

# ***Methodologies for evaluation of sustainable agricultural public policies within the European context. A review.***

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**Abstract:** In Europe, many governments have already defined and implemented public policies for sustainable agricultures, at several scales and in different territories. Nowadays, decision-makers count on pre-defined and already tested evaluation methodologies for the policies they design. But indicators that are brought on the table for the evaluation tasks are mainly focused on one aspect of the sustainability. Many of those methodologies are mainly defined for a single objective, that usually is the environmental one. Thus, not all the tackled points are assessed, such as participation or socioeconomic issues.

When it comes to define public policies and their evaluation systems from an holistic or multidisciplinary perspective, several main goals are to be tackled. Indeed, from an agroecological approach, policies must be engaged in environmental issues as well as on social and economical matters. Moreover, there is not yet a specific evaluation set for systemic public policies for sustainable agricultures.

This article aims at identifying the current evaluation methodologies for public policies related to sustainable agricultures in Europe. Based on the review of several authors' publications, it presents an analysis of the existing and proposed methodologies so to highlight their potential and deficiencies for their translation into public policies defined from a multidimensional approach. This analysis, together with a reflexion on the nature of the indicators to be integrated on such methodologies will include participation, ex-ante or ex-post evaluations approach as well as whether the multidisciplinary sustainability evaluation are included. It pretends to propose a basis for defining evaluation methodologies well adapted to public policies related to sustainable agricultures that tackled simultaneously its three dimensions: social, economical and environmental.

**Keywords:** Public policies, evaluation, policies impact, agroecology, indicators

## **1. Introduction.**

The concept of sustainable agriculture has gained momentum in the European social discourse due to the successive ecological, economical and social crisis in the rural context, and also thanks to the agroecological movements.

With more or less impact, this discourse has been integrated by the political European stratum. During the last decades, many public policies have been designed so to foster the ecologization of agrarian practices, as a means for reaching alternative ways of production, which are ought to be sustainable from the three dimension of agroecology: social, economical and environmental.

It seems quite logical that, to achieve these objectives, the European institutions get transformed and that they implement new ways of acting, designing and assessing. What, indeed, means accepting the need to develop a true political agroecology, as it has been

highlighted by some authors (González de Molina, 2103; Garrido Peña, 2012). The way in which this new paradigm is built has to integrate the complexity of the agrarian transformation through the increase of stakeholder's participation, in this particular case, linked to a sustainable agrarian production. As Ostrom (1965) affirms, the evolution of institutions towards collective action needs to create an interdependent framework in between participants in such a way that each individual is collectively affected and that oblige them to commonly act to reach the expected objectives.

The theoretical frame in which this way of acting is inserted is the Political Ecology. It is defined as a discipline, which focus on the design and production of actions, institutions and norms that tend towards achieving sustainability (Garrido Peña, 1996). It is also strongly linked to Ecological Economy. But we are not going to deepen on any of those disciplines because they have been described and compared in an interesting publication of Martinez Alier (2004). This author demonstrates, for instance, how the economical ecology launches a debate in between the "weakness" and "strength" concepts of sustainability.

The task to design multi-target actions and to perform a multi-dimensional productive transformation is not easy at all. Many examples show how the implementation of some agroenvironmental policies are not generating the expected effects, whether because they haven't been designed properly, whether because they haven't been assessed on time with the adequate holistic methodologies that allow to know which is the real effect of these actions on the agrarian system sustainability on which they are acting.

Today, there is a wide offer of methodologies to assess public policies in terms of fulfilment (budget, deadlines, procedures, quantitative objectives, etc.) that have been developed by the different national agencies for assessment that exist in almost every country in Europe. This kind of assessment could be called "structural" assessment.

However, those methodologies still have a partial approach (only environmental, only economical, etc) while assessing impacts for the agrarian sustainability. Different models of production are fostered as a consequence of political actions. For a more accurate measure of the sustainability of such systems, it is important that the evaluation methodology, as Ostrom proposed, tackles the whole complexity and that it includes the three above mentioned dimensions.

This articles aims at realising a bibliography revision of the different methodologies employed for assessing some European policies related to sustainable systems. In this revision we try to identify, on the one hand, if those policies have been designed from the awareness and with the aim to involve stakeholders so to include them in the results. And on the other hand, we want to identify the complexity with which the impact is being assessed. That is if the three dimensions of sustainability (economical, ecological and social) are measured. This information will bring us a global vision of the methodological lacks from an holistic perspective, and by the way, it will show up some examples that could become guidelines for the improvement of the future tools for assessment. The study will be held around sustainable agricultures and organic farming.

Tools for evaluation must reflect the quality of inter-connexions in between the public organisations and outside (Subirats, 2005). A public policy is a collective answer, channelized by an institution, to a problem that has been considered to be relevant for the population or community concerned (Subirats, 2016). Many times, the need to integrate those mechanisms for evaluation to the design of public policies has been mentioned, but very little has been done in practice because of the complexity of such a task.

Systems for assessment are complex because (Moreno, 2007): they have to be characterized

From several perspectives (different actors); the principle of *emergence* (the whole is more than the sum of its parts) is prevailing because several actions are getting added one to the others; there is no clear cause-effect link; some self-organization processes have to be added to the institutional actions; there is a *reflexive nature* (that steps down individuals) and directed behaviours (that encourage individuals). Those factors oblige us to always take into consideration an implacable uncertainty.

A good example of a complex evaluation can be found in the work done for assessing the policies for the management of natural resources in which there is a recurrent conflict of interest between different social groups (Martínez Alier, 2004; Subirats, 2005). In those cases, conflicts can be explained, and even predicted, with physical indicators of (non) sustainability.

To delimit the analysis, we have selected the European organic farming as a paradigmatic example of implementation of numerous public policies over the last decades. It's also an interesting example to focus on because, moreover its significant contribution to the environment, the organic production model also represents a system that contributes to the improvement of the socio-economic facts of agriculture, and therefore, to its global sustainability. It is also interesting to note how many processes of *conventionalization* and loss of its genuine values, have been described, partly linked to certain public policies that have not been through a holistic evaluation process (Best, 2008; Darnhoffer *et al*, 2010; De Wit & Verhoog, 2007; Wilairat, 2010)

## **2. Public Policies for sustainable agriculture in Europe. Methods and indicators for multi-target policies.**

For the last years, many policies have been implemented throughout Europe to foster a transformation of agriculture towards more sustainable agricultures, from a local dimension until a wider communitarian scope. If we focus on European scaled policies, some of them have a clearly definite environmental target, even though most of them are multi-target policies, included in complex programs (policy mixes). It is, for instance, the case of the first CAP pillar (Common Agriculture Policy) or the case of the Rural Development Programs (RDP) in which we could highlight the Agri-Environment Schemes (AES) present at almost all EU countries.

The General Directorate-Agri of the EU, indeed, fostered the IRENA (Indicator reporting on the integration of environmental concerns into agricultural policy) project in 2002 in order to assess the environmental impact of some of those measures.

Those programs, especially the RDP, are usually proposing mid-term and final reviews to evaluate the efficacy of their measures. However, as we have already mentioned, several studies show that the grants are inefficient to achieve their expected objectives for environmental or socioeconomical impacts (Petrick & Zier, 2012; García, 2010), and they also demonstrate that the way policies are designed is not adequate to the generation of the information needed for their assessment (Subirats, 2005; Nicholas *et al*, 2006; Caporal, 2013). That is why it is important to count on an adequate methodology for evaluating the impact, the design and the spreading of the measure itself.

A special mention can be done to the grant for integrated agriculture for the wine sector in Galicia (Spain), (García, 2010). The dissemination of the measure was mainly done by

agrochemicals firms, situation that prevents to have the required conditions for decreasing the use of agrochemicals.

We have revised the assessment methodologies employed for CAP subsidies, AES regulations and in the case of organic farming, we have widened the scope to other specific policy mixes, with the aim to compile the different methodologies for impact evaluation in the sustainable agrarian systems sector. There is a wide bibliography. Table 1 sums up some examples of evaluation of those policies and the scope they have, in the sense of understanding if they include methodologies or indicators to measure the three dimensions of sustainability (environmental, economical and social), if they are applied for the design and ex –ante evaluation or if they are ex –post evaluation of the impact, and finally, if they include participative methodologies to involve different stakeholders.

Quite a high number of the evaluations aim at measuring environmental indicators only. Modelisation techniques are also getting widely spread. (Primdahl *et al*, 2010) analyses and discusses the actual and potential use of impact models in supporting the design, implementation and evaluation of AES. Impact models identify and establish the causal relationships between policy objectives and policy outcomes.

Each day, classic indicators for environmental impact evaluation are getting improved and their scope widened, as for instance, the techniques employed for measuring biodiversity (Kleijn *et al*, 2006). In general, the research around the environmental impact is modifying its approach, and it is integrating the context complexity by using multi-criteria assessment methodologies (MCA) or using expert judgements (Finn *et al* 2009; Park *et al*, 2004), not to look only for improve the impact, but also the design of the policy itself.

Uthes and Mardorf (2013) developed a wide review of studies on AES in Europe since 1994 until 2011. They found 419 studies including empirical-statistical, model-based, methodology, review and discussion papers, a quite large quantity of them!. Nevertheless, they state that the existing research is usually either based on toward ecological or economic perspectives and fails to provide a holistic picture of the problems and challenges within the agri-environmental programming (e.g. multiple measures, multi-target areas, legal aspects, financial constrains, transaction cost, etc).

In that sense, the evolution of new methods should evolve towards, on the one hand, the integration of systems' complexity that are currently assessed in such a way that the impact of a define policy could be predicted regarding environmental criteria but also regarding the social and economical sustainability of this agrarian system; and in the other hand, it should evolve towards the integration, in the design and evaluation of specific measures, of the social agents involved in the implementation of this particular action, as a means for facilitating the encompassing of the complexity itself. The appropriate quality management of the policy would be enriched by including the multiplicity of participants and perspectives (Subirats, 2005). Quality criteria presuppose ethical principles that should be explicit and integrated within the dialogue.

Recent European regulations for rural development also emphasise the requirement to involve stakeholder groups and other appropriate bodies in the policy-making process (Refsgaard & Bryden, 2012; Mills, 2013; Prager & Freese, 2009) implementing the bottom up approach. Whilst some research has looked at the more easily quantifiable economic impacts of agri-environmental schemes (AES), there is a paucity of research exploring the social dimensions (Mills, 2013).

In that sense, Munda (2004) has proposed methods for Multi-Criteria Social Evaluation Methods that have been successfully applied for the design and evaluation of policies for the management of natural resources. Those methodologies are facing the complexity of policies and the plurality of objectives and values to be measured. Multicriteria methodologies do not provide a single criterion for selection, since they do not reduce all the values to a single scale, but they include uncertainty and conflicts of values. The methodology defines in a participative way which criteria have to be assessed after have identified the stakeholders involved.

The Participatory Action Research (PAR) techniques that are already used for agroecological actions can be very interesting for integrating stakeholder actions in the evaluation processes, especially for qualitative aspects (semi structured survey or discussion groups) (Ibáñez J., 1979; Ortí, 1986). As Salazar (1992), notes, PAR is seeing as a movement necessarily linked to political actions, as generator of theories and methodologies that guide information, and finally, as a methodology that emphasizes the intervention of intellect in communities' processes in terms of communicative actions (Guzmán *et al*, 1996). There also are other interesting antecedents in other fields of study, such as policies for natural resources management (Martínez Alier, 2004; Munda, 2004) whose methodological successes could be brought to the agrarian context.

Finally, as we mentioned above, the institution itself has to establish as an objective, the inclusion, *a priori*, of tools that will enable to do a good evaluation of the policy they are designing, facilitating the generation of information and enabling participation. The no inclusion of those features in the policy framework, during the decision-making process, do not allow, *a posteriori*, to make the adequate decisions.

The SEAMLESS project conclusion affirms that institutional effectiveness is often ignored and that policies implemented are not compatible with formal or unformal norms of our society. Therefore, policy turns ineffective even though it pursues an holistic sustainable development. And policies that go to this global sustainable development, by integrating the economical, social and environmental dimensions, often require specific institutional actions so to meet their aims (Schleyer *et al*, 2007). This project tries to develop predictive models *ex ante*, for measuring the impact of public policies and it analyses the previous conditions required introducing the *institutional dimension* as a fourth sustainability dimension.

Subirats (2005) brings up that the first step is to define if we want to evaluate whether management or government tasks, and cross them with the different areas of action (operational or strategic) of administrations.

The governmental tasks are evolving in a political and social legitimation context. The unit of analysis has to be clearly defined by establishing a division between the different types of organizations, tasks and operators. And that generates different power and mutual influence relationships.

### **3. The case of Organic Farming.**

The main policies implemented in the organic farming sector are derivate from the CAP under Axis 2 (improving the environment and the countryside) of their rural development programs (RDP) or under Article 68 of Council Regulation 73/2009 (Specific support to farmers) among others from Axes 1 and 2 (Sanders, 2013). Besides CAP measures, a wide range of national or regional policy instruments exist, like several National Action Plans for organic farming. Added to that, the current organic EU legislation (R834/2007) is another policy instrument impacting the organic sector throughout Europe.

The volume of experiences of holistic evaluation of policies specifically devoted to organic farming decreases significantly in comparison to other assessments for AES.

Nicholas *et al* (2006) warned in their study that the data available didn't allow to know if the policies devoted to organic agriculture had been effective in terms of generating positive externalities, in respect to all the dimensions of sustainability. What seems to be clear is that policies have had a certain incidence in the growth of areas managed under organic agriculture and they identified 5 criteria that had improved in the organic farms in comparison to farms receiving agri-environmental grants. But because the method employed was indirect, and because of the lack of information, it was difficult to establish any cause-effect clear link.

Sanders (2013) has evaluated the impact of the European norms for organic farming on the sustainability of the sector itself. The study recognises that, although rural development has had a positive influence in the spreading and adoption of this production method, there where several aspects of it such as rural diversity, rural employment and the development of human capital, where consolidated evidence for the impact was missing. It even admits that few objectives for environmental sustainability (water, energy, rotations, etc.) can not be met because legislation is not requiring it in a compulsory way. Environmental sustainability of growth in the sector relies partly on the way in which the rules and organic concept have been interpreted, rather than been exclusively attributable to the legislation.

At the same time, other authors, (Lynggaard, 2001; Daugbjerg *et al*, 2008, 2011; Offermann *et al*, 2009; Konstantinidis, 2014) have described the relative impact that public policies and the institutional environment have had in various aspects of sustainability within organic production, for instance, as a consequence of the dependence on agri-environmental measures.

What's more, and bringing back the participatory approach, we have found proposal, such as

Håring *et al* (2009), for adopting a bottom-up approach for policy design, based on the definition of the 11 RDP of the countries lately integrated within the EU. The benefits of including stakeholders in the policy-making processes provide those policies with quality, credibility and higher probability of impact and societal gains (democracy, equity, transparency). In that case, it highlights that the SMART methodology approach which states that goals should be Specific; Measurable; Achievable; Realistic; and Timed.

From the economical efficiency of policy point of view, Schader *et al* (2014) have analysed the Tinbergen rule applied to multi-target policies using organic farming in Europe as an example. Undoubtedly, the importance of targeting and tailoring of policies to achieve maximum effectiveness with a given budget or to minimize spending for achieving the targets set has been stressed by economists and policy makers (OECD, 2007). Multi-target policy instruments, in particular cross-compliance and support for organic farming via direct payments have been evaluated to be inefficient as their multi-target character seems to contradict Tinbergen's postulate (Tinbergen, 1956). The main statement of the Tinbergen Rule is that efficient policy requires at least as many policy instruments as there are targets. However, empirical data from evaluation studies is scarce due to methodological constraints and does not permit the drawing of general conclusions on the efficiency of multi-target policy instruments. By using a model of *analytical linear optimisation*, these authors are demonstrating that the efficiency is set by the fact of using several multitarget tools within a policy mix.

ORGAP project has also realised a first approach to the elaboration and evaluation of strategic plans. It was finalised in 2007 (Schmid *et al*, 2008). The methodology proposed for the evaluation phase (ORGAPET) recommends the use of several tools and indicators well known, especially in the context of European public policies, such as multicriteria evaluation, IRENA indicators or socioeconomic evaluation programs MEANS. Due to the wide scope tackled by this tool, the results of the project are quite generic and they require a more specific application according to each of the objectives to be assessed.

Vieweger *et al* (2014) developed an impact assessment model based on this methodology for the whole evaluation of the German Organic farming research programme. They combined it with an on line survey, interviews with stakeholders and workshops with external experts. These authors point out the need for a better link between goals and the design of the program in order to better assess its impact. Contextualising the program within the whole policy in which it is developed as well as including the participatory approach in the policy-making and evaluation are, both, part of the main conclusions of this work. Again, the difficulty of knowing the impact extent of this research program is highlighted due to the interrelationships with other measures.

#### **4. Conclusion**

Policies that are fostering sustainable agrarian systems often include in their objectives, to achieve an improvement in their environmental, social and economic impact of the production system they promote and for the rural context in which they are implemented.

But, to guarantee that such objectives are met, holistic methodologies have to be designed so to allow the measure of sustainability in its all dimensions. To do so, those methodologies must be taken into account in the policy-making process, so to facilitate the generation of the information needed for the adequate assessment and the participation of the stakeholders involved in the measure. The policy design should anticipate the measurement of different indicators and impacts (combining ecological, economic and social evaluation techniques), how and when to do this data collection (for example in a mid-term evaluation) and how are the main actors to involve in the process. The inclusion of the evaluation frameworks and indicators in the pre-project will allow to collect different perspectives to be assessed and will permit a more direct cause-effect link between policy and impact. Impact models also help to this purpose. The spreading way of the measure itself could also influence its final impact.

It is the only way to integrate the complexity of the system that is being evaluated, but also the diversity of criteria and conflicts, especially in cases for which these multi-target policies are integrated within a broader policy pack in which they interact one with each other. Moreover, the participation of stakeholders will contribute to the success of the policy and will co-responsabilize the society in the objectives fulfilment.

For the last years, the assessment methodologies for agrarian public policies have evolved towards more complex systems, that integrate qualitative and quantitative techniques and that gather several dimensions of sustainability. Particularly, new methodologies have been defined so to include the social component.

However, there is still a long path to develop new methods that will assess the environmental, social and economical multicriteria, combined with a participatory evaluation. In that sense, techniques from sociological investigation, such as the Participatory Action

Research (PAR) techniques, can be of help. Those techniques enable to achieve qualitative information from stakeholders that permits identify and prioritize the sustainability indicators in both the policy design and the evaluation stage. The most used methodologies are interviews, discussion groups, expert teams, online surveys, etc.

Finally, the institutional dimension is also relevant. Public bodies must change themselves in order to integrate the multidimensional purpose of the evaluation, sharing the working way to other actors and multidisciplinary teams in the policy design. Developing predicting models for an ex- ante evaluation could contribute to improve the further impact (post) assessment.

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1. Table 1. Examples of methodologies for the evaluation of public policies schemes that foster sustainable agriculture in Europe.

Authors	Policy	Methodology	Environmental indicators	Economic indicators	Social indicators	Ex-ante evaluation	Ex-post evaluation	Participatory approach
Mazzocchi <i>et al</i> , 2013	Regulatory impact assessment	<b>Scryer</b> Fuzzy multicriteria approach		Monetisation of impacts		X	--	--
Refsgaard & Bryden (2012)	CAP subsidies at regional scale	POMMARD modelling	Biodiversity, use of mineral N	incomes	Labour, employment, migrations	--	--	--
Petrick (2012)	CAP subsidies	Dynamic labour demand equation	--	--	Labour	--	X	--
García (2010)	Agri-environmental subsidies for integrated pest management	interviews				--	X	X
Carey <i>et al</i> (2003)	Countryside Stewardship Scheme (England)	Surveys, desk study and interviews. Evaluation by an expert team (ecologist, architech, historian and social scientists)						X
Mills (2013)	Agri-environmental schemes (AES)	Interviews			Non-farm employment, income security, human capital through skills and training development, social capital through networks and flows		X	X
Finn <i>et al</i> (2009)	Agri-environmental schemes (AES)	Multi-criteria analysis schemes (MCA), expert pannels	X				X	X

Park <i>et al</i> (2004)	Countryside Stewardship Scheme (England)	Multicriteria analysis schemes (MCA)	X					
Sanders (2013)	European Organic farming Regulation (R834/2007)	Previous surveys, personal interviews, internet enquiries						
Schmid <i>et al</i> (2008)	European Organic Action Plan	ORGAPET	IRENA indicators, others.	MEANS indicators, others	MEANS indicators, others	--	X	X
Nicholas <i>et al</i> (2006)	Agri-environmental schemes (AES) for organic farming	Nominal Group Technique in expert panel workshops ('estimate-talk-estimate'), evidence based expert assessment, previous surveys.	Energym biodiversity, GMOs trazability, others	Capital investment of farms, diversification, farm income, others.	Employment, agricultural demographic, public health impact, others.	--	X	X
Schader <i>et al</i> (2014)	Organic farming area support payments (OFASP) in policy mixes	Analytical linear optimisation model	--	Economic efficiency of policies	--	X	--	--