

Building agroecology with people. Challenges of participatory methods to deepen on the agroecological transition in different contexts

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Introduction

Agroecology was formulated from a transformative epistemological standpoint that proposes to do “science with people” (Guzmán *et al.*, 2000; Francis *et al.*, 2003; Cuéllar-Padilla and Calle, 2011; Levidow *et al.*, 2014). Numerous publications propound Participatory Action
5 Research as a way of generating knowledge useful to local communities and to transformative food movements, all under the umbrella of sustainability (among others, Holt-Giménez and Shattuck, 2011; Cuéllar-Padilla and Calle, 2011; Putnam *et al.*, 2014; Méndez *et al.*, 2017; López-García *et al.*, 2018; Calvet-Mir *et al.*, 2018). This approach also targets ethical issues, in line with an effort to dissolve the power structures created around scientific
10 knowledge and its monopoly over the production of “truth” (Harding, 1991; Fricker, 2007; Kindon *et al.*, 2007; Bacon *et al.*, 2013; Levidow *et al.*, 2014).

The so called agroecological transition is embedded in this conceptual framework (Lamine, 2011; Calle *et al.*, 2013; Duru, 2015; Darnhofer, 2014; Méndez *et al.*, 2016; López-García *et al.* 2018). The components of social change and transformation of reality are transversal to
15 this approach (Cuéllar-Padilla and Calle, 2011), often navigating within a vague space between research and action (Cuéllar-Padilla and Calle, 2011; Guzmán *et al.*, 2013; Méndez *et al.*, 2016; López-García *et al.*, 2018).

The epistemological justification for participatory science have gained a wide consensus, and its epistemological and methodological bases applied to agroecology have been profusely
20 discussed in theoretical terms (Guzmán *et al.*, 2000; Cerf, 2011; Méndez *et al.*, 2016). In the past three decades emerged still broadly used methodological approaches such as Participatory Action-Research (PAR) or Participatory Rural Appraisal (PRA). Both approaches lie on the epistemological and methodological principles of Popular Education, as approaches to build up community empowerment through (collective) action-reflection
25 processes (Freire 1975, Patton 2017). The former is a research methodology that combines theory, action and participation committed to further the interests of exploited groups and classes through a series of techniques to combine knowledge and power analysis (Fals-Borda 1987). The latter is a family of (participatory) approaches for (sustainable) rural development and methodes to enhance rural communities to share, improve and analyze the
30 knowledge of their livelihoods, and through it planning and developing self-determined actions (Chambers 1994).

The agroecological scientific literature based on empirical data on the agroecological transition is scarce (Guzmán et al., 2013; Méndez et al., 2017), and has been mostly applied at farm-scale. Recent debates on agroecological transitions and scaling agroecology (among
35 others: Gliessman, 2016; Mier et al., 2018; Ferguson et al., 2019), have raised the scale of agroecological analysis to the food system. Meanwhile, both rural subjects and the features and logics of the (corporate) food regime which shapes their context have undergone great transformations in last decades (Borras, 2009; McMichael, 2014; Bernstein, 2017). So new elements of complexity on the conception of agroecological transitions and the participatory
40 methods to support them are introduced. Thus, a more complex and renovated approach to agroecological, participatory research is needed (Ollivier et al. 2018; Magda et al. 2019).

With this article we intend to contribute to these challenges. To do so, we have compared eight case studies of participatory research in agroecology in six different countries of Europe and Latin America. Based on the analyses carried out, we aim to discuss the main learnings
45 and challenges that emerge in the development of agroecological transitions through participatory methodologies considering different scales, contexts and stakeholders involved.

Participatory Research in agroecological transition

With the emergence of the Food Sovereignty paradigm in the 1990s, the politico-cultural proposals of agroecology took on special importance (Holt-Gimenez and Shattuck, 2011;
50 Cuéllar-Padilla et al., 2013; McMichael, 2016; Rosset and Altieri, 2017). The issue of power and decision-making in relation to agri-food systems, explicitly denounced by the Food Sovereignty paradigm, found interesting answers in agroecology and in the experience it had thus far accumulated (Cuéllar-Padilla and Sevilla, 2013; Rivera-Ferré, 2018), specially addressed through Participatory-Action Research (PAR) (Méndez et al., 2016), and built on
55 early criticisms of rural extension (Freire, 1969, 1975), and some relevant methodological approaches for sustainable, participatory rural extension, namely Participatory Action-Research (Fals-Borda and Rahman, 1991), Participatory Rural Appraisal (Chambers, 1994), and c) Farmers' Participatory Research (Farrington and Martin, 1988).

The need for adequate methodological approaches related to power issues has been
60 stressed in recent scientific debates on the "scaling up", the "massification" or the "institutionalization" of agroecology (González de Molina, 2013; Parmentier, 2014; Giraldo and Rosset, 2017; Mier *et al.*, 2018; Rivera-Ferré, 2018). The role of the state on agroecological transitions and the institutionalisation of agroecology (Sanderson and Ioris, 2017; González de Molina et al., 2019) is questioned, and the protagonism of peasant and
65 food movements is found at stake, needing to be ensured (Giraldo and Rosset, 2017; Giraldo

and McCune, 2019) and often constructed (López-García et al., 2018; López-García et al., 2019). And not only the state. The transformations given in the condition and features of peasantry worldwide, the wide expansion of rural poverty and hunger, and the complexation of the global food chain under the Corporate Food Regime (Borras, 2009; Bernstein, 2010, 70 2017; McMichael, 2016) has originated a diversification of the subjects of the agroecological transitions (López-García et al., 2019), articulating wide alliances among urban and rural stakeholders (Holt-Giménez and Shattuck, 2011; Giraldo and McCune, 2019; González de Molina et al., 2019; López-García and González de Molina, 2020), and also new negotiation arenas.

75 So complex approaches to sustainability, taking into consideration the food system scale, are required. In recent years, a wider diversity of issues for PAR processes applied to agroecology have entered into the English scientific literature, raising the territorial scale, social, economic and political issues, as well as the collective dimension of agroecological transition, embedded more or less explicitly in the Spanish and Portuguese scientific 80 agroecological literature that since the early 90 was already incorporating such complexity (Hecht, 1995; Costa Gomes, 2005; Caporal and Costabeber, 2006; Sevilla, 2006; Prévost, 2019; Cuéllar-Padilla and Sevilla, 2019). Researches on Participatory Guarantee Systems (Cuéllar-Padilla and Calle, 2011); short food supply chains and local logistics networks development (Guzmán et al., 2013; Bacon et al., 2014; Moragues-Faus et al., 2015; Méndez 85 et al., 2017); the construction of farmers' and community organisations (Daniel, 2011; Bacon et al., 2013); gender inequality (Bezner-Kerr et al. 2018); or urban food policies (López-García et al., 2019) have incorporated such diversity and complexity of issues. This trend appears to be related, also, to a bigger amount of research in Global North territories, and to the emergence of the so-called 'urban agroecology' (Tornaghi and Dehaene, 2019; López- 90 García and González de Molina, 2020).

Networks have been highlighted as a major lever within socio-technical transitions, specially regarding to the dissemination of socio-technical innovations (Elzen et al., 2012; Bui et al., 2016; Magrini et al., 2019). The research on such issue have shown a weak theoretical framework on socio-technical transitions (see e.g. Wezel et al., 2015; Muru et al., 2015; 95 Méndez et al., 2016), which hinder its development (Sanderson and Ioris, 2017). Multi-Level Perspective (as, for instance, Levidow et al., 2013; Elzen et al., 2018; Magrini et al., 2019) has been noted as an appropriate strategy to understand and promote the upscaling of local agroecological transition processes to regional or higher levels, and to provide an appropriate theoretical framework for the transition (Levidow et al, 2014; Sanderson and 100 Ioris, 2017). But, such an approach doesn't provide the technical basis to work and activate

real world processes with people. A combination of Multi-Level Perspective and Participatory Action-Research has been proposed as adequate for it (Ollivier et al., 2018; López-García et al., 2018) but has not been further developed.

105 The complexation of such an operational approach to agroecological transitions raises the question of the participatory methodological approaches to be developed: what key elements and characteristics should these methodologies contain? What methodological challenges do we face, given the diversity of stakeholders and contexts in which agroecological transitions are taking place?

Methodology

110 This article emerged as a result of the comparative analysis of eight case studies that were presented and discussed in the Working Group on “Participatory and activist research”, at the VII International Congress of Agroecology, held in Córdoba, Spain, in May 2018.

A broad call for contributions was developed that ended in the selection of 16 papers to be presented and discussed in the working group. Authors were asked to systematize their case studies following the same schema: the theoretical framework that inspired their research; a description of the steps followed in the participatory methodology developed and the timeframe; the main results of the process and the main conclusions. Once the articles were received by the coordinating team, and discussed during the working group in the Congress, 115 8 of the cases were selected (see table 1).

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Project	PAR stages	Territorial context	Participants
Participative Construction of the Valladolid Food Strategy, Valladolid	a) Preliminary stage b) Participatory diagnosis and planning c) Implementation	Municipality Spain	Civil society organizations and organic farmers at the provincial level
Local Agroecological Dynamization in the Collserola Natural Park, Barcelona	a) Preliminary stage b) Participatory diagnosis and planning c) Implementation d) Evaluation	6 municipalities, Spain	Agricultural holdings within the Natural Park, civil society of 6 municipalities with land within the Park
Agroecology and PAR with Small-scale Coffee Producers, Tacuba	a) Preliminary stage b) Participatory diagnosis and planning c) Implementation d) Evaluation e) New cycle	1 municipality, El Salvador	3 coffee growers' cooperatives

Production and Exchange of Participatory Knowledge by the Community Agroecology Network, San Ramón	a) Preliminary stage b) Participatory diagnosis and planning c) Implementation d) Evaluation e) New cycle	1 municipality, Nicaragua	234 families and 12 communities of organic coffee growers a NGO
Participatory Construction of Research Projects at the Agroforestry Research Centre, Portal da Amazônia	b) Participatory diagnosis and planning c) Implementation d)Evaluation	16 municipalities, Brazil	About 1,200 families with structured agroforestry systems (2,800 ha)
Building Farmer Protagonism in the Creation of a Farmers' Market, Goiás	a) Preliminary stage b) Participatory diagnosis and planning c) Implementation d)Evaluation	1 municipality, Brazil	Small agroecological producers in a settlement from the Agrarian Reform
Promotion of a Multi-stakeholder Network on Strategic Planning for the Agroecological Transition at the City-Region Scale, Brussels Region	a) Preliminary stage b) Participatory diagnosis and planning	A metropolitan region, Belgium	Local social and economic stakeholders involved in setting up alternative food networks
Promotion of Networks of Production and Consumption of Organic and Local Food, Defining "Agroecologically Based Farmer Products", Santiago de Chile	a) Preliminary stage b) Participatory diagnosis and planning c) Implementation d)Evaluation	AMetropolitan Region, Chile	Networks of farmers and consumers of organic and local food

Table 1. Profile of the eight cases studies analysed.

The cases were selected taking into account, on the one hand, that they all involved PAR processes that promoted the agroecological transition. The case studies reflect at least two main phases between the five identified that are followed in participatory processes of knowledge building:

- a. *preliminary stage*, consisting in different actions, such as: development of the pre-diagnosis, initial negotiation, concretization of resources and timeframe, relationships building, identification and involent of potentially interested actors, definition of the common goal, definition of governance structures and bodies of the process, between others. Just in one case this phase is not included, which correspond to the case that has been developed for a longer period of time. So the preliminary stage can be

diluted in long term processes as relations with local subjects and diagnosis are already developed.

- 135 b. *first phase* corresponds to the participatory diagnosis of the situation and the further identification of the common goals related to the process. In this phase, the cases also include the identification and design of the actions to be developed and the elaboration of a strategic planning. Feed back activities start taking place, as well as iterative moments to keep evaluating the advances.
- 140 c. *second phase* corresponds to the implementation of the established action plan. All the cases that developed this stage present activities related to orientate the development of the actions and give support, to reflect about them and the results, and to supervise the changes and new needs.
- d. Third stage corresponds to a specific moment to evaluate and supervise all the results and design, develop iterations of selected actions and to discuss collectively about learnings and following steps.
- 145 e. New cycle: two of the cases, longstanding, had initiated a second cycle of PAR, implementing the results of the first cycle. In such situations nor preliminary stage neither diagnosis were necessary, and they began working based on a renovated
- 150 Action Plan.

On the other hand, they were selected as they represented a diversity in the following variables: a. scales (municipality, province and region); and b. geographical contexts (Spain-urban and periurban; Belgium-urban and periurban; Matto Grosso and Amazonia in Brazil-rural; Nicaragua-rural; El Salvador-rural; and Chile-urban and periurban). These criteria were established after the discussions regarding to the research questions within the work group of the VIII International Congress on Agroecology (Cordoba, Spain, 2018), in which most of the authors of the paper were included. Once the selection was done, the variables and codex for comparative analytical purposes were designed in order to develop the comparison

160 between the case studies. They were drawn after an inductive process, following the information given in the different cases (see table 2).

Variables	Results of relevance to “participant” groups	Research team learnings	Subjects involved
Codex	1. Public policies 2. New food supply chains	1. About the contexts 2. About the process and	1. Research teams 2. Peasant communities

	3. Social articulation	methodological design	and family farmers
	4. Logistics infrastructures and knowledge	3. About stakeholders involvement and participation	3. Organic farmers
	5. Communication tools	4. About the role of research teams	4. Policy makers
	6. Farm-scale agroecological transition	5. About power issues and power imbalances management	5. NGOs
	7. Healthy diets knowledge		6. Grassroots organizations
	8. Food security – right to good food		
	9. Gender justice		
	10. Self/collective-assessment tools and knowledge		
	11. Self-esteem		

Table 2.- Variables and codex used in the analyses of the case-studies

The codification of the corresponding case studies documents was carried out by the coordination team, using the software atlas ti. Both the variables and codex, together with the systematisation of the different cases following the codification stage, were discussed and agreed between the different authors in a collective discussion held virtually, in order to agree on the coding results of every case study. These discussion led into the introduction of new quotas for some of the case studies, as well as on the clarification of others that were identified to one code, and then changed into another.

This sample of cases is by no means exhaustive, nor representative of all possible contexts and designs, but it is sufficiently diverse to draw lessons concerning the operationalization of participatory methodologies in the construction of agroecological transition processes, in different contexts and territories.

Results

The different types of results analysed after the case studies are shown in table 3.

Case study code, location, scale and context	Results of relevance to “participant” groups	Research team learnings	Subjects involved
C1. Valladolid, Spain; Region, Global North	Public policies New food supply chains Social articulation Logistics infrastructures and knowledge	1. About the contexts 3. About stakeholders involvement and participation 4. About the role of research teams 5. About power issues and power imbalances management	Organic farmers Policy makers NGOs Grassroots organizations

C2. Collserola, Barcelona, Spain; region; Global North	Public policies Social articulation Communication tools	3. About stakeholders involvement and participation 5. About power issues and power imbalances management	Organic farmers Policy makers NGOs
C3. Tacuba, El Salvador; Region; Global South	New food supply chains Social articulation Farm-scale agroecological transitions	2. About the process and methodological design 3. About stakeholders involvement and participation 4. About the role of research teams 5. About power issues and power imbalances management	Peasant communities and family farmers NGOs Grassroots organizations
C4. San Ramón, Nicaragua; Municipality; Global South	Agroecological transition in farms Healthy diets Food security – right to good food Gender justice	3. About stakeholders involvement and participation 4. About the role of research teams 5. About power issues and power imbalances management	Peasant communities and family farmers NGOs Grassroots organizations
C5. Portal da Amazônia, Brazil; Region; Global South	Public policies Farm-scale agroecological transitions	2. About the process and methodological design 3. About stakeholders involvement and participation 4. About the role of research teams 5. About power issues and power imbalances management	Research teams Peasant communities and family farmers
6C. Goiás, Brazil; Municipality; Global South	Public policies New food supply chains Farm-scale agroecological transitions Food security – right to good food	2. About the process and methodological design 3. About stakeholders involvement and participation 4. About the role of research teams	Peasant communities and family farmers Policy makers NGOs Grassroots organizations
C7. Brussels Region, Belgium; Region; Global North	Social articulation Logistics infrastructures and knowledge Agroecological transition in farms Food security – right to good food Self/collective-assessment tools and knowledge	2. About the process and methodological design 3. About stakeholders involvement and participation 4. About the role of research teams 5. About power issues and power imbalances management	Research teams Policy makers NGOs Grassroots organizations
C8. Santiago de	New food supply chains	2. About the process and methodological design	Organic farmers

Chile Metropolitan Area, Chile; Region; Global South	Self/collective-assessment tools and knowledgeSelf-esteem	3. About stakeholders involvement and participation	NGOs Grassroots organizations
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Table 3. Main results and lessons learnt from the eight case studies.

180 **Results of relevance to participating actors**

Three types of results emerge that are relevant to the participating social groups, which are: material results; social-political results and epistemological results. The three of them have been codified and systematised following the cases contributions.

185 Related to the material results, they correspond to concrete and often physical solutions to identified problems, or the materialization of identified collective dreams or desires. The different types of material results identified are shown in figure 1.

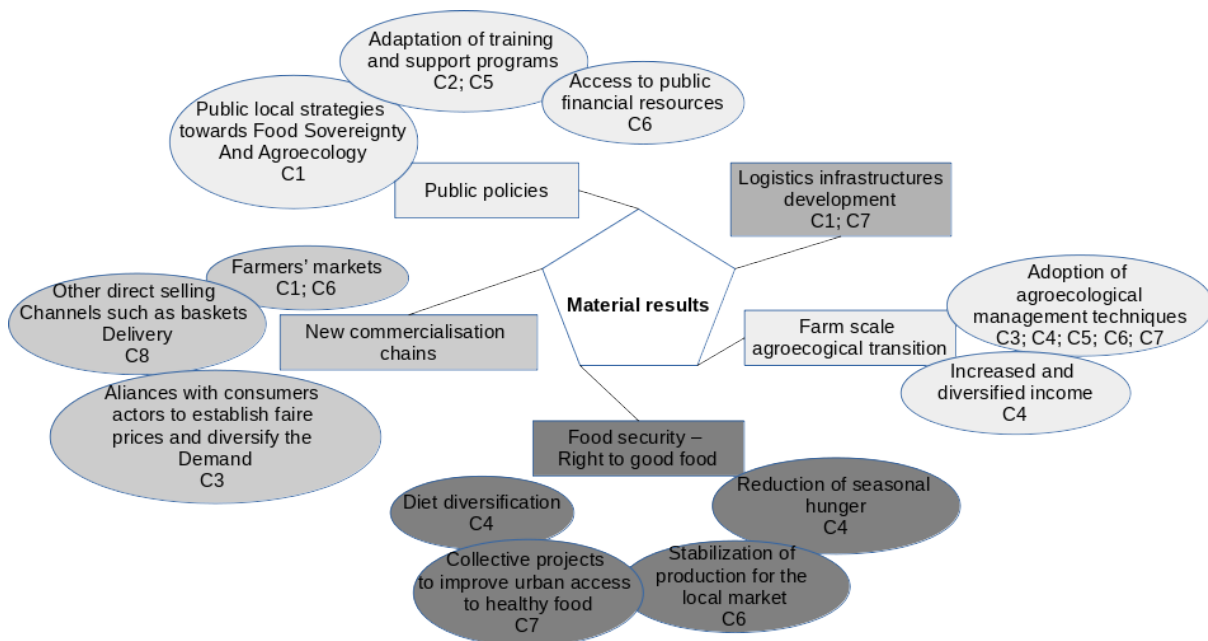


Figure 1.- Type of material results identified in the cases studied

190

In this group we find, by way of example: (a) the development of direct-sales structures and infrastructures (such as farmers' markets) that provide an outlet for agroecological produce while providing a space for direct contact between producers and consumers; (b) the adaptation or creation of public policies that give support to producers and short food supply chains developed (or in process) (for example, adapted training or financial programs to small scale producers oriented to agroecological management and short food supply chains);

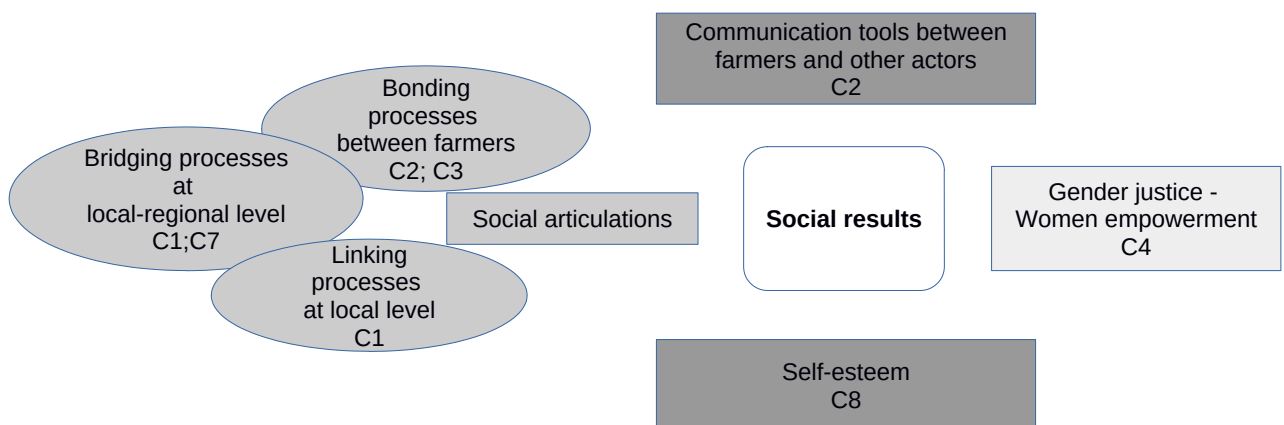
195 c) logistic and distribution infrastructure in complex food relocation processes (for example, oriented to an institutional market or public food purchase programmes, facilitated by

producers coming together in a coordinated manner); (d) the development and learning of
 200 agroecological practices and of processes of productive diversification; or (e) concrete tools
 or projects to guarantee production and income stabilisation to farmers and access to healthy
 food to urban consumers in socially excluded situations.

All the cases present concrete results in this area. However, the cases from rural contexts
 are more oriented to farmers and their needs, while the cases from urban contexts are more
 205 oriented to multiactor processes that complexify the diversity of material results. That is to
 note, for instance, that the farm scale transition is mainly addressed in rural processes, while it
 is very little present in the urban ones. Also the issue of the right to food and food security is
 mainly present in rural processes, while it is little addressed in urban processes.

Related to the scale, it is worth highlighting that as small the scale is, the more present are
 210 issues related to new food supply chains, food security – right to food, logistics
 infrastructures and farm scale transition. Scale is not a key issue when developing public
 policies. Most of the material outputs from participatory agroecological transition processes
 have a municipal or metropolitan scale.

215 The second type of results are of a social nature, and it is to note that they are not identified
 by all the cases.



220 Figure 2.- Social results identified in the case studies

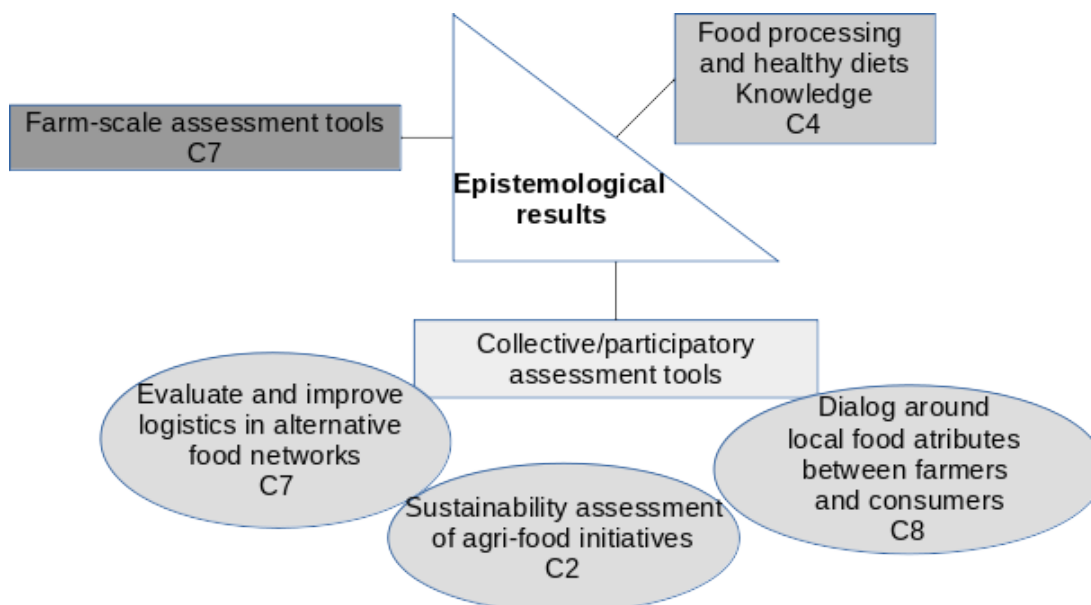
The most relevant results are the promotion and strengthening of social cohesion within
 territories – among peers of stakeholders and also among stakeholders with different levels

of social power. Thus, an intrinsic result of these processes is the strengthening of the social fabric at the local or regional level (depending on the scale of impact ,through both horizontal
225 and vertical networks. In some cases, it touches public policies and institutions, in linking strategies. This is identified both in rural and urban contexts.

Other social outcomes that were reported just in a few cases are related to communication tools that facilitate the links between farmers and other actors such as consumers; gender justice in the form of projects oriented to empower women at community level; or the
230 increase in selfsteem of the stakeholders involved, specially farmers, in processes that generate autonomy and decision making capacity.

Most of the social results in the cases studied are identified at municipal or metropolitan scales, and also in urban processes.

235 The last type of prominent results are of an epistemological nature. That is to say, these processes generate the collective construction of useful knowledge. Again, this type of results are not identified in all the cases studied.



240 Figure 3.- Epistemological results identified in the case studies

We identify that the scale is not that important in this type of results and, that, again, most of the cases highlighting these outputs take place in urban contexts.

245

Learnings identified by the research teams

Research teams identify interesting learnings in four different areas: (a) about the process and the methodological design (C3; C4; C5; C6; C7; C8); (b) about the involvement and participation of stakeholders (C1; C2; C3; C4; C5; C6; C7; C8); (c) about the role of the research team (C1; C3; C4; C5; C6; C7); and (d) about power issues and power imbalances management (C1; C2; C3; C4; C5; C7).

Delving deeper in the design of both the processes and the methodologies developed, we find that the use of mixed research methods, combining quantitative and qualitative techniques, is perceived to be an interesting support instrument in these processes. Flexible planning of the research process, enabling the respect of social times, as well as allowing for emergencies and unforeseen events, is in turn brought up as a key resource. Third, importance is given to moments of systematization and participatory evaluation – at each phase of the process – in order to realize and develop the empowering and emancipatory pedagogical potential of the methodology itself. The iteration of activities is also proposed as a valuable resource that reinforces the appropriation of the process by the participating stakeholders.

Also highlighted is the need to assume responsibility for the process and the stakeholders involved in it, beyond a time-limited project. This implies: a necessary immersion in the field in order to create trust; the continued presence of the research team in the territory, or figures that permanently establish a link between the actors involved and the process; the dedication to "taking care" of the process, in the sense of safeguarding the memory of the initial objectives agreed, as well as of the goals and common vision constructed along the way; the specific design of confidence building moments and spaces and accountability mechanisms.

Lastly, it is highlighted the importance to incorporate technical assistance or extension activities, in order to engage farmers in a committed way.

With respect to the participation and involvement of stakeholders, the case studies point at several key lessons. First, intergenerational collaboration is a key element in guaranteeing the long-term impacts of these processes. Second, agrarian stakeholders present important specificities that must be taken into account in order to guarantee their participation, as they might feel uncomfortable in mixed contexts (when dealing with non agrarian stakeholders). The experiences studied show that it is important to incorporate moments and elements into

the process that enable farmers to overcome viewing themselves as the object of research, and to collectively build their social place as political subjects, in a Freirean sense (Freire, 1975). Also, concrete objectives and results related to the improvement of their profitability and incomes is identified as a key issue to motivate their involvement. In this sense, and taking into consideration other stakeholders, it is highlighted that the process must be designed to achieve in its early stages short-term and simple actions and results that are of significance to participants, and perceived by the community, and that allow them to move from these “partial successes” to more complex actions and moments of reflection. In this sense, symbolic results that reinforce local struggles and shared identities are considered as an appropriate device for fostering processes. To build collectively new narratives that are more open to agroecological transitions can be a key element.

Due to this complexity, the case studies highlight the importance of choosing well the partners with whom this type of research is carried out. This determines to a large extent the type of results obtained. Lastly, in the cases that lead with public policies, it is clearly identified that when aiming to involve local institutions in such process, the scale of the territory matters, that is, the smaller the scale is, the easiest will be to get (local) public administrations engaged to the process. The scale of the processes is also a sensitive variable regarding to the ways in which local stakeholders do engage. As territorial scale (and therefore the number of people and organizations involved) grows, deep pedagogic processes become more difficult, and the participation of local subjects tends to be reduced to deliberative, often just consultive activities. Some cases developed different strategies to keep the pedagogic potential of action-reflection processes in broad territories. For example creating territorial subgroups (Collserola) or focusing the calls to participatory activities on representatives of associations or other institutions and not on individuals (Portal da Amazonía), as a way of positional, structural approach for encompassing the diversity of stakeholders present in the territory.

Delving deeper into the role of the research team in such processes, several lessons are found. In the formerly mentioned contexts which are socially diverse and in which the stakeholders participating in the research have different and even opposed positions with respect to agroecology, mediation is a key element that should be incorporated into the role of the research team. It is not evident for the requirements and capacities of mediation to be present within this team. In rural contexts, the dialogue between academia and popular knowledge proves to be complicated, due to divergent mindsets and interests. In this regard,

tensions were identified concerning several aspects: between the different aesthetics and shapes of each type of knowledge; between the different time frames and rhythms of each sphere; and also between differences in expected or sought results. So, capacities and abilities to introduce a dialog of knowledges (following Santos' concept, 2018) in academia and research teams seem to be important. In this sense, the cases identify resistance to open up academic institutions to non-academic social actors – stakeholders with whom to define and diversify research agendas. This internal work regarding academia structures and procedures seems to be another interesting role to introduce in the research team. Finally, all the cases reviewed raised the issue of leadership management, together with the management of the reconfigurations of social relations which result from consensus building and social empowerment processes .

Related to the importance and specificities in managing power relations in agroecological transition processes, there are many interesting learnings. There is a general consensus as to the importance of the steering group. It should be composed of like-minded stakeholders that share a similar agroecological perspective, among whom a balanced contextual level of capacity for action should exist. In this regard, several studies have highlighted the importance of incorporating farmers into decision-making and process design. This entails taking care to adapt these processes to the farmers' language and aesthetics, and ensuring these spaces do not reproduce unmanaged power relations. Along this line, and especially in contexts of relative marginality of the agricultural sector, several cases point out the importance of establishing exclusive spaces for farmers, in parallel with mixed social spaces. The aim is to manage existing power imbalances between the rural and urban spheres, between agriculture and other sectors. The issue of amplifying marginalized voices, so as to enable them to be heard at the same level as the others, is generally perceived to require attention.

Stakeholders involved

The main stakeholders involved in the agroecological transition processes systematized are farmers, more or less organized; civil society organized around values and principles related to sustainability, social justice, and so on (grassroots movements, NGOs); and some institutional stakeholders such as research groups and policy makers. That is to note that when research groups are involved, they are often not supported by their institutions, but they answer to more or less isolated research groups in bigger institutions, with an activist profile related to social justice, food sovereignty, between other sustainability frameworks.

We find processes where there are just two different stakeholders involved, to others more complex where, at least 4 different type of stakeholders are engaged. That is to note that policy makers stakeholders are present only in the more complex processes in terms of the diversity of stakeholders involved.

355 It is also remarkable that farmers are central stakeholders in rural processes, while their presence and centrality is diluted in urban contexts (even disappearing in one of the urban cases). In general, agroecological transition processes in urban contexts are more complex in terms of stakeholders and social processes than rural processes.

360 We also identify that the scale of the process is not directly related to its more or less complexity. There are municipal processes where we find very different stakeholders, and the opposite. And the same for regional scale processes. The scale can be related, after the case studies, with the presence of policy makers. We identify that this type of stakeholders is more easily founded or involved in agroecological transition processes developed at municipal scale than in larger scales.

365 **Discussion. Lessons from science with people applied to the agroecological transition**

The discussion of the comparative analyses of the eight case studies will try to set up some key elements related to participatory processes oriented to the agroecological transition, organized in three frameworks: a. territorial scale and geographical context; b. issues
370 covered and transition paths developed; and c. power management and subjects involved. The three categories emerged in the initial literature review, regarding to the changes occurred in the last decades both in the global agri-food sector (differentiation of peasant and farmers profiles and economic strategies, and changes in local and global food chains) and in the conception of the agroecological transition (raising the scale of analysis to food
375 system, and a stronger focus on social, economic and political aspects).

Territorial scale and geographical contexts

The cases analysed are built at different scales, from the municipality, to the regional, passing through the metropolitan scale. A bigger territorial scale is supposed to require more
380 extense time lapses to launch PAR processes (Herrador et al., 2012; López-García et al., 2019), but what we see is that in each case objectives are rather adjusted to available time and resources (as it would be said by Chambers, 1994b), or focused on specific groups within wider communities. For instance, most processes in complex situations limitate their objectives and actions to specific activities or tasks (developing a common research agenda

385 in Portal da Amazonia and Brussels region, building a local food strategy in Valladolid, or
creating new food supply chains in Tacuba). Instead, the municipal project (Goiás) and the
projects in Chile and Collserola (which focus each one in a small group of farmers, despite
covering a vast and highly populated territory) develop a deeper approach of action-
reflection-action and more complex 'itineraries of results'.

390 The so-called urban cases (Santiago de Chile, Brussels, Valladolid and Collserola) were
actually located in highly urbanised or metropolitan regions. All of them are based around
cities in which the food is sold, and include, at least formally, farmers which are located in the
hinterland of the cities, and more often in metropolitan locations. In this sense, rather than
'urban' the City-Region Food System approach would be more adequate to be applied to
395 agroecological transitions (Vaarst et al., 2017; Blay-Palmer et al., 2018). In fact, urban food
policies and urban agroecologies lack of a territorially extended approach which links the city
and the countryside. And such a bias limitate the sustainability potential of agroecological
transitions in urban settings, as it cannot address a comprehensive approach of the food
system, including upstream and downstream processes (López-García and González de
400 Molina, 2020).

Processes in urban contexts (Brussels, Valladolid, Collserola, Santiago de Chile) are
promoted by local institutions (activist research groups included), in order to build or
strengthen agroecological distribution networks. Most of them include policy makers in the
processes, in a clear case of agroecological policies' institutionalization (Van Dyck et al.,
405 2019). The case of Santiago de Chile is an urban case that does not include these
stakeholders. It could be related to initial stages of the agroecological transition (Guzmán et
al., 2013) and a weak position of food movements and farmers in the local scene and politics
(López-García et al., 2019). In such situations it seems that there is a collective subject for
agroecological transitions to be constructed (López-García and González de Molina, 2020)
410 (we will come back to this question later).

The rural-urban axis could be related to a bigger importance of agronomic issues related to
self-sufficiency and food security in rural locations and processes with peasant and rural
communities, as food poverty and hunger is a mainly rural phenomenon (Borras, 2009; FAO,
2020). This raises important discussions on the questioned need of access to markets for
415 rural and peasant communities (Mier et al., 2018): self sufficiency approaches to
agroecological farming practices doesn't seem to be able to take rural poors out of poverty
(Bernstein, 2010), but development of local markets and alternative food supply chains could
be a way to strengthen the so-called 'agroecological peasantries' through Food Sovereignty

processes and agroecology out-scaling (McMichael, 2014; Mier et al., 2018; Giraldo and
420 McCune, 2019). In fact, in our cases in rural contexts, peasants want a better access to
markets to scape rural (farmers') poverty and hunger, even if markets are international (as in
Tacuba). It is not clear yet if this means a step further in commoditization of peasantry or if
this is re-peasantization (Van der Ploegg, 2010; Bernstein, 2010), and the methodological
implications of such a discussion should be further developed.

425 By the moment, we could affirm that rural agroecological transitions are often related to
avoiding food insecurity (Putnam et al., 2014; Bezner-Kerr et al., 2018); while in urban
locations the processes focus on the search for more added value for its produces, and on
reconstructing "rural power" (Bell et al., 2010). These differences in the contexts, and in the
concepts applicable to each of them, lead to very different methodological strategies being
430 applied in each case. In rural contexts there is a focus on organizing training actions, field
visits and to work on farming extension. In urban locations there is a bigger focus on
meetings and participatory workshop in order to develop a multi-stakeholder agenda for joint
work, whether related to the development of alternative food networks or to the construction
of local food policies. In urban locations appear a strong presence of NGOs and grassroots
435 organizations which could be identified with what has been called 'urban agroecology'
(Tornaghi and Dehaene, 2019; Egerer and Cohen, 2020), and peasants or farmers losses
centrality. In all cases, we find multistakeholders alliances, specially between like minded
actors such as grassroots movements, NGO and peasants/farmers groups (in rural
contexts), in the sense of the "transformative agroecology" pointed out by many authors
440 (Levidow et al., 2014; Mier, 2018; Anderson et al., 2018; Tornaghi and Dehaene, 2019).

Thematic route maps and transition paths

Cerf (2011) affirms that participatory research produces two types of knowledge: one
"situated" and useful for the communities or subjects "participating" in the research, and the
other of a scientific nature and useful to researchers. But, the situated knowledge generated
445 also becomes in results which are key on raising involvement of the 'participants' in the PAR
processes, and activate the spiral of action-reflection-action which might conduct to
community empowerment through the freirean 'concientizaçao' (Freire, 1975; Kindon et al.,
2007; Méndez et al., 2017). But, the results obtained changes in each case, and can be
differentiated with regard to urban/rural settings.

450 Results are important in PAR processes in agroecology, but people don't always want the
same results in agroecological transitions, and not always begin in Gliessman's (2016) level

1 (external input reduction in farming). In all contexts, the development of new marketing chains occurs, mostly setting up alliances between producers grassroots organizations and consumer groups, even if located in foreign countries such as for Tacuba's coffee. The specific food distribution channels and infrastructures available for local food and farmers groups have been identified a major key driver for fostering agroecological transitions (Guzmán et al., 2013; Magrini et al., 2019). But, as discussed before, urban processes are focused on generating food policies and multi-actor networks, together with the improvement of the sustainability of food systems and the development of new sustainable approaches for the economic flows and territorial planning. Meanwhile, in rural processes, there is a bigger threshold to food security, self-sufficiency, and stepping-out poverty, together with setting alliances between researchers and rural communities to improve rural livelihoods.

Guzmán et al. (2013) talk on the 'previous degree of development of agroecological transitions' as a measure to design methodological PAR arrangements in each given context, but the diversity and fragmentation of global food system's local configurations (Bernstein, 2010; 2017) makes difficult to adopt linear approaches to reality. Urban cases such as the Spanish ones do not search for new farming practices (levels 1-3 of Gliessman's scheme), but for horizontal organization and public support to the existing farmers to survive in very competitive markets (sociocultural and economic dimension, and political dimension in Calle et al. 2013 model). Coffee growers in Tacuba arrive to level 4 but then turn back to level 3 or 2 when export markets becomes harder. Even though there is a common trend to strengthen communities and re-configuring market relations towards alternative, local food networks, there are other important ingredients of the equation, such as the 'participants' profiles or the need to work on the symbolic and emotional context of the transition which may be also addressed (Mendez et al., 2017; López-García et al., 2019). A focus on transitions as an open-ended process for gaining growing sustainability in food systems (Magda et al., 2019), in which the 'itineraries of results' might follow very diverse paths (López-García et al., 2019), seem to be more adequate for adapting PAR approaches to the differentiated situations of farmers and rural communities in the current globalized food system, and to address the hybrid and changing strategies of small and/or organic farms to keep their economic viability (Darnhofer, 2014).

Anyway, the materiality of PAR processes in agroecology requires for researchers the adoption of mixed profiles which enhances the construction of both action (achieving results with significance for 'participants') and reflection within action-reflection-action spirals (Kendon et al., 2007; Guzmán et al., 2013). Hybrid scientific profiles and multi-disciplinary

teams might fill in the demands of local 'participants' better than pure agronomists or pure sociologists teams, what constructs the transdisciplinarity of agroecology (Mendez et al., 2016).

Subjects in transition and social power structures

490 Interesting differences were identified in the interrelation of the geographical contexts and the type of subjects involved in the case studies. Those cases developed in rural settings (the cases of Nicaragua and Brazil, fundamentally), focus on a collective or community approach, and rely on strong, structured and well-defined organizations. In urban cases, the concept of "community" loses its meaning or takes on a much more lax meaning than in rural contexts.
495 In urban cases the farming sector loses centrality and the processes embrace a greater diversity of stakeholders than in rural settings. In the latter we observe that peasants, farmers and/or rural communities show a clear protagonism in PAR processes, although actions aimed at establishing links with urban stakeholders exist. This may be linked to the shift on the composition and nature of agrarian work force worldwide, which could be more violently
500 expressed in Global North through depeasantization (Bernstein 2010, 2017). And also, to the strength of rural stakeholders that contrasts with the weakness of farmers movements in the deagrarianized and highly urbanized scenario of urban contexts (such as the Global North) (Mier et al., 2018; López-García et al., 2019).

In urban contexts, agroecological transition processes are developed with the participation of
505 a diversity of actors, including deeply conventional stakeholders and alternative non-agricultural stakeholders that are connected to food consumption or urban social movements, together with other stakeholders that are closely linked to agroecological movements. This reflects the emphasis that some agroecologies from the Global North place on alliances (Holt-Giménez and Shattuck, 2011; Levidow et al., 2014), especially with urban
510 and non-agricultural stakeholders. The farmers subjects of the transition in urban contexts would fit in categories such as organic family farmers or even small organic enterprises, but the leaders of the transitions in our case studies have proven to be local (urban) food movements and administrations. This raises new questions: is there an emergence of urban agroecology in diagrarianized contexts, or rather agroecology in such contexts is an urban
515 movement trying to build up its subject around the so called 'peasant agroecology' (Giraldo and McCune, 2019). In opposition, the rural contexts emphazise the agroecological outscaling, by strengthening the capacity of peasant and rural organizations to multiply and territorialize themselves (Mier et al., 2018; Giraldo and McCune, 2019).

Farmers doesn't appear as self-organized collective actors directly committed to agroecology

520 at the beginning of the process. PAR methodologies showed here a strong potential to
engage such actors in the transition, and even to settle them as leading groups for it (for
example the neighbours in Valladolid and Collserola, or the rural community in Goás). The
most involved groups are not always the 'agroecological peasantry' supposed to be the
525 avantgarde in agroecological transitions overall (Mier et al., 2018; Giraldo and McCune,
2019), but often a big diversity of groups like NGOs, local governments and specially
researchers themselves.

In this sense, it is interesting to highlight that, in contexts where agrarian stakeholders are
present, farmers and/or rural communities gradually transform their identities, organizational
forms and survival strategies. In San Ramón (Nicaragua) and Goiás (Brasil) there is an
530 evolution from self-sufficiency to self-organization and development of direct marketing
channels; in Tacuba (El Salvador) the shift is from conventional to organic farmers; in
Santiago de Chile small organic farmers develop a collective identity around 'peasant
agroecology'; and in Collserola (Spain) organic farmers develop a collective identity to
demand more public support for accessing payment for ecosystem services.

535 The diversification of stakeholders raises ethical and epistemological questions regarding the
position of researchers, supposed to accompany local subjects to develop their potential as
they do immersion in the territory and the problem (Chambers, 1994a; Kindon et al., 2007;
Méndez, 2017). Reflections about the role of researchers come together in most of the cases
analysed to highlight the unbalanced power relations between researchers and the objects of
540 research. Researchers are clearly positioned in favour of agroecology, as an exercise of
scholar activism or activist research (Cancian, 1993; Edelman, 2008), but thus assume a
position of power that might influence the orientation of the process, and then the divergence
of interests between researchers and 'participants' becomes a key issue to work on
(Cancian, 1993; Edelman, 2008).

545 Despite this, we identify a conscience on a key success factor of PAR in agroecological
transition: to listen the needs of the people, to promote reflection and through it to empower
local subjects (Freire, 1975; Kindon et al., 2007; Méndez et al., 2017). Most of the cases
focus their processes in strengthening local communities so as they can further create their
own questions and then their own answers, beyond researchers' professional interests
550 (Freire, 1975; Patton, 2017). The protagonism of local stakeholders in agroecological
transitions is then not an a priori aspect in the cases studied, but rather appears to be
something to be constructed through PAR. In fact, in mostly all the cases (excepting those in
Nicaragua and El Salvador, which start with the impulse of strong peasant and farmers

organizations), PAR processes are oriented to create a collective subject -often quite
555 heterogeneous- able to lead the transitions (López-García et al., 2018; López-García and
González de Molina, 2020). In some of them (Valladolid, Collserola and Chile), in
metropolitan locations, there are explicit methodological decisions taken in order to create
the protagonism of farmers' groups, through farmers' exclusive (non-mixed) spaces to
enhance empowering processes. Such a suggestion is convergent to the methodological
560 suggestions made from feminists agroecologists in order to empower women in rural
communities and agroecological movements (Siliprandi, 2010; Khadse, 2017), so as
considering farmers', in some situations, as a marginal social-economic group even in rural
locations (Kindon et al., 2007; Schattman et al., 2015; López-García et al., 2019). But, in
565 most of the cases, anyway, the process advances to heterogeneous subjects for the
transition, even in the case in Tacuba, as the solution to low prices and income comes
through setting up alliances with solidarity NGOs located in importer countries (in the global
North).

The categories used to talk about 'participants' who produce food deserve a specific
comment, as researchers use diverse and heterogeneous concepts in the different cases.
570 This present links with relevant discussions in the political economy arena (see discussions
between Bernstein, McMichael and others in the Journal of Peasant Studies). In most of our
cases (Valladolid, Collserola, Brussels, Portal da Amazonia, Santiago de Chile) the category
of 'peasant' is not used to refer to participants, but rather 'farmers'. In some of them the term
'peasant' is a concept used, instead, to utter processes and networks, or to differentiate ways
575 of producing food (often in opposition to 'commoditized organic food'). This contrast with
some authors who present peasants or peasantries as core profiles for leading
agroecological transitions and agroecological scaling (Van der Ploegg, 2010; Mier et al.,
2018; Giraldo and McCune, 2019; Fergusson et al., 2019). Regarding to the cases analysed,
'peasantries' might be seen in PAR processes for agroecological transition as a political
580 rather than as an analytical category, useful to construct symbolic identities and unified (food
sovereignty) movements bringing together a wide panorama of class and political division
between agricultural and rural workforce worldwide (Edelman, 2009; McMichael, 2014;
Bernstein, 2017). But, this raises new questions about the differences of urban and rural
contexts, given that in some diagrarianized contexts, specially in metropolitan environments,
585 'peasant' and 'peasantries' are not used, not even as a political category, to build up a
movement.

Final remarks

The case studies present a diversity of results, learnings and social fabrics, despite having stemmed from a same methodological and theoretical framework, and with similar goals -
590 triggering agroecological transitions. These differences are related to the territorial scales of research, the different features of the geographical context (following the axis urban/rural – diagrarianized/agrarian contexts), and the diversity of stakeholders included in each process. We can thus state that there are different ways of approaching reality, within the common objective of participatory action research (PAR) to generate agroecological transition
595 processes. Such diverse approaches address and incorporat the changes in the different profiles of the agricultural sector worldwide along the last decades: growing urbanization of the population, expansion of rural poverty, differentiation of farming profiles, generalization of commoditization of subsistence agriculture and farming practices, and economic strategies (including marketing strategies) among farmers and peasants.

600 The discussion allows us to differentiate two types of agroecology which could inform the application of PAR approaches to agroecological transitions regarding the different geographical contexts. They would be shaped in terms of actors involved and the type of results aimed by participants. In one hand a ‘rural/agrarian context agroecology’, characterised by a stronger focus on farming practices and on-farm transitions in order to
605 address food insecurity situations, a marginal access to markets and added value, a clear protagonism of farmers and peasant communities, linked to a majority of cases in rural settings, and the common leadership or support of farmers or community organisations. And an ‘urban/ diagrarianized context agroecology’, mainly developed in urban or metropolitan settings, leaded or strongly supported by urban actors but involving urban and rural
610 stakeholders within a determined City-Region Food System, which includes a wide diversity of stakeholders and tries to build the protagonism of (usually organic) farmers, and aims at scaling agroecology through the development of local food networks and policies. Both agroecologies seem to focus on achieving levels 4 (connection between producers and consumers) and 5 (building a new global food system) of Gliessman’s (2016) scheme for
615 agroecological transitions, and on the construction of new political subjects to promote and lead them. And, the two of them, present elements of the five different dimensions of the agroecological transition folowing Calle et al. (2013) proposal.

Thus, agroecological transitions cannot be easily adressed through linear approaches, especially when applied to scales of analysis bigger than the farm. Instead, the major
620 complexity addressed by the analysed case studies drives us to adopt complex models in which transitions can begin in different levels/dimensions of the transition, as the drivers for people to get involved are diverse. We are then drawing a complex, open-ended process in

which the transitions can follow different paths to achieve higher degrees of social and ecological sustainability. Such a viewpoint allows the transitions to involve very diverse
625 actors in very diverse contexts and actions, trying to engage them in action-reflection-action processes to create new collective subjects. For situations in which the agricultural fabric is not strong nor strongly committed to agroecology (which were the most), the subjects of the transitions are not given a priori, but are to be constructed.

Following Chambers (1994b:1449) classic reflections on Participatory Rural Appraisal, we
630 could say from PAR applied to agroecological transition that “as it is emerging is experiential, not metaphysical. Theory has been induced from practice, from what is found to work, not deduced from propositions. Good performance has been sought through empiricism, diversity, improvisation and personal responsibility”. The challenge of embracing open-ended processes is a key question to adapt scientific knowledge to be operative at generating
635 practical knowledge in complex situations and with complex subjects. This is specially difficult when dealing with agrarian issues and actors, with who the power imbalances related to academia/stakeholders; rural/urban; farmers/consumers are to be taken into account and managed.

The risk, in diagrarianized/urban contexts, of not considering farmers as a central
640 stakeholder, and disconsidering their own needs and specificities, is high. And also the lost of these key actors when the desagrarization process is developed till its major consequences.

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