcome variables through a binary probit model. We used an svy set to correct for the finite nature of the population (pw=481; fpc=104) The statistical software package stata 13.1 was used to perform the analysis. The original survey data will be made available online and can be retrieved through a search for the article title on the EU open access infrastructure for research data zenodo ([www.zenodo.org](http://www.zenodo.org)).

## 5. Governing local and sustainable producer-consumer partnerships

The following subsection first shortly presents the common features of the alternative food networks that emerge from the survey. We then present the regression analysis on the specific governance features of each of the two components of the hybrid social enterprise/social movement organisational form.

## 5.1 Common features of the hybrid social enterprise/social movement organisations

Sustainable consume producer partnerships combine the technological ability of easy manageable internet portals for managing food buying groups, with a social movement of solidarity with sustainable farmers and a democratising business model. As such these partnerships are expected to have a double specificity. First, they are expected to give a central role to the farmer in the social network that is built around the collective food buying group. Second, they should provide a variety of tools that favour a certain degree of participation in the decision making.

These two features are confirmed by the descriptive data of the survey. First, when inquiring into the most influential organisations for shaping beliefs of the Food Buying Group, the main supplier comes out systematically first for the vast majority of the FBG, far above other options such as local authorities, social organisations or other FBG's (cf. table 5.1). Second, the majority of the FBG's provide a General Assembly Meeting on a frequent basis (64,7 % of all the FBG), mailing lists (82,4 % of all the FBG's) and Convivial events amongst the members (64,7%), to foster participation and involvement of the members.

**Table 5.1.** The most influential organisations for shaping beliefs on agri-food transition highlighted by the coordinators of the Food Buying Groups (Q34 of the survey)

	No influence (%)	Influence (%)	Don't know or n/a (%)	Total respondents
the first closest FBG to yours (Mention the name in the box below)	36	45	16	97
the second closest FBG to yours (Mention the name in the box below)	32	36	29	97
your main supplier	7	92	1	100
Local groceries, cooperatives and local market	49	46	4	99
supermarkets	84	13	0	97
local authorities	76	22	1	99
national or regional governments	81	15	1	97
EU level governments	81	14	2	97
social organisations: mutual insurance organisation, medical centre, municipal social services	72	13	12	97

## 5.2 Governance features of the two components of the social enterprise based transition movement

### 5.2.1 Presentation of the results

Table 5.2 and 5.3 show the results of the two regression models. Table 5.2 presents the correlations with key governance features of the food buying groups, related to resource mobilisation and commitment, while table 5.3. presents the correlations with key governance features related to resource mobilisation and policy support.

**Table 5.2. Results of the probit estimations on governance features related to resource mobilization and commitment (technical specification of the variables and descriptive statistics in annex 1).**

		Dependent variables					
		M1: Transform Farming Systems FBG's Priority Objective (in general)			M2 : Sustainable Food Distribution FBG' Priority Objective (in general)		
Independent variables							
		Signif	Coef.	St.err.	Signif.	Coef.	St.err.
Resource mobilisation	Resources food transition assoc	(+)**	1.8844	0.3994	(-)**	- 1.6642	0.4155
	Resources other assoc	(-)**	- 0.7214	0.2707	(+)**	0.5401	0.2670
	Members consulted for practical advice	(-)*	- 0.5513	0.2782	(+)**	0.9238	0.2829
	FBG social networking	(+)*	0,4780	0.2543	(-)	- 0.4197	0.2563
Commitment	Convivial events	(+)**	0,5508	0.2716	(-)	- 0.2864	0.2629
	Newsletter	(+)**	0.6362	0.3032	(-)*	- 0.5095	0.2942
	Netw transition towns	(+)*	0.5139	0.2659	(-)**	- 0.5743	0.2630
Control variable							
	My own FBG struggles against the existing food system	(-)**	- 1,6099	0.5457	(+)**	1.4549	0.4748
				Prob > F = 0.0000		Prob > F = 0.0001	

**Table 5.3. Results of the probit estimations of governance features related to resource mobilization and policy support (technical specification of the variables and descriptive statistics in annex 1).**

		Dependent variables					
		M3 : Support sustainable farming practices priority objective (in the building of relations with the farmers)			M4: Supporting the local circuits priority objective (in building of relations with the farmers)		
Independent variables							
		Signif.	Coef.	St.err.	Signif.	Coef.	St.err.
Resource mobilisation	Resources food transition assoc	(+)**	0.6103	0.2580	(-)	- 0.4108	0.2612
	Members mobilised for functional activities	(-)**	- 1.0580	0.3332	(+)**	0.6294	0.2882
	No FBG social networking	(-)**	- 0.9322	0.2704	(+)**	0.6249	0.2550
Policy support needed for the emergence/development	Political legitimacy	(+)**	0.9854	0.3616	(-)**	- 0.7656	0.3648
	Technical support	(+)	0.3257	0.2759	(+)	0.3516	0.2510
	Administrative service	(-)**	- 0.5975	0.2945	(+)**	0.6053	0.2697
Control variable							
	My own FBG builds a different food system	(+)**	1.1392	0.3800	(-)	- 0.3772	0.3045
				Prob > F = 0.0001		Prob > F = 0.0011	

Significant at 10 % level (\*), 5 % level (\*\*), at 1 % level (\*\*\*)

### 5.2.2. Discussion of the regression results

We first discuss the variables that are at least significant at the 1% level in one of the four models. In the second section we then discuss the variables that are significant at the 5% level in one the four models.



*(a) Most significant variables at 1% level in at least one of the regressions*

The general outcome of the survey confirms the difference in governance features of the social movement component and the social enterprise component of the alternative food networks. The most significant difference lies in the way resources are mobilized from other organisations. The use of buildings (meeting rooms, deposit space, etc.) from food transition related associations that are made available through sharing arrangements (variable “Resources food transition assoc”) is positively correlated with the social movement component. Along the same line, the absence of social network with other Food Buying Groups (variable “No FBG social networking”) is negatively correlated with the social movement component. These results are consistent with the theoretical models reviewed above which highlight the importance of inter-organisational networking within the social movement as a key element of autonomous resource mobilisation in favour of radical transformation of the production system. On the other hand, the variable “Resources other associations” is significantly correlated with the non-profit service component. No significant difference between the two components is observed in relation to the other organisations that are strongly involved in the sharing of resources in the local food networks, but which are unrelated to the social movement component (such as sharing of resources with local authorities or local groceries).

A second set of features with highly significant correlations are related to the organisation of the non-profit service component. Both the variable related to the requesting of advice to the own members (“Members consulted for practical advice”) and the variable related to the distribution of general organisational tasks (accounting, invitation for the meetings, organisation of the collection point, etc.) amongst the members (variable “Members mobilised for functional activities”) are positively correlated with the non-profit service provision component. The latter reflects the light, functional governance system that characterizes the service provision component of the Food Buying Groups.

The two regression models also show significant differences concerning needed policy support (as formulated by the organisations’ coordinators) and enabling governance features that stimulate members’ commitment to the organisation. The variable “Political legitimacy” is positively correlated to the social movement component. This variable indicates that respondents highlighted policy support in terms of assigning “higher priority to Food Buying Groups within the food system” as the most important kind of support, as compared to five other options that were proposed to the interviewee (which were respectively related to financial, administrative, technical, legal and information sharing/political lobbying support). Interestingly, this variable fits well with the general nature of the hybrid organisations, which strives to change the legal and political food-regime through the development of innovative niche activities, instead of the more conventional lobbying and advocacy channels.

Finally, the survey also “controlled” for the general orientation of the organisation in relation to the food system, by proposing three options: gradual improvement, internal reform or building a different system. In the overall sample 79% of the respondents indicated that they consider that their Food Buying Group is “building a different system”, in line with the overall strategy of the collective food buying groups of creating alternatives to the mainstream system. Only 12% of the overall sample indicated that they consider that their group struggles against the existing food system (13 respondents, 11 of these belonging to the non-profit component). As might be expected

the social movement component is correlated with the building of a different system, while the non-profit service component is correlated with the group of respondents striving for internal reform. The latter might be related to the fact that organisations with a more explicit non-profit service provision orientation are more directly concerned by removing obstacles created by the existing system for the expansion of their service activities (for example by making sustainable farming products comparatively more competitive).

*(b) Most significant variables at the 5% level in at least one of the regressions*

Organizing a specific administrative service with councillors/researchers/advisers by the government is highlighted as a highly needed form of governance support by the respondents of the non-profit service component. This is consistent with the need for general non-profit infrastructures as highlighted in the literature.

In terms of commitment, the social movement component is correlated with the organisation of activities with transition town movements (which belong to the network of transition towns initiated by Rob Hopkins). This allows to contribute to building shared values amongst the members, in relation to the transition agenda of the transition towns, which is highlighted as an important element of successful building of social movements in the literature. Along the same lines, the organisation of convivial events and the distribution of a newsletter is also correlated with the social movement component.

Finally, the results on the variable “Resources food transition assoc” are consistent with the results discussed above for the variables that are significant at the 1% level.

## 6. General discussion: options for broadening the toolbox of public policy for agri-food transition

Two major challenges for the development of so-called alternative food networks were discussed in this article. First, the networks are confronted to the need to find mechanisms to increase the local and regional “supply” of sustainable farm products, through supporting farmers in low-input, agro-ecological or organic farming systems or through supporting farmers to converting to such systems. Second, the multiplication of partnerships with sustainable producers and food processors depends on the growth of the “demand” for such partnerships, which in turn depends on the enlargement of these networks beyond the core group of highly motivated and involved consumers.

As shown in this article, organizational networks of collective food buying groups address this twin challenge by a hybridisation of a social movement component, focused on the transformation of the farming systems, and a social enterprise component, focusing on non-profit services (such as collection and distribution) for provision of quality foods. More specifically, each food buying group includes members from within each component, even if each organisation will put a higher accent overall on one or the other dimension as shown through the survey. In addition, each of the categories of organisational networks that have been studied (cf. table 4.2 above) include collective food buying groups of both types.

The hybrid social movement/social enterprise nature of the collective food buying groups and other transition initiatives provides some indications for broadening the public policy toolbox in support of

sustainability transitions in the agri-food system. In general, scholars of non-state collective action have shown the important role of support to network bridging organisation in the context of collaborative social networks amongst private not-for-profit and public sector actors (such as regional platforms, umbrella organisations or knowledge hubs) (Berkes, 2009; Dedeurwaerdere, 2015). These organisations fulfil various roles that are key to the building of the cooperative action amongst the various social actors that drive the transition initiatives.

The results of the analysis in this paper points to two important categories of tasks for such network bridging organisations in the case of alternative food networks. First, as can be seen from the survey, various governance means are specifically needed for developing the social enterprise component. Many local and regional food networks still suffer from inefficient distribution channels, lack of administrative support and poor infrastructure. Umbrella organisations, supported both by public authorities and members' fees, can step in to overcome some of these insufficiencies. For example, in one of the cases analysed in this paper, the case of Voedselteams vzw (cf. table 4.2), a strong umbrella organisation supports the local groups with the search for nearby producers. This kind of support (the search for local producers) is strongly correlated in the survey with the confidence expressed by the local food buying groups in the umbrella organisations (respectively questions 17 and 27 of the survey). In another prominent example, the case of the Seikatsu Club, the umbrella organisation coordinates the consumer demand for products other than fruits and vegetables and organizes the transport of these products from the producers to the collective food buying groups in the most efficient manner ([Seikatsuclub.coop/about/english.html](http://Seikatsuclub.coop/about/english.html)).

A second category of tasks that can be related to the outcomes of this research is the support for network activities related to collaboration amongst the food buying groups and other associations as part of the social movement component. In contrast to the more conventional supporting activities in terms of exchange of best practices, administrative support and legal advice, this collaborative aspect is often less straightforward. Indeed successful collaboration in networks of non-state collective actors depends on "process" dimensions such as non-coercive discussion and inclusiveness of participation (Innes and Booher, 2003). An interesting example of a network bridging organisation operating along these lines is the "Endogenous Regional Development" program supported by the Regional authorities in Austria (Petrovics et al. 2010). This program is explicitly geared towards supporting social enterprises for regional sustainability transitions, but also includes an important aspect of regional and supra-regional dialogue between the initiatives. Another example is the role of the "Grand projet Rhône-Alpes" in the Val de Drôme in the South of France, where support for non-profit and for profit enterprises involved in ecological activities was combined with a collaborative networking of all the actors in a specific territory (Lamine et al., 2014). In the case study area that was the focus of this paper, potential network organisations that operate along these lines are the "Ceinture alimentaire Liégeoise" ([www.catl.be](http://www.catl.be)) and the forum "Gent en Garde" (<https://gentengarde.stad.gent>). However, further research is needed to document the effects of these organisations on the development of the local food networks and to better understand the various governance and complex "process" management needs of the collaborative tools established in such larger-scale transition experiments.

## 7. Conclusion

This paper analysed the contribution of hybrid organisational strategies, based on synergies between social enterprise and social movement missions, with the view to fostering transition towards more sustainable agri-food systems. As shown in the literature on transition, in the current situation where the negative environmental externalities of conventional farming are not reflected in the food price, transition initiatives depend on the building of protective innovation niches, where initiatives are not yet fully exposed to the market pressure so that they can evolve towards a mature stage. In the same time these alternative food networks provide non-profit services that create multiple alternatives to the mainstream marketing channels and thus make an original contribution to a strategy for social change. The main contribution of this paper is therefore to contribute to the development of the “demand side” of transition theories, by focusing on hybrid non-profit organizations that are built on networks of producers, consumers and social movements.

To analyse such hybrid organisational strategies, the paper analysed a survey with a structured questionnaire administered through face to face interviews to 104 collective food buying groups in Belgium. The main finding of the paper is the possibility to combine the governance needs of the social movement component and the non-profit service component. In addition, the survey results clearly indicate that the hybridisation of these two components is not specific to one type of consumer-producer partnership, but has been found across a broad variety of organisational types.

While the study needs to be further substantiated through additional comparative research on other actors in the agri-food systems, such as related to retail, whole sale or food processing, the analysis provides strong evidence for the existence of successful hybrid transition initiatives, which can be supported by a diverse set of network bridging organisations (such as regional platforms, umbrella organisations or knowledge hubs). These possible roles of these network bridging organisations cover support for network activities related to collaboration amongst various social enterprise based transition initiatives, in addition to the more conventional supporting activities in terms of exchange of best practices, administrative support and legal advice. Nevertheless, it is unlikely that such support will be covered by one single kind of tool or policy mechanism. Therefore, the overall goal of the analysis is to stimulate reflexion on the appropriate combination of various mechanisms in supporting the transition of agri-food systems analysed in this paper.

### **Author contributions**

The text was written by Tom Dedeurwaerdere, Olivier De Schutter, Marek Hudon and Erik Mathijs. Tom Dedeurwaerdere conducted the statistical analysis. The other authors selected the cases, contributed to the design of the survey protocol through a series of common field-work design workshops and conducted the interviews. All authors endorsed the presentation and interpretation of the field work data and approved the final manuscript.

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## Appendix A. Supplementary content

The following are the electronic supplementary content to this article:

Annex 1: Definition of the variables and descriptive statistics

Annex 2: Correlation matrix amongst the independent variables

Annex 3: Questions of the close-ended questionnaire

Annex 4: Graphs of the aggregated survey results

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## Annex 1: Definition of the variables and descriptive statistics

First probit estimation model (n = 104)

DEPENDENT VARIABLES		mean	Std. Dev.	Min-max	Survey question
Transform Farming Systems FBG's Priority Objective (in general)	=1 if the following option is ranked first priority for the FBG's objectives: Support the farmers that supply the FBG (local economy, small-scale farming, sustainable farming practices) = 0 if this option is ranked 2 <sup>nd</sup> or 3 <sup>rd</sup> (amongst 3 options)	0.41	0.49	0-1	28
Sustainable Food Distribution FBG' Priority Objective (in general)	=1 if the following option is ranked first priority for the FBG's objectives: Provide tasty healthy, sustainable and affordable food to the members of the FBG (good taste, no pesticides, affordable prices, neglected vegetables) = 0 if this option is ranked 2 <sup>nd</sup> or 3 <sup>rd</sup> (amongst 3 options)	0.52	0.52	0-1	28
<b>INDEPENDENT VARIABLES (alphabetic order)</b>					
Convivial events Q26a_10	=1 if "Meals and Convivial" events are indicated as one of the tools that the FBG uses/provides, amongst a list of 18 proposed tools = 0 if it is not indicated	0.63	0.48	0-1	26
Members consulted for practical advice q37e_123	= 1 if the option "your organization organizes itself to seek for advices by requesting its own members" is indicated amongst one of the 3 most relevant ways to organise support to the development or improvement of the food buying group (out of a list of 5 options) = 0 if it is not selected	0.63	0.48	0-1	37
Netw transition towns qtrall	= 1 if transition towns are mentioned spontaneously in one of the "open answers" as an organisation that is trusted/influences beliefs and/or in which activities they participate = 0 otherwise	0.39	0.49	0-1	9, 19, 27, 34
Newsletter Q26a_2	=1 if "Newsletter" is indicated as one of the tools that the FBG uses/provides, amongst a list of 18 proposed tools = 0 if it is not indicated	0.22	0.42	0-1	26
Resources food transition assoc q15c6_1	= 1 if buildings (meeting rooms, deposit space, etc.) that are made available through a sharing arrangements are used from food transition related associations = 0 if this is not the case	0.06	0.03	0-1	15
Resources other assoc q15a8_b8_c~8	= 1 if one of the listed resources (software, list of suppliers, buildings, common delivery, volunteer time, meals/recipes) are used which are made available through a sharing arrangement with other associations (not food related associations: environmental / social) = 0 if this is not the case	0.49	0.50	0-1	15
FBG social networking q34ab_2	= 1 if the first/second closest Food Buying Group is indicated as being most influential in shaping beliefs on your own Food Buying Group = 0 if it is not indicated as most influential	0.45	0.50	0-1	34
<b>CONTROL</b>					
Reform of the food system q33_2	= 1 if you consider that your own Food Buying Group "struggles against the food system" = 0 if you consider that your own Food Buying Group "improves the existing food system" or "builds a different food system"	0.13	0.33	0-1	33



Second probit estimation model (n = 104)

DEPENDENT VARIABLES		mean	Std.D ev.	Min Max	Survey question
Support sustainable farming practices FBG's priority objective (in the relation with the farmers)	= 1 if the following is ranked first priority, as FBG's objective concerning support to the farmers: Support sustainable farming practices	0.41	0.49	0-1	29
Supporting the local circuits FBG's priority objective (in the relation with the farmers)	=1 if the following is ranked first priority, as FBG's objective concerning support to the farmers: Supporting the local circuits =0 if	0.40	0.49	0-1	29
<b>INDEPENDENT VARIABLES (alphabetic order)</b>					
Administrative service q37a_12	= 1 if the option "the government organizes a specific administrative service with councillors/researchers/advisers" is indicated amongst one of the 2 most relevant ways to organise support to the development or improvement of the food buying group (out of a list of 5 options) = 0 if it is not selected or selected as the 3 <sup>rd</sup> most relevant only	0.28	0.46	0-1	37
Members mobilised for functional activities q22a_1	= 1 if the general organisation tasks (accounting, invitation for the meetings, organisation of the collection point, etc.) is distributed amongst the members (more than 5) = 0 if it is done by a single person or a small coordinating group (between 2 and 5)	0.18	0.39	0-1	22
No FBG social networking q34b_1	= 1 if the first/second closest Food Buying Group is indicated as having no influence on shaping beliefs on your own Food Buying Group = 0 if it is indicated as influential / not applicable	0.31	0.46	0-1	34
Political legitimacy q36f_4	= 1 if political support (assigning higher priority to Food Buying Groups within the food system) is indicated as most importantly needed to develop or improve activities = 0 if it is indicated as not needed , mildly needed or needed	0.13	0.34	0-1	36
Resources food transition assoc q15a6_b6_c~6	= 1 if one of the listed resources (software, list of suppliers, buildings, common delivery, volunteer time, meals/recipes) are used which are made available through a sharing arrangement with food related associations = 0 if this is not the case	0.34	0.47	0-1	15
Technical support q36c_34	= 1 if technical support (software, logistic advises, information on new suppliers, stockroom, tools to improve the inclusiveness or the efficiency of the Food Buying Group) is indicated as needed or most importantly needed to develop or improve activities = 0 if it is indicated as not needed or only mildly needed	0.36	0.48	0-1	36
<b>CONTROL</b>					

Building different food system q33_3	<p>= 1 if you consider that your own Food Buying Group "builds a different food system"</p> <p>= 0 if you consider that your own Food Buying Group "improves the existing food system" or "struggles against the food system"</p>	0.79	0.40	0-1	33
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## Annex 2: Correlation matrix amongst the independent variables

Correlation matrices for the probit estimations on governance features related to resource mobilization and commitment (first model)

	Resources food transition	Resources other assoc	Reform of the food system	FBG social networki	Members consulted for practical	Convivial events	Newsletter	Netw transition towns
Resources food transition assoc	1							
Resources other assoc	-0.0777	1						
Reform of the food system	0.0312	0.0945	1					
FBG social networki	-0.0590	0.0754	0.0657	1				
Members consulted for practical advice	0.0934	0.1477	-0.0917	0.0109	1			
Convivial events	0.1021	0.0253	0.0453	-0.1134	-0.0904	1		
Newsletter	-0.0325	-0.0593	-0.0613	0.0282	-0.0993	-0.0287	1	
Netw transition towns	0.0587	0.2129	0.0000	0.0764	0.0352	0.1484	0.0073	1

Correlation matrices for the probit estimations on governance features related to resource mobilization and policy support (second model)

	Resources food transition assoc	Members mobilised for	Building different food system	No FBG social networking	Administrative service	Technical support	Political legitimacy
Resources food transition assoc	1						
Members mobilised for functional activities	0.1372	1					
Building different food system	0.0894	0.0413	1				
No FBG social networking	-0.0780	-0.0456	-0.0447	1			
Administrative service	-0.1840	-0.1363	-0.0663	0.0354	1		
Technical support	-0.1467	0.0125	-0.1470	0.1138	0.1918	1	
Political legitimacy	-0.1020	-0.1136	0.0495	-0.0188	0.2463	-0.0577	1