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Adapting established instruments to build useful food sovereignty indicators

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Adapting established instruments to build useful food sovereignty indicators

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The recent context of global food emergency and ecological crisis has increased the relevance of people's struggle for food sovereignty (FSv), which promotes the transformation of the dominant food system and claims 'the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems'. Revisiting two Spanish and Catalan articles developing FSv indicators, this article aims at discussing the need and utility of developing FSv indicators at different territorial levels. Confronting these two territorial scales, the paper also identifies common steps that can facilitate other future processes of building FSv indicators. As a conclusion, the paper suggests that these processes of building indicators can contribute to providing political direction at different geographical scales for the implementation of the FSv proposal. At the same time, they favor the movement's self-reflexivity in its practices while supporting the collective shaping of future actions.

Keywords: food sovereignty; indicators; multi-scale; participatory methodology

1. Introduction: The need for indicators to build FSv

Hunger and poverty are two of the most acute problems that humanity is facing today. To resolve these problems, the first question we need to consider is where poor and hungry people are located. The answer reveals that 80% of undernourished people live in rural areas in poor countries and depend, completely or partially, on agriculture, livestock or fisheries for their daily sustenance (UNDP 2005). Half of these people are food-producing households in higher risk environments and remote areas, without adequate access to productive resources; 22% are non-farm rural households and rural landless and 8% belong to herder, fishing and forest-dependent households (Sherr 2003). This situation is aggravated by the fact that agriculture and food policies in many countries have been centered on the development of industrial agriculture and livestock as well as on commercial fisheries, rather than on the needs of small producers, artisan fishermen or shepherds (McMichael 1992; Windfuhr and Jonsén 2005; Naranjo 2012). Additionally, the conditions of the rural

poor have been worsened because rural areas have been neglected in national and international policies and, under the present concept of development, support for rural development and agricultural production was judged as outmoded and was reduced by more than half between the 1990s and 2000s (Windfuhr and Jonsén 2005).

Decades of official work on poverty reduction without major results have led to the recognition and consensus that policies aimed at effective poverty reduction must address the needs of people in rural areas (IFAD 2001; McIntyre et al. 2009) and not solely the needs of the market. But what are those needs? Who defines them and what are the priorities? Here the debate is intense and there is no consensus. For instance, in relation to agriculture, some defend the use of post-green-revolution-derived technologies, continuous modernization and intensification while avoiding environmental damage (World Bank 2008); others would suggest that only small-scale agriculture can feed the planet through peasant-based agriculture (La Vía Campesina 2010; Altieri, Nicholls, and Funes 2012). It is

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indeed an issue on which different worldviews and paradigms derive different proposals to address the problem of hunger and rural poverty (Rivera-Ferre 2012), which result in different models. Defenders of the latter option doubt the capacity of the dominant model of large-scale, capitalist, industrial and export-based agriculture to feed a growing population (Pimbert 2009; Wittman 2009; Altieri and Toledo 2011; McMichael and Schneider 2011; Lee 2013). They aim at building new models based on agroecology principles of participation and collective management of resources, in which (radical) democracy is placed as a core element of alternative food systems (Calle, Soler, and Rivera Ferré 2011). Different proposals may exist, but they all have their emergence as counterproposals to the current capitalist food system and their vision that other practices and policies can reduce or eliminate global hunger in common. As the UN Special Rapporteur for the right to food stated, agroecology then 'becomes vital for food security and an essential component of the right to food' (De Schutter 2010).

In this context, social movements promoting alternative food systems raise their criticisms and proposals centered not only on food production, but also on the food system as a whole. The ample diffusion of people's struggle for food sovereignty (FSv) is a paradigmatic example. FSv is commonly described as 'the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems' (Nyéléni Declaration 2007). The concept has been adopted by local, national and international social movements, as well as by global institutions (Desmarais 2008), including the UN (United Nations 2004) and intergovernmental scientific panels, such as International Assessment of Agricultural Knowledge, Science and Technology for Development (McIntyre et al. 2009). It has also been incorporated into the legislation of several countries (e.g. Mali in 2006, Nepal in 2007, Ecuador in 2008, Venezuela in 2008, Bolivia in 2009 and Nicaragua in 2009) (Holt Giménez and Shattuck 2011; Fernandez Such and Rivera-Ferre 2011). As a political demand articulated around the prevailing industrial agri-food system, FSv exemplifies the consideration of food as a means for social change, being also conceived as a counterproposal to the mainstream development paradigm (Rivera-Ferré 2008; Rosset 2011). In this manner, it breaks the traditional North-South development paradigm to address development as a clash of models (Rosset 2003).

Despite the increasing acceptance of the FSv proposal, most organizations and governments working to promote it do not have the tools for monitoring and evaluating their projects or actions in this area, or simply to allow them to systematize policies from this perspective. Although integrative tools such as sets of indicators could play a key role in fulfilling these purposes, their use has been very

limited so far. At the international level, it is worth mentioning the cultural indicators of indigenous people's food and agroecological systems developed under the multi-stakeholder Sustainable Agriculture and Rural Development (SARD) initiative (Woodley et al. 2009). These indicators included the right of indigenous peoples to choose their own food systems, maintain their cultural practices, utilize their food-related knowledge and be protected from the spread of genetically modified organisms (GMOs), monocultures and other activities that could undermine traditional food production systems, as well as to have access to land and biodiversity, among other productive resources. Also relevant here is the right to food indicators suggested by Food and Agriculture Organization (FAO) of the United Nations (FAO 2008) or the work performed by Mamen et al. (2005), who developed sustainability indicators for the food and agriculture sector at the state level (California, USA). At the field level, Simón-Reardón and Alemán Pérez (2010) discussed the need for developing FSv indicators from an agroecological perspective, although they did not provide a practical proposal. Also Kloppenburg et al. (2000), who did not explicitly use the FSv framework, proposed participatory indicators of sustainability for alternative food systems. An interesting participatory approach developed to evaluate the sustainability of different natural resource management systems at a local scale (plot, farm and community) useful for evaluating agroecological experiences is the framework for the evaluation of natural resource management systems incorporating sustainability indicators methodological framework (López-Ridaura, Masera, and Astier 2000), although again the framework does not include all the pillars of FSv and has a strong focus on the production side.

The aim of this paper is to facilitate the consideration of the FSv proposal as a normative framework of reference for the development of alternative agri-food systems and rural development policies. The contribution will be centered on the need, usefulness and shortcomings of developing indicators for FSv at different spatial scales. Particularly, we base the discussion on two published studies of indicators coherent with the discourse of FSv at the international (Ortega Cerdà and Rivera Ferré 2010) and local-regional (Catalan) levels (Badal et al. 2011). While the original studies are published in full in Spanish and Catalan, this article aims to make the results more widely available in an English publication to facilitate other future processes of the development of FSv indicators. The authors are aware that in discussing different spatial levels of FSv indicators, intermediate levels are also important. However, we have not found studies addressing this spatial level.

In order to do so, the paper is structured in six sections. Following the introduction, we introduce the FSv concept. Next, we examine the use of indicators and discuss the state of the art regarding the utilization of indicators for

evaluating the adoption of policies and communicating strategies toward FSv. In Sections 4 and 5, we describe the two case studies and discuss the main results in each of the processes. Finally, we discuss the implications of this research and provide some concluding remarks.

2. The concept of FSv

The concept of FSv was coined by La Via Campesina (LVC) and launched at the World Food Summit in Rome in 1996. LVC is an international peasant movement founded in 1993 with the double objective of defending farmers' and rural communities' rights while promoting a more just and sustainable resource management (La Via Campesina 1996). It has been considered as one of the most important transnational social movements in the world (Martínez-Torres and Rosset 2010), representing almost 200 million farmers worldwide.

FSv is a dynamic concept in constant evolution. Since it was first proposed, it has evolved with the transformation of the international context, and its adoption by a global network of social movements and civil society organizations (CSOs) to include the interests of a wide range of collectives and, at the same time, adapt to different local contexts. This has resulted in a growing literature corpus that includes several conferences, fora and declarations (Windfuhr and Jonsén 2005; Pimbert 2009; Anderson and Bellows 2012). Further to the definition of food security proposed by the Nyeleni Declaration, at the LVC forum in Havana (Cuba) five main action axes were settled:

- (1) *Access to resources*: FSv promotes and supports individual and community processes to ensure that small and medium-size producers have access to and control of basic natural and social resources. It includes proposals regarding access to land, seeds, financial services, water, fertilizers or public services. The access to (and management of) resources proposal includes sustainability, indigenous rights and gender perspectives as cross-cutting dimensions.
- (2) *Production model*: FSv fosters local and family production. It proposes a diversified production model based on local and traditional knowledge. The production systems must be sustainable and culturally appropriate to their unique circumstances. It supports endogenous development processes and the right to produce food.
- (3) *Transformation and commercialization*: FSv proposal defends the right of farmers, landless agricultural workers, fishermen, pastoralists and indigenous people to sell their food production to feed local populations. This requires protecting and regulating the national agricultural and livestock production, shielding the domestic market from the dumping

of agricultural surpluses and low-price imports from other countries and promoting direct commercialization from producers to consumers.

- (4) *Food consumption and right to food*: FSv defends the right of citizens to safe, nutritious and culturally appropriate food. This food should be produced by local producers with agroecological techniques.
- (5) *Agricultural policies and CSO*: FSv places producers and consumers at the heart of public policies related to the agri-food system. This requires strong organizations of peasants and civil society in general, promoting participation and radical democracy.

As the environmental and policy contexts change, other dimensions have been added to the FSv proposal, including issues such as climate change (framed as a global ecological crisis), rural–urban migrations, rights of rural workers or the situation of rural women and youth. Another important evolution of the concept has been its increasingly politicized confrontation with neoliberal policies at the same time that agrobusiness expanded in the form of new enclosures (e.g. land grabbing, GMOs and bioprospecting, infrastructures and value-chains, but also immaterial aspects such as the imposition of 'monocultures of knowledge' and rationalities). These confrontations have crystallized in territorial disputes between what have been called 'the spaces of domination' and the 'spaces of resistance' articulated around local social and peasant movements which are actively resisting and defending their land and territories, and themselves, in social, economic, political, cultural and ideological terms (Rosset 2011; Rosset and Martínez-Torres 2013; McMichael 2014). Being a proposal developed in the context of the global South, its evolution toward a counterproposal to capitalist agriculture and neoliberal policies has prompted interest in higher income settings. DiMasso (2012) studied the FSv movement in Catalonia, analyzing how different discourses coexisted conforming a complex case of conceptual convergences but operational divergences in relation to the transformative strategies and subject of action (DiMasso, Rivera-Ferre, and Espluga 2014). These divergences reflect the need to accurately define indicators so everyone agrees on what needs to be evaluated in advance of the proposal.

The topic has also been explored under feminist approaches addressing the gender implications of the power and control relationships within the food system (Patel 2012), the impact of public food safety regulations (McMahon 2011) or peasant women's contribution to the evolution of the FSv concept (Desmarais 2007).

Finally, FSv addresses the need for social change with a focus on the governance of food systems. One major claim is that decisions on agri-food policies must be taken at all appropriate levels, placing poor peasants at the heart of food systems and demanding the 'right to have rights' (Edelman

and James 2011; Ishii-Eiteman 2009; Patel 2009). In this sense, one of the main objectives of FSv is to guarantee peasants' participation in decision-making processes.

3. Indicators for FSv

Addressing the process of implementation of FSv actions and policies requires tools capable of evaluating the success of such actions and policies toward a given objective, as well as to communicate at the appropriate level. In general terms, technical and political interventions of any type aiming to be efficient and effective do normally have to answer a sequence of questions (UNDG 2005):

- *Where are we?* aims to understand exactly the initial situation.
- *Where do we want to go?* basically consists in a clear formulation of the objectives.
- *Which steps do we need to take to arrive at that point?* It includes the formulation of the policies, strategies, measures to take to achieve the objectives proposed, as well as appreciating the links and priorities.
- *Do we have capacity to achieve it?* That is, strong application methods, good management, resource allocation and accountability.
- *What have we achieved?* It consists in objectively and effectively systematizing, evaluating and monitoring the actions and the results. It aims to check whether we have or have not accomplished the objectives proposed in the previous phases.

Needless to say, organizations aiming to complete this process have to use indicators. Indicators are variables used to assess progress toward a target (UNDG 2005) previously defined with a political, ecological, economic or social objective. As a general rule, the elaboration or selection of a group of indicators to measure the progress of specific actions in a time frame (short, medium or long term) requires the establishing of goals (in this case FSv) and objectives or targets (individual, observable achievements directly related to a goal). Making explicit the indicator selection process and the framework used is essential in any process of indicators development, as stated by Niemeijer and Groot (2008), since this determines which indicators are considered and, thus, influences the conclusions of analysis based on indicators. Also the scale is important; for instance, the local community level would be addressed to organizations working for FSv in the field, including peasant organizations, CSOs or Non-governmental organizations (NGOs), while the international level would be mostly addressed to multilateral institutions and governments, or to other international organizations, such as LVC. Obviously, the source of indicators and their objectives would be different in each case.

The selection of an appropriate scale (both spatial and temporal) would be the determinant for collecting an appropriate indicator's data and analyzing them accurately, as well as for finding indicators that are meaningful and useful (linked to action) for users (see Ramos and Caeiro (2010) and Reed, Fraser, and Dougil (2006) for a discussion on the importance of scale on sustainability indicators). Nevertheless, the analytical framework in which the indicators need to be accommodated would be similar in all cases, as given by the food sovereignty proposal.

In developing indicators for FSv, two inherent characteristics of the concept are important and determine the process: first, the clear political and value-based focus (as opposed to the food security concept) and the clarity of the concept (goal) and of the proposed alternatives (objectives), which favor a consensus around some main themes and conform to a basic common departure point. This contrasts with what happened, for instance, to the concept of sustainable development, which was susceptible to numerous interpretations and uses responding to different (and sometimes conflicting) objectives (Pinter, Ardí, and Bartelmus 2005; Dahl 2012). Second, the high dynamism of the proposal, being a concept in evolution, together with the need to contextualize it during the implementation process, results in different priorities, actions and strategies proposed by different parties in different regions. The application and prioritization of FSv objectives at any scale (country, region or community) will depend on the specific circumstances of each territory at that moment. In this manner, from the different indicators that may exist, each context and scale require one type and not another, as well as different methodologies, as is illustrated by the case studies presented. Thus, FSv is characterized and enacted differently in different regions and by different stakeholders, showing the complexity of developing a proper framework of analysis as well as posing a major constraint to the process of indicators' definitions. In fact, the different dimensions of FSv should not be taken as a checklist to be completed, but rather as targets integrated into a comprehensive praxis (Boyer 2010). For this reason, it is neither feasible nor desirable to create a perfect list of FSv indicators. They should adapt to the different contexts where the struggle for FSv is taking place. This is more evident in the case of indicators at the local level.

The high level of contextualization required, together with the democratization claims made by the FSv proposal, suggests that one indispensable characteristic in the process of developing FSv indicators is the promotion of participation and collaboration between different parties, such as academicians and civil society (Anderson and Bellows 2012). In the two cases analyzed here, participation was essential for the processes of indicators development, although the form of participation differed. The form in which participation is promoted depends on the scale at which indicators are developed

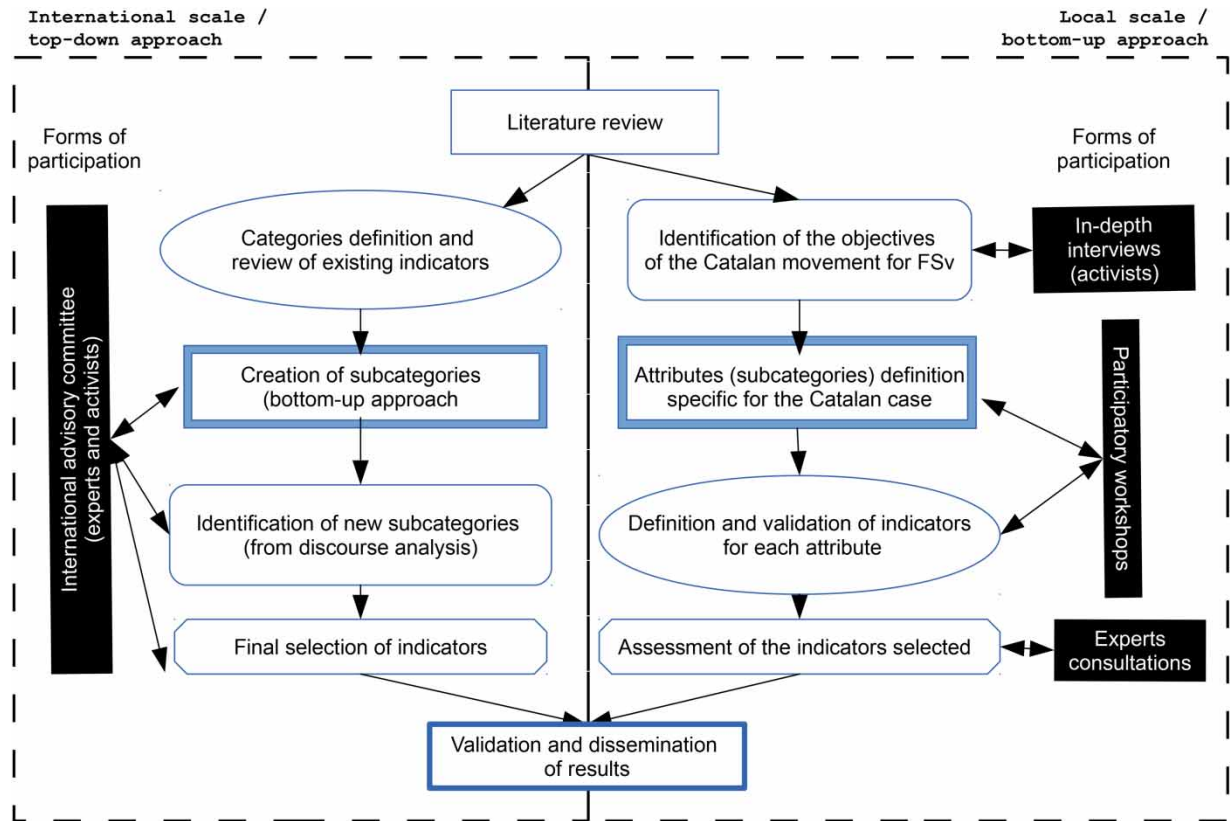


Figure 1. Research phases for the development of indicators at the international and local (Catalan) level. Each shape represents a step in the process of indicators development.

(Figure 1). Details of the processes are discussed in greater depth in Section 4 (International) and Section 5 (local).

In the following sections, we illustrate two case studies developing FSv indicators at different spatial scales (international and local-regional), highlighting the main similarities among these two processes that can be understood as intrinsic elements of developing FSv indicators at any scale, as well as the main differences between scales (Figure 1).

4. Indicators of FSv from an international perspective

Developing indicators at the international level has as a main objective to systematize and reinforce its discourse in the international arena, as well as to influence agricultural and food policies in national and international discussions. One example of the procedure is that used by Ortega-Cerdà and Rivera Ferre (2010). In this case, the process of producing a first set of categories and attributes was based on documents from the FSv movement, and the indicators were based on reliable international databases. Ortega-Cerdà and Rivera Ferre (2010) suggested the five axes described earlier as the five main categories that

could facilitate the classification of indicators: that is, (1) access to resources; (2) production model; (3) processing and commercialization; (4) consumption of food and the right to food and (5) agricultural policies and CSO. From this initial classification, it was necessary to develop a subsequent group of subcategories and attributes that led to the final selection of indicators. Ortega-Cerdà and Rivera Ferre (2010) used a pyramidal structure of three levels: 5 overarching categories (corresponding to the five axes outlined earlier), 35 subcategories (attributes) and 128 indicators (see Figure 2). This hierarchic structure is similar to the one used for other panels of international indicators such as the Environmental Performance Index, which measures the environmental performance of a country's policies (Esty et al. 2008); the Ibrahim Index of Governance to measure the effective delivery of public goods and services to African citizens (Rotberg and Gisselquist 2007) or some databases related to food, such as the main database of FAO (FAOSTAT 2012).

The process of selection of adequate indicators started with a parallel process of literature review and a revision of potential sources of information, based primarily, but not exclusively, on well-known international organizations that develop agriculture- and food-related indicators. These sources of information comprised United Nations agencies

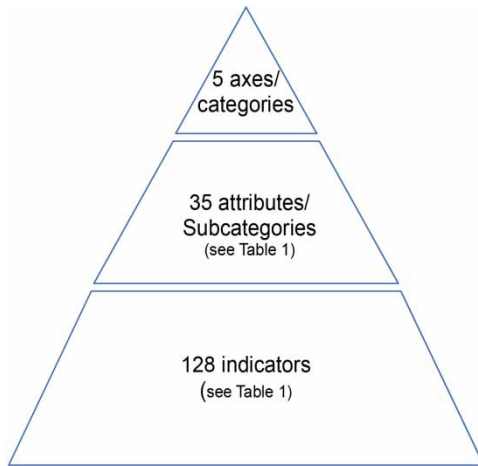


Figure 2. Pyramidal structure of the international indicators.

such as UNEP, FAO or UNDP, the World Bank, the World Trade Organization, Sea Around Us, World Resource Institute, Action Group on Erosion, Technology and Concentration (ETC) and the United States Central Intelligence Agency. Next, all available indicators were reviewed and classified within one of the five proposed overarching categories, annotating for each indicator which organizations used it, its geographic scope and the frequency of data collection (Ortega-Cerdá and Rivera Ferré 2010). For the selection of indicators some criteria need to be defined; in this work the authors suggested (1) adaptation and pertinence for the FSv discourse; (2) preference for those indicators compiled and published by international organizations; (3) preference for indicators compiled for the maximum number of countries and (4) preference for those indicators with a wider data record. The next step consisted in grouping the indicators into subcategories that were inferred using a bottom-up approach (from the lowest level indicators to the upper level attributes or subcategories). At the same time, after a discourse analysis of the LVC documents and declarations (La Vía Campesina 1996, 2000, 2004, 2008, 2009), other subcategories not directly reflected by the existing indicators were proposed, so as to include all the thematic areas which were judged as relevant for the FSv proposal. After evaluating all the available indicators, and with the objective of facilitating the adaptation and prioritization of indicators in the various regional contexts, a final set of indicators was proposed for each of the subcategories or, in the absence of appropriate indicators, the gaps were annotated. This final choice was made using the previously mentioned criteria for the selection of indicators as well as the criteria used by the Organization for Economic Cooperation and Development (OECD) for the selection of social indicators such as policy relevance and utility for users, theoretical sense and capacity and quality of measurability (OECD 1993). The different steps in the research process and indicators

development are summarized in Figure 1. After the process was finished, a web page was designed to facilitate the use and assessment of the developed indicators: www.foodsovmaps.info.

A difficult point in developing indicators at the international scale is how to promote participation in order to include the perspective and expertise of those who work for and defend FSv. Ortega-Cerdá and Rivera Ferré (2010) overcame this problem with the creation of an International Advisory Committee that advised and validated the entire process. It was composed of 10 members that were selected using the following criteria: (1) experience and knowledge on FSv; (2) regional diversity, assured by the participation of members from the five regions where LVC has representation; (3) institutional diversity, with representatives linked to at least one of the following institutions: universities, NGOs, multilateral (International Planning Committee on FSv) or peasant organizations (LVC Asia, Africa, Europe and South and Central America); (4) balanced participation of men and women, although the final ratio was six to four and (5) sector representation, including persons linked to a diversity of collectives, with fisheries finally not being represented. The principal objectives of the Committee included the revision of the sources of information used, the validation of the subcategories and indicators proposed and ensuring the quality of the process.

Table 1 presents the results of the investigation, with the various subcategories and the proposal of indicators used to characterize each of them. The results suggest that some key areas of work relevant to the FSv proposal at the international scale have no indicators that allow the monitoring of progress. This can help interested parties to detect those areas in which they will not find enough information from existing indicators to support their views in international political negotiations. These areas are *access to financial services, forestry and marine distribution of resources, access to seeds, local production and commercialization, culturally appropriate food, small and medium-size peasant participation in decision-making, peasant social organization, human rights and peasant migrations*.

In the 'Access to resources' category, information is lacking on access to credit (financial services) for small and medium-size producers, access to forestry and marine distribution of resources and access to seeds. The access to credit for small and medium-size producers is a key issue in the FSv discourse. During the last few years, it has also been rediscovered by some other parties with different political perspectives. The World Bank (2008), development agencies and some private banks have been offering microcredits in agricultural programs. This new interest for access to agricultural financial services has not been followed by significant improvements in data availability. As a consequence, it is not possible to properly

Table 1. Categories, subcategories and indicators for FSv at the international level.

Categories and subcategories	Indicators
Access to resources	
Infrastructures and basic services	Index of rural access Rural household access to electricity Population with access to improved sanitation Total enrollment ratio in primary education
Access to land, <i>forestry and fisheries</i>	Agricultural land GINI index of land ownership Total arable land
Access to animals	Livestock (total) Livestock per capita rural Livestock per hectares of agricultural land Beasts of burden per hectare of agricultural land Small farm animals per rural capita
Access to water and water systems	Rural population with sustainable access to an improved water source Irrigated land area Children less than five years old who receive diarrhea treatment Area equipped for irrigation as % of cultivated area Renewable internal freshwater resources per capita Area equipped for irrigation as % of irrigation potential Agricultural water managed area
Access to industrial equipment	Number of agricultural tractors Number of milking machines Number of tractors per ha of arable land
<i>Access to seeds</i>	Number of harvesters–threshers Top 10 Share of Global Proprietary Seed Market
Capital stock	Share of patented seeds as percentage of total traded seeds Share in capital stock (%) livestock Share in capital stock (%) land Share in capital stock (%) structure Share in capital stock (%) machinery
<i>Access to financial services</i>	
Production model	
Agricultural population and employment	Rural population Share of women employed in the non agricultural sector Agricultural population Child employment in agriculture Population active in agriculture
Land crops	Permanent crops Forest area Pastures Area waterlogged
Production	Cereal production Fish production Meat production Forest harvest rate Fruits and vegetables production excluding melons Cereal yield
Agricultural inputs	Pesticides intensity Fertilizers use intensity Agricultural water withdrawal as % of total renewable water resources Other seed treatments – fungicides and insecticides Market share of the 10 world top fertilizers firms Market share of the 10 world top pesticides firms
Emissions and degradation of the natural basis of production	Water pollution, food industry Land degradation: severity of agriculture degradation Water pollution, paper and pulp industry Area salinized by irrigation Marine trophic index
Economy	Natural forest extent Rural population below the poverty line Food production index per capita Agriculture, value added Agricultural products production index per capita Agriculture, net per capita Livestock, net per capita Food, net per capita
Agricultural biodiversity	Number of livestock breeds at risk Number of species at risk by international trade Number of livestock breeds by country
Sustainable and agroecological production	Conservation agriculture area as % of cultivated area Land under organic management as percentage of total agricultural land Organic producers by country Forest Stewardship Council certified forest area Ecological fishprint

Transformation and trade

International trade

Agricultural raw materials exports
 Agricultural raw material imports
 Fishery exports
 Fishery imports

Food exports
 Food imports
 Forestry exports
 Forestry imports

Agricultural producers prices
 Production and manufacturing

Producer price for the five most important products of the country
 Food, beverages and tobacco (% of value added in manufacturing)

Percentage of food manufacture of the three most important products in terms of production for the country
 Percentage of the global cereal production

Role in the global agricultural market

Export concentration (% of the total value of exports of the country that is covered by the three most important agricultural exportation products)

Percentage of the global meat production
 Percentage of the global fish production

Final distribution structure

Market share of the 10 world top food retailers firms on groceries

*Local production and commercialization***Food consumption and right to food**

Food vulnerability

Prevalence of undernourishment in total population
 Intensity in food deprivation

Prevalence of underweight children
 Gini coefficient for food consumption (dietary energy consumption)

Food consumption and nutritional quality

Food consumption per capita and day
 Dietary energy consumption

Dietary protein consumption
 Dietary fat consumption

Dietary consumption

Diet diversification index. Dietary energy
 Diet diversification index. Dietary protein

Diet diversification index. Dietary fat

Food effort

Food, tobacco as percentage of household consumption expenditure

Consumer price index. Food

Foreign dependence in food consumption

Percentage of the cereal imports volume in comparison with national production

Percentage of the cereal exports volume in comparison with national production

Percentage of the meat imports volume in comparison with national production

Percentage of the meat exports volume in comparison with national production

Percentage of the fish imports volume in comparison with national production

Percentage of the fish exports volume in comparison with national production

*Culturally appropriate food***Agricultural policies and CSO**

Government spending

Government spending on agriculture international
 Public R&D spending on agriculture

Government spending on agriculture
 Government spending on the fishery sector

Government spending distribution of agricultural resources

Total support estimate
 Consumer support estimate

Producer support estimate
 General services support Estimate

Official development assistance (ODA) to agriculture

ODA to agriculture
 ODA received or donated for land reform

ODA received or donated on agriculture as a donation

Tariffs on international trade of agricultural products

Agricultural products, final bound simple average

MFN (most-favored-nation) tariff, simple average of import duties for agricultural goods

Trade weighted average tariffs for agricultural products

Small and medium-size peasant participation in decision-making

Peasant social organization

Human rights and peasant migrations

Note: Text in italics are the subcategories for which no indicator was solid enough

evaluate the global situation on this issue and the significance of the proposed initiatives. Furthermore, under the FSv proposal other types of nonfinancial credits, based on solidarity or family networks, can be contemplated. This type of credit would not have reliable indicators at the international level either.

Regarding access to forestry and marine fisheries, the available information is focused mainly on global production (or extraction) and on the overexploitation of fisheries and forests. There is not enough information on access to natural resources by nonindustrial/artisan fishermen and the rural population that uses a forest's natural resources in the form of non-timber forest products (NTFP). NTFP play an important role in food security for many disadvantaged groups worldwide (Paumgarten and Shackleton 2011). This lack of information is of great importance at the present moment of global restructuring of access to resources regarding land, forest and fisheries rights. New laws are being made at the national level with a general tendency toward the privatization of this access (Bollmann et al. 2010). These changes are taking place in many countries and at a very fast rate, especially in Africa (Manji 2006).

Finally, there is also an urgent need to collect information regarding access to seeds by producers and the privatization of genetic resources, a very sensitive issue for La Vía Campesina (1996, 2000, 2004, 2008, 2011). There are only some pioneering investigations to try to evaluate the concentration of patented seeds by some corporations (ETC 2008). However, indicators were based on private corporations' databases whose methodology to collect the information is not transparent and the data were not disaggregated by country. Thus, it is necessary to generate transparent and high-quality information that could throw some light on power concentration in the food chain.

In the 'Production model' and 'Transformation and trade' categories, the indicators found that only some partial aspects of the FSv criteria were covered; also, some of them were not yet fully accepted at the international level. For instance, the priority of production for local consumption was only partially reflected through the indicators 'imports/national production' and 'exports/national production', while other possible indicators, such as 'food-miles', are not yet fully available. Furthermore, significant improvements should be pursued to obtain relevant information, for example, about agroecological production, the energy dependence of the current agricultural system or the sustainability of fish captures.

More information is available in the 'Food consumption and right to food category' due to international efforts such as the FAO/IFPRI/WFP Food Security Information Network initiative, aimed at developing, supporting and coordinating countries to have common standards of measurement (FAO 2011). However, important gaps exist

related to the availability of culturally appropriate food at the global level. In this respect, the SARD initiative developed some cultural indicators of indigenous peoples' food and agroecological systems (Woodley et al. 2009) that were very useful but have not yet established an international systematic collection of data. The indicators proposed covered not only those related to culturally appropriate food, but also other relevant indicators for FSv, such as access to land or biodiversity.

The 'Agricultural policies and civil society organization' is the category with the lowest number of indicators, showing a severe lack of information to address the power structure in the decision-making processes of agri-food policies at the global scale. The most important gaps are associated with the participation of producers in agriculture and trade decision-making; peasants' social organization; and peasant's migrations, and violations of human rights within the rural environment. This is important from the FSv perspective, since the right to participate in the decision-making process of agri-food policies is one of the main claims of the movement to achieve peasant-centered policies.

Finally, the need was exposed to better integrate data from specific social groups, such as women, rural youth or indigenous populations. Most of the indicators did not present the information disaggregated; and when the information was available, it lacked continuity and had poor geographical coverage. Here again, the SARD initiative aimed at integrating some dimensions, but data are not yet globally collected and it was only done once the initiative had already finished.

5. Indicators of FSv from a local perspective

We also want to analyze here the process of development of FSv indicators at the local-regional level through the research conducted by Badal et al. (2011). One of the most interesting characteristics of this case is the fact that it was located in the global North, in the region of Catalonia (North-East of Spain), while most of the applied research on FSv has been carried out in the so-called global South (Fairbairn 2012).

Catalonia is a highly urban and industrial region, with less than 2% of the Catalan economically active population working in the agricultural sector (Idescat 2011a). Since the 1960s the region has suffered an important restructuring: the number of agrarian exploitations diminished by 60% between 1962 and 1999 (Majoral 2006); the agri-food industry is very relevant from an economic perspective, and has a clear export-based vocation (Idescat 2011b). Paradoxically, given the prominent role of the livestock industry in the sector, it is totally dependent on soya bean and cereal (mainly maize and wheat) imports (Idescat 2011c).

In this context, this research is aimed at examining the current situation of the agri-food sector in Catalonia from a FSv perspective, as well as determining the options for implementing the FSv proposal in this region, exploring its constraints, potentials and specificities. To achieve this objective, the authors used a bottom-up approach not only to develop the indicators, but also to favor the Catalan FSv movement's self-reflexivity. Accordingly, the starting point of the research was to characterize how the FSv concept was conceived and implemented by these stakeholders and how that framed their actions within the FSv paradigm in Catalonia.

The research was structured in six phases (Figure 1) using documentary analysis, interviews and participatory action research (see Badal et al. 2011). First, a literature review was conducted in order to (a) characterize both the international and Catalan agri-food systems; (b) deepen the knowledge on, and describe the evolution of, the FSv concept in Catalonia and (c) analyze the international, European and Catalan social movements struggling for FSv. Second, 21 in-depth interviews with key stakeholders were performed to determine the objectives of this movement. These objectives were later translated into technical attributes (or subcategories) during the third phase of the research through two participatory workshops attended by members of the Catalan FSv movement (with more than 20 participants each). In the next phase, a third workshop was conducted to obtain a set of indicators for each of the attributes. Sixty-seven indicators were proposed to describe the Catalan agri-food system from a FSv perspective and to analyze the actions and projects carried out by the FSv movement in Catalonia. During the fifth phase, the indicators were evaluated through the elaboration of a technical folder that included the definition of each indicator, its objectives and importance, the attributes and other indicators to which it was associated, its assessment and the available sources of information. The last phase included the return of results to all participants for validation, and the dissemination through a series of public events and participatory workshops, as well as their publication in a webpage (www.ieeep.net/sobirania-alimentaria) and a book summarizing the final report (Badal et al. 2011). The whole research process was supervised by experts consulted through the different phases.

Table 2 presents the characterization of the FSv concept in Catalonia, with the categories, attributes (subcategories) and indicators as suggested by stakeholders. The characterization process of the FSv concept in Catalonia and the evaluation of the indicators proposed allowed, on the one hand, to assess the distance between the objectives of the FSv movement and the evolution of the Catalan agri-food system, and on the other hand, to increase the movement's self-reflexivity about its own practices, supporting the collective proposal of future strategic actions.

Given the political clarity of the concept it is not surprising that being a participatory local process, most subcategories could be perfectly allocated to at least one of the more general five main FSv axes (called categories here) stated by LVC. Three significant exceptions were the subcategories 'agri-food packaging' (referring to the use of plastics in the production and distribution of food), 'education for FSv' and 'cooperative and trustful relationships' that were more difficult to classify within these categories. This suggests that the Catalan context, as an example of FSv implementation in the global North, has some specificities that require the adaptation of the FSv paradigm to local circumstances. For instance, the emphasis placed on the first one could probably be associated with the strong links between FSv and environmentalist movements in Catalonia. In this context, however, it was surprising that no mention was made of the greenhouse gases emissions linked to the food system, a problem explicitly recognized by the peasant movement (see, for instance, the Climate Justice Now! movement in which LVC takes part). The importance given to the 'education for FSv' and 'cooperative and trustful relationships' is probably more related to the characteristics of alternative food movements in the so-called global North. These movements use education campaigns as tools to raise public awareness on food-related issues and give a lot of importance to the relational aspects within the food system. Thus, both strategies are typical in the 'actions repertoire' of alternative food movements in the North (see Debuissou-Quellier, Lamine, and Le Velly (2011) for the case of France) and constitute a key pillar in the mobilization toward changing the structural conditions in which agri-food systems operate, as well as in the construction of collective identities.

The existence of these attributes shows that apart from the more institutional claims made by the international FSv movement, the Catalan movement pays a high degree of attention to those aspects linked to the movement's own autonomy and its capacity of agency to promote social transformations in the food system. In this sense, we can situate the movement for FSv in Catalonia as overlapping between the 'Progressive' and 'Radical' trends of agri-food movements described by Holt-Gimenez and Shattuck (2011). While the former focuses on practical alternatives to industrial production models and farmer-consumer food networks, the second seeks to change the food system on the basis of rights from an anticapitalist and class-based redistributive perspective.

The 'Access to resources' category, translated into the 'Popular control of the agri-food system' attribute, clearly showed the political trends of the Catalan FSv movement (Table 2). Participants' claims were not only restricted to the access to resources (land, seeds, financial options (in the form of subsidies) and water) but also to changes in the governance of these resources, in order to favor the participation of stakeholders in the decision-making and,

Table 2. Categories, subcategories and indicators for FSv at the local (Catalan) level.

Categories and subcategories	Indicators
Access to resources	
Popular control of the agri-food system	Distribution of cultivated land with respect to farms' dimensions (total agricultural surface and total surface, period 1982–2007) Distribution of cultivated land with respect to the type of land ownership (period 1982–2007) Land price (€/ha and €/type of crop) Existence of seed exchange agroecological projects (*) Direct payments in the Common Agricultural Policy (CAP) (millions of €) Comparison of list of CAP direct payment receptors with the number of active farmers Comparison of agricultural rent according to the volume of subsidies received and the total number of receptors (as for 2009) Irrigation water price (€/ha) Virtual water Water consumption in different types of production (including agrofuels)
Production model	
Production diversity at the regional level	Distribution of the main crops (Ha and geographical distribution of the main crops produced in Catalonia)
Live and productive rural environment	Number of students in agronomic, forestry, veterinarian and food sciences studies Number of hectares of protected agricultural land Number of hectares of marine protected areas Farm income and gross added value of agriculture (€) Number of men and women employed in the primary sector Percentage of producers in the agri-food sector/industry Aging index of the agrarian population Food expense in households (% of expenditure)
Agroecological production	Volume of the organic agricultural production (Tm) Distribution of the main organic crops (ha and geographical distribution) Size of organic farms (Ha) Production and consumption of genetically modified organisms (Tm) Sales of phytosanitary products (Tm) Number of heads of extensive livestock breeds Number of heads of native livestock breeds Number of companies of organic nurseries Number of artisan fishing boats in relation to industrial fishing boats Volume of total fish captures associated to different boats categories (artisan and industrial) (Tm) Number/production of fish farms Number of initiatives to regain traditional peasant's knowledge Energetic consumption of the agri-food system (MJ/ha) Energy balance of different production and distribution channels (energy return on investment) Application of renewable energy systems in the production of food
Agri-food packaging	Volume of food packaging (Tm) Volume of phytosanitary products packaging (Tm) Plastic consumption in agriculture (Tm)
Production diversity at the regional level	Distribution of the main crops (Ha and geographical distribution of the main crops produced in Catalonia)
Transformation and trade	
Short and local distribution channels	Trade balance of agri-food products (imports/exports, Tm) Trade balance of organic food products (imports/exports, Tm) Trade balance of fresh fruit (imports/exports, Tm) Food market share by type of establishment (% of sale share per size of establishment) Place of origin of the fish distributed in Mercabarna (Barcelona's wholesale market) Number of community supported agriculture initiatives
Fair and transparent commercial relationships	Food prices margin origin-destination Concentration in the food distribution sector (% market share) Importance of fair trade projects with the global South
Food consumption and right to food	
Culturally appropriate food	Consumption of foreign and unhealthy processed food (kg/person/year) Consumption of fast food outside home (kg/person/year) Consumption of novel functional food (kg/person/year)

(Continued)

Table 2. Continued.

Categories and subcategories	Indicators
Healthy and balanced diet	Degree of compliance with the nutritional objectives Consumption of meat (kg/person/year) Consumption of organic food (kg/person/year) Degree of phytosanitary residues in food (ppm)
Agricultural policies and CSO Cooperative and trustful relationships	Quality in the FSv networks (*) Number of small agroecological peasant organizations Level of exclusion of migrant people working in agriculture (*) Number of initiatives for territorial coordination and articulation
Territorial balance Education for FSv	<i>Land use planning from the perspective of FSv</i> Number of schools with organic meals Content of food advertising in Spain (*) Evolution of food advertising investments (€/food-related sector; % of food-related advertisements/ total advertisement investments) Presence of organic production educational content at occupational training schools (number of subjects) Presence of organic production educational content at university studies (number of subjects) Number of schools with organic garden
Fair gender relationships	Agricultural labor per gender (proportion men/women) Political participation of women in the rural and agrarian environment (number of women, proportion of men/women) Participation of women in organic agriculture projects (number of women, proportion of men/ women)

Note: Text in italics are the subcategories for which no indicator was solid enough.

* Refers to qualitative indicators.

thus, transition toward a radical democracy system (Calle 2011). On the contrary, other important aspects from a FSv perspective, such as access to infrastructures and basic services or to industrial equipment, were not considered in the Catalan case. One possible explanation is the profile of the people integrated in the Catalan FSv movement (mostly urban consumers) as well as the workshops location. Workshops took place in an urban context to favor participation, but at the same time, this could also favor the presence of more participants coming from an urban settlement, influencing the final selection of indicators. This shows both the importance of the context and the perceptions of stakeholders in the definition of the FSv goals in different places. It is also important to mention that in other cases it was not possible to assess the proposed indicators. For instance, despite the access to irrigation systems, the use and distribution of water was judged as an important theme, and it was not possible to find reliable data to evaluate it in a synthetic way.

The category 'Production model' is developed through the attributes production diversity at the regional level, life and productive rural environment (macroeconomic indicators), agroecological production and agri-food packaging (Table 2). Linked to the importance given in Catalonia to the environmental implications of producing food, quantifying the use of energy in the process of food production was proposed as an important element to characterize Catalan FSv. However, the proposed indicators could not be assessed due to the lack of information (only very limited information

based on selected case studies was found). The importance of this topic has been further highlighted with the creation of a new movement in Catalonia, the Network for Energy Sovereignty, which establishes a direct link between the FSv movement and the movement aiming to promote an alternative energetic system (see <http://xse.cat/>).

Regarding the category 'Transformation and trade', most emphasis was placed on the 'short and local distribution channels' which correspond to a major strategic action of the Catalan FSv movement, as explained earlier. But again, participants gave importance to the quality of the commercial relationship, defining a dimension in search of fair and transparent food chains and, thus, focusing on more relational aspects.

The 'Right to food' component of FSv was mentioned by most stakeholders during the interviews and workshops and was translated into indicators measuring the quality and safety of food, as well as the cultural adequacy of food consumption (Table 2). However, it is possible that conducting the research in the current temporal scale (year 2014) will result in proposing other indicators, as the economic crisis has skyrocketed poverty indexes in Catalonia (Idescat 2012), and there is an important public debate on the right and access to food. This also shows the dynamism needed in the process of developing FSv indicators, since not only the concept evolves, but also the context and circumstances at both the local and global levels, which result in different priorities of the movement at different spatial and temporal scales.

Finally, the category ‘Agricultural policies and civil society organization’ again put emphasis on relational and educational aspects, with attributes such as ‘cooperative and trustful relationships’ and ‘education for FSv’. Emphasis is also placed on fair gender relationships, with specific indicators allocated to it (‘agrarian labor per gender’, ‘political participation of women in the rural and agrarian environment’, and ‘participation of women in organic agriculture projects’). However, it is important to note that due to the political relevance of gender and youth aspects for the FSv movement, during the process of assessment of the other indicators the information was, when possible, disaggregated. In the case of youth, despite there not being a specific subcategory, some indicators tried to indirectly address the issue (e.g. ‘students of agronomic, forestry, veterinarian and food sciences studies’, ‘ageing index of the agrarian population’, ‘presence of organic production educational content at occupational training schools’ and ‘presence of organic production educational content in university studies’ at the ‘Education for FSv’ subcategory).

Surprisingly, in the agricultural policies category no indicators were proposed to address the policies as such; for instance, the number of policies that could address different elements of the FSv proposal, such as the law of short food chains approved in 2013, or issues related to food safety for artisan products, a problem for many small farmers (Binimelis, Escurriol, and Rivera-Ferré 2012). Policy issues, however, were more focused on the participation of farmers or citizens in decision-making and were included in some of the other categories (e.g. political participation of women, or social participation in the agri-food system decision-making, see Table 2). This finding again matches the specificities of the alternative food movement in the North, which tends to have a lesser focus on the role of the State and puts more effort into promoting the participation of people as political citizens (see Allen and Guthman (2006), Fairbairn (2012) and Guthman (2008) for a review of the debate on the counter-hegemonic potential of this approach in the USA). Although a subcategory called ‘territorial balance’ was recommended by the participants of the process, no indicators were further developed due to the lack of available information. In fact, research has been only recently published establishing a link between land use planning and FSv (Connell et al., 2013), confirming the information gap regarding this issue.

6. Key issues in developing FSv indicators

In analyzing the processes of developing FSv indicators at different spatial scales, we found that some conceptual and methodological similarities and dissimilarities exist. The most important conceptual difference is the reason why indicators are defined. In both cases the objective is to

measure progress toward FSv; however, in the international case, the information is focused on favoring international discussions and offering information to international movements to support governance and law changes at this level. In the local case, the reason to develop indicators is more focused on determining the state of the art in the community, as well as to favor the self-reflexivity of the local FSv movement in order to design common future strategies. In line with Niemeijer and Groot’s (2008) suggestion, the conceptual differences in developing indicators lead to differences in the methodology even when the two cases use a common political framework, that of FSv. Methodologically, the two most important differences are found in the phases a) indicators selection and b) the definition of the FSv objectives required to determine the subcategories (or attributes). In the international case, the selection of a big pool of indicators at the international level occurs at the very beginning of the research, after revision of all the different international databases (Figure 1). This pool of indicators is at later stages filtered to select the most adequate according to the data availability and the objectives of the FSv discourse as stated in international documents. Later, using a bottom-up approach, the subcategories are defined. That is, subcategories (attributes) depend on the availability of existing international indicators, and thus, have to be determined at a later stage. At the local level, however, subcategories are determined through participation of the main parties involved, after the objectives of the FSv movement are defined, and indicators come at later stages, after the attributes (Figure 1). Common in both cases was the definition of the categories, through literature review, although in the case of developing local indicators these categories were later modified and adapted to the specific situation as suggested by participants.

Also of interest is the way in which participation is favored in each of the case studies. In the first case, given the scale of the analysis, participation of interested stakeholders takes the form of an international advisory committee that is formed by both experts and activists of the FSv proposal, active in international discussions in different regions. This committee has mainly a consultation and validation role. In the second case, the parties involved are local activists of the FSv movement in the region, and thus, the degree of implication and participation at this level is much higher.

7. Concluding remarks

The present article exposes two different research processes aimed at constructing indicators of FSv at different spatial scales (international and local-regional (Catalonia)). Both the different methodologies used and the adaptation to different contexts result in two sets of indicators with substantial differences regarding the individual indicators

selected but coincident in the objectives (categories) to be addressed. International indicators refer to global trends in the international policy arena and have as a main objective the gathering of information for policy negotiations at the national and international levels. At the local level, the type of indicators is much more grounded on the specificities of local processes in the territory and has as objectives both understanding of the local situation in order to promote FSv strategies, and promoting the self-reflexivity of the movement for the definition of future actions. While contrasting the top-down versus bottom-up approaches highlighted differences associated with the different scales, the application of a bottom-up approach to a different case would probably illustrate similar differences, as the process would probably identify different areas of attention than the ones observed in the Catalan setting. Finally, the research processes show, over and above the limitations, the utility of using indicators as tools to help systematize the discourse for FSv and for assessing policies and internal actions and strategies for FSv global and local movements.

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