

## Co-Designing an organic framework: the "REF'AB" Project in France

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### Abstract

*To help the development of Organic Food and Farming (OFF) systems, there is the need to consolidate conversions to OF, to support entry into organic farming, and to develop existing organic farms. Therefore a group of extensionists, researchers and educators has been working 2 years long to co-design a framework for OFF, taking into account the need to (i) embrace all forms of OFF, and at the same time to (ii) address the specificities of OFF. This project, called REF'AB (REFerentiel de l'Agriculture Biologique, 2010-2012) aims at designing the organization of set of references produced on shared methodological bases. The approach consisted in identifying key-issues of OFF systems, defining indicators, identifying relevant databases and references to feed the framework, and providing recommendations for governance to optimise the establishment and circulation of references. The outcomes of this project is that first it was not necessarily clear what a framework for OFF should be, and therefore a conference of consensus was used as a methodological tool to share views by multi-stakeholders. Second, we used sustainability assessment as an integrative process of the three levels (technical-economic, environmental, and social) and third, to manage to share a more transversal approach, we proposed a framework with 3 levels of key-properties: 1) security and efficiency, 2) durability through the protection of resources, and 3) autonomy and resilience.*

## 2. Introduction

There is a growing uncertainty about the future of agri-food systems. But new biophysical realities -the end of the myth of the perpetual growth ("Planet Boundaries")- are more and more acknowledged by the general public. We have been used to optimise our systems on the "security" and "productivity" issues in an efficiency management, then we have added since the 90ties the need to take into account sustainability, commonly seen as the integrative concept of the three pillars –environmental, economic, and social-. The challenge is now to re-consider the issue of sustainability in relation with resilience (the ability of a system to maintain its capacity to express a given set of structures and functions facing a situation of stress); and this requires a re-discussion of the set of attributes of performances that should be considered. More globally, the methods of recognition and qualification of sustainable food and farming systems remain to define (Bellon et al ., 2007).

Organic food and farming (OF&F) has been legitimated as a "prototype" of sustainable food and farming systems, since OFF combines providing public goods, and marketable ones (IFOAM 2005). By using no chemical pesticides, OFF enhances biological resources more than other forms of farming, which enables to consider OFF as a model of ecologized practices (Francis, 2009). Likewise, organic products attract more and more consumers, which also tend to recognize OFF as a promising economic model. Moreover, it is acknowledged that OFF contribute to rural development while maintaining employment, and strengthening relationships between producers and consumers.

But on another side, we have established that there is a great diversity of practices and strategies among the organic farmers, especially because there is a very fast expansion of organic, providing different kinds of models co-existing inside the banner "organic" (Sylvander et al., 2006). Diversity seems crucial, even neces-

sary : it is important to safeguard diversity in all dimensions, including socio-cultural, economic and technological, and to explore a wide variety of options, both incremental and radical. But a lot of questions has emerged with a tension between fast growing or maintaining OFF close to its ground principles (Sautereau and Bellon, 2010).

We will first explain what are the objectives of the OFF framework co-design, then in the second part, we will present the the framework as a tool for a process toward OFF sustainability through the integrative assessment of the three levels of performances (technical-economic, environmental, and social), and third, to manage to share a more transversal and dynamic approach, we will propose the guidelines of the framework with 3 levels of key-properties : 1) security and efficiency, 2) durability through the protection of resources , and 3) autonomy and resilience.

## **I – A framework, to support a vision of OFF**

### **1) Why a framework ?**

To build a framework, it is necessary to identify the strategic issues, specified by references, and matched with a set of key indicators. The whole is articulated around the purposes and elements of initiatives. The framework for OFF systems should contribute to identify the characteristics which are necessary to realize expected functions in OFF, and those to develop in the future : in a context of fast evolution of organics, it seems important to us to describe its distinctive identity, and also to emphasize the area and the diversity of the practices.

A framework can be seen as a set of databases containing "references" of an information system. These references are from two types: (i) about information or "data", or (ii) about information of " administration of the data ": definitions, and also indications about the conditions of use and validity of the data. The framework is as the vertebral column of an information system. The framework is able to be inspired by initiatives of other current frameworks, for instance the. "Agenda 21" framework. This last reference frame aims at five purposes: 1. the conservation of the resources ; 2. the fight against climate change; 3. the self-fulfilment of all the human beings; 4. a development process following responsible production and consumption systems 5. the territorial social cohesion and the solidarity between the generations.

To answer the ambitions of development of OFF with high environmental, social and economical values, we are looking for a basis to combine all the gathered requirements for an organic system, and for a common method to favour the objectives of coherence and of transversality of OFF systems. That is why the project has the following objectives:

- meet the needs of references on the OFF systems performances (technical, economic, environmental, social) to consolidate conversions, installations and development of already existing OFF systems;
- optimise actual reference production by targeting the productions with hardly stakes or for which current availability of references is too incomplete;
- propose a structuring of reference acquisition within a framework, to pool the skills and the potential of every region, by the elaboration of shared methods and the definition of a frame of use and valuation;
- exceed the production of sectorial separate references to think them in a articulated way;
- introduce a shared approach implying formalism and a list of accessible and long-lasting references;
- lean on coordinated devices on a regional, interregional but also national scale.

### **2) What is the "identity" of OFF ?**

Identity is defined " as what is central, distinctive and enduring ". It is thus a question of dealing with what differentiates OFF: in what are OFF systems unique? What are the cognitive elements shared durably between its members, the representations which the members have and build, and the practises they implement ? This refers to the consideration of the socio-cognitive dimension in the production of meaning and sense. Identity according to Mucchielli (1986) is " a set of meaning (variable according to the actors) fixed by actors on a physical and subjective reality (...). It is thus a received sense ".

A model of production is, above the visible diversity of the practised forms of farming, a simplified, theoretical representation, -ideal-type in the sense of Weber-, main technical and economic characteristics of the production in a given period. It indicates the way of producing at the technical level as well as at the economic, social, institutional, political, even ideological level. The ideal – type is an “idealized production”, which has a simple value : it is the support of comparisons and classifications, and constitutes an utopia which has to help to reconfigure our food and farming systems.

OFF carrying values -ecology, equity, health and care (IFOAM, 2005) - can be considered as a model of value-laden agriculture, going beyond classical agro-economic performances, which can refer to the notion of sustainability (Elzen & Wieczorek, 2005). To be controlled and certified, organic agriculture has been codified into rules, labels and organizations, but while expanding, the models of organic farming are diversifying. However the success of OFF systems depends on whether they can continue to improve in relation to their goals. Therefore it seems necessary to propose a characterization of OFF through the design of a framework, which could at the same time value the experiences led by pioneers, and open new perspectives. We deduce that we need to define a new framework, with new reference values, other hierarchical organizations, other thresholds, and other optima (Sautereau et al. 2010) to estimate OFF systems, towards their purposes and value systems (Darnhofer, 2010).

Pernin has showed identical justification could go against economic necessity. This potential disconnection between the core of OFF and technico-economic dimensions is a source of transformation of a project (Pernin, 2006). The "conventionalisation" of OFF, that can be seen at some producers' and consumers' levels is source of identical dissonance of OFF systems but can generate strategies by actors to mitigate this evolution: reaffirmation of a shape of regulation, of consistency between its identical and technico-economic dimensions, of the need to refocus on some values such as equity and autonomy.

### **3) There is still a need to compare**

Increasing information on OFF systems are expected. There is (i) a high demand of technico-economic references for farmers in conversion (and extension agents and educators who advice and train them) to estimate the technical and economic feasibility of their projects, and (ii) on a wider scale, demands of references to accompany the development of OFF systems on territories' scales, organization of markets and at environmental level : the final users are often here civil society or some territorial agencies, who want to measure some long-lasting effects of OFF initiatives between all existing ones (and sometimes putting some concurrencies between promoting short-selling channels to the detriment of OFF systems). One of the objectives is also to help policy makers in the development of a tool which could provide a more comprehensive and balanced assessment of sustainable land use.

For the first expectation, these multiple need of information is to reduce the aversion of the risk of the potential adopters when, being more adopted, OFF systems and their performances are better known. The risks are at the same time of technical order (does that work?), economic (is it viable?) and social (is it socially recognized?) (Noe, 2002). For the farmers aiming at the implementation of systems of production, the challenge is to assume a diversity of stakes, among which better ecosystem services functioning, and a better consideration of their environmental impacts. The aim is to engage a dynamic of joint improvement of all ecological, agronomic, economic and social performances, and at all scales with a better management at the scale of the plot, of the land, of the farm, and even beyond, with territorial management.

The framework should enable a fair comparison with systems that are optimised only with regard to one or a few criteria with high focus. We expect to choose relevant indicators that allow:

- to compare OFF systems and conventional ones ;
- to estimate the performances inside OFF systems (that means to be able to compare organic farms between them).

## **II A framework as an open-ended process towards sustainability**

While the meaning and implications of "sustainability" have been interpreted in many ways, there is broad agreement on basic components that have important implications for design and practice. For example, sus-

tainability considerations clearly include socio-economic as well as biophysical matters and are especially concerned with the interrelations between and interdependency of the two. That means not just that human as well as ecological effects must be addressed but also that these two must be considered as parts of large complex systems.

### **1) Sustainability indicators**

A great deal of efforts have already been done in identification and elaboration of sustainability indicators. A multitude of evaluative methods with indicators (IDEA, Diagnosis RAD, Marguerite, Tree of the Durability, MASC) was developed since the 90s. The suggested indicators can be combined, from the plot of land until the national level (Reau and Doré, 2008). These systems of indicators are very heterogeneous according to the institution and the theoretical reference frame. Whether it is in the choice of indicators, in their organization, in the type of aggregation and in the weighting of each indicator, in the articulation of scales, there has been yet no convergence of these systems of indicators in the research or in the institutions which would have led to privilege a choice rather than the other one (Geniaux et al ., 2006).

Today there is a big variability between operators calculating carbon assessments or estimating impacts of application of pesticides. And different indicators for the same environmental impact can bring to opposite recommendations of action, what illustrate the necessity of stabilizing and of clarifying the most relevant indicators for the research for OFF systems. The user has to question the desirable agricultural models underlying under the proposed indicators (Capitaine et al ., 2009) : on the relative level-weighting which grants to the various categories of performances, and on the reference values used to interpret indicators. Indicator development remains valuable as a way of clarifying what is important (thereby also contributing to objective setting) and well chosen indicators can be powerful devices of education and empowerment.

### **2) Some insights from EPAB Research Program : Evolution of the Performances in OFF**

Approaches linking the productive, environmental, social and economic performances remain rare. Multi-criteria assessments poses significant cross-challenges. This is a complex and very difficult task. Two of the main challenges are 1) how to balance very different types of assessments and avoid bias in favour of accurate knowledge and which is easy to measure, and 2) how to communicate complex overall assessments in such a way they can be used in practice by different actors and stakeholders with different perspectives and values.

In the REF'AB project, links were made with EPAB Research Program where evaluations were done on jointly various performances and their quantitative and qualitative dimensions. In first approach, we can distinguish:

1) Technico-socioeconomic performances directly bound to the income and to the well-being of who pilot the production system: yields, quality of products, production costs, margins, working conditions, ...

2a) environmental performances which depend on considered targets, and which consist in minimizing negative impacts: consumption of not renewable resources (fossil energy, mining resources for P and K), improvement of the quality of the resources (water, air, ground, and biodiversity), effects on human beings and ecosystems. Environment is here more considered as an external component on which the impacts of the activity have to less degrade its state.

Environmental assessment clearly implies that minimization of negative effects is not enough. Few environmental assessment processes today are well designed for addressing ecological effects within complex systems, and similarly few emphasize attention to maximizing positive long-term improvements (Gibson, 2001).

2b) agro-ecosystemal performances which determine the evolution of the capacities of the environment to fill its productive functions in the shorter and longer term: fertility of the ground, infrastructures, (but also stock of seeds of self-propagating plants or *inoculum* of diseases in the plot of land), etc. Environment is here one of the production factor to better regulate : the aim is to manage to reproduce resources (conservation manner). It is a question of optimising the mechanisms of biological auto-regulation, of closing the cycles of minerals to limit the losses ... It requires to use more

knowledge to generate a higher level of organization by unit of surface (Niggli et al., 2009). This eco-functional intensification is crucial in OFF Agenda, as in the current revival of the agroecology (Wezel et al., 2009).

In a review of the literature on the economic performances of OFF, Nemes (2009) advances the difficulty producing reliable comparative analyses and pointed the need to work on the domain of validity of the existing comparisons. The majority of the estimations, whether interested in the profitability, in the production functions, or in the agronomic yields lean on comparisons between OFF and conventional ones not taking into account the presence on a bias of selection. The evaluations are different in OFF or in conventional, and results on the slightest performances of OFF are often questioned because of the absence of consideration of this. The comparative works are besides often produced from samples limited in size as regards to the development in OFF.

#### *Agronomic performances*

The difficulty is that there is often a necessary “transition phase” to come into organic for conventional farms: at first, during conversion time, authorized phytosanitary products are used (Substitution), before the progressive implementation of an integrated and global management of an agro-ecosystem can be implemented (Reconception) ; and this requires experiences and knowledge (Flatten et al., 2008). Analyses of the agronomic performances showed that a reduction of yields for instance is often progressive; and that it can take several years before the situation gets to stabilization. However it is necessary to note that these results often concern varieties selected for the conventional agriculture *de facto* little adapted to the organic farming production. Besides, it seemed to us that quantitative criteria must be linked together with qualitative ones to be relevant (Fauriel et al., 2009). That is why agronomic references should include references for beginner systems in OFF and others for OFF mature systems with in the between a gradient of situations, which complicate the framework.

#### *Economic performances*

If yields are an important element to study, they are not the only criteria of profitability. For instance, analyses of samples of farms in OF and conventional farming with similar characteristics showed that the slightest yields were compensated with more stable economic results in OFF than in conventional, these results being associated to lesser variability of prices (Sautereau and Petitgenet, 2011). The stability of the economic results is also to connect with another property that we were able to bring into light: a bigger autonomy, at the same time in the inputs supply and in the marketing, served itself by a bigger diversification of the productions. We can move forward the hypothesis of an arbitration between agronomic risk and economic risk during the conversion process. Finally, the comparisons of profitability often do not report well certain trajectories where conversion constitutes a strategy of "survival". Therefore we should not only consider differences of profitability between groups of farms in OF and in conventional, but rather by considering the capacity of every system of production to perpetuate the activity or to avoid the agricultural abandonment (Geniaux et al. 2011).

#### *Social performances*

Devices of financial and technical supports (advice, training, organization of networks, ...) set up by public policies or by other types of collective actions directly influence the above performances. OFF farmers often get organized outside institutional productive networks (seeds farmers, thematic associations), and these social networks contribute to share the knowledge in OFF by regularly organizing visits of farms, exchanges between producers, which should be also taken into account in the “social innovation” process. Besides, motivations, often not considered as valuable factor, are also important : ethical and moral considerations (e.g. be in coherence with his (her) convictions), or social (e.g. demonstrate to the others his (her) commitment in favour of the environment) play roles in adopting other practices (Mzoughi, 2009). These motivations and principles enter in the choice of the production modes and interact with the above performances quoted as “objectivable” : thus they must be also considered in the appreciation of the global performances of the systems.

Another delicate consideration is on the criteria “labor”, which can be ambiguous: indeed, most of the time the practices in OFF systems generate additional working time, what can be a constraint for farmers. But the

additional work does not always seem to affect the positive perception which they have of their job. Questioned about their quality of life, the farmers in OFF systems indicated the personal satisfaction (interest of the work, the necessary technicity correlated with stimulating challenges) while the farmers in conventional make more reference to the uncertainty and low prices (Sautereau and Petitgenet, 2011). This performance refers to objectives of re-conquest of sense and coherence in farmer's job, and is often not taken into account in current evaluation.

To summer up, many of the most desirable sustainability-oriented initiatives will involve trade-offs between performances. System Innovation can help to ease the adverse-effects of some trade-offs but system innovation is not without problems: it brings risks, and the need to built capacities to absorb risks.

### **III- A framework for changes in the assessment of systems of goods provisioning : from the efficient use of resources to resilience**

The work was carried by different stakeholders producing references in OFF (research, experimental institutes, advisers, farmers' associations, educators) and has been decomposed into complementary work packages. First, a large inquiry was made to evaluate the need of references. A second phase was a review of the various existing devices (networks of observations, experiments) of reference production in organic farming. The third package is the methodology work to build the framework.

This project is very ambitious because of the large covered fields: productions, actors, territories, sectors, scales. A difficulty thus be to manage compromises to guarantee the representativeness of the various territories and the sectors. Another difficulty will be to manage the complexity and the variety of the situations to be analyzed. The diversity of the partners and their skills should help to manage this complexity, by valuing this variety. And at least but not last, there is the need to qualify trajectories of OFF systems.

#### *Initial diagnosis*

The first phase showed that there is a very large expectation on references concerning OFF including social, bio-economic, environmental and nature quality considerations.

The second phase pointed out the main gap in references in OFF in technical or economic nature at various levels and scales: certain productions are little investigated ; and according to regions, the levels of knowledge of the performances are very uneven towards the potential productions which may be converted. Beyond this lack of technico-economic references, questionings on the type of marketing, the territorial approaches, the consideration of the environmental functions... are added.

These two first steps showed that the partners of the project did not agree on the objectives of the next step which is the OFF framework, even if the necessity of building a specific framework in OFF was shared. This project was based on the ability of multi-skateholders to have a "holistic" approach of OFF systems, but the first exchanges revealed the necessity of clarifying certain points regarding to the framework. : a conference of consensus was thus organized to discuss various points of controversy on the construction of the framework.

#### **1) The need for a consensus conference**

Inspired by a Danish model been born in the middle of 1980s, a conference of consensus is a method of consultation and debate having for purpose to help in the decision-making. This method consists in making audition by a jury of experts on a specific theme. At the conclusion of these auditions, the jury elaborates a series of concrete recommendations to the organizing institution in the concerned field. The identified controversies were the following ones:

1. The objectives of the framework (organization of the reference production, or the organization of the distribution of the references),
2. The nature of the references to be taken into account,
3. The organization of the partners (legitimacy of the project leader, governance, management of the competitions between stakeholders),

4. The way of integrating (or not) the knowledge / references produced by farmers (bottom-up production of references complementary to the classic top-down one).

The jury raised the existence of a consensus on the importance of references needed in OFF although this still remains to specify (and to organize into a hierarchy). He also underlined the necessity of progressing in the organization of a national framework. He suggested working on (i) the type of framework to establish, (ii) the way of constructing this framework, (iii) the need of organization of the actors, in the respect for the stories, the skills, and the experiences of the various structures.

The exchanges showed that before continuing the reflection on framework, the notion of reference must be clarified :

- There are targeted users and uses (the reference must be able to join the reasoning of the user; the construction of a reference is based on an hypothesis concerning the way of arguing of his(her) potential user).
- Origin of the data and the nature of the methods of construction (methodological transparency).
- Domain of validity (type of ground, type of farms, geographical zone,..). The transition from the data to a reference supposes a work of extrapolation : the definition of the domain in which this extrapolation is valid often leans on the mobilization of theoretical knowledge.
- Agreement shared by experts and actors (including farmers) on the characteristic elements of the reference (relevance, validity, stability).

The jury suggested to define a reference as a " mobilizable information to act, explicit (by opposition to a tacit knowledge), exogenous (built by a third party) and contextualized (with the domain of validity)". The references feed diverse activities- technical, tactical or strategic choices, evaluations, advice, training- led by various actors (farmers, advisers, teachers, public decision-makers, etc.). The jury pointed out that the references are a category of cognitive resources for action, with other resources such as tacit knowledge (know-how skills), theoretical knowledge, decision-making tools, etc. A decision-making tool is not a reference but it can require some.

#### ***(i) The type of framework to establish***

The project aims at building a joint organization of the reference production on shared methodological bases at the national level. The present project does not aim at producing directly references but the frame in which they would be desirable to be produced (methodology, use, valuation) and that allow comparison. Therefore indicators allowing comparisons are to be privileged.

The jury confirmed that the framework can lean at the same time on indicators used in conventional agriculture (in particular for the farms in conversion) and on specific indicators of OFF, for a more global approach of the farm (among others in the social and environmental domains). The framework to be built has to answer to identified specific needs. For example, while elaboration of the references often use averages, the management of the biological systems also creates the reference need on the question of the risks and the behavior of adaptation to the risk.. It has been underlined not to focus only on annual observations, but every time it is possible on averages of 5 years to take into account variability.

#### ***(ii) The construction of the framework***

The jury noticed that it is necessary to distinguish the sources of data at the origin of the references and the way of transforming these data into references (method of construction). Sources of data to build references are very variable: research, experimentation, network of farms, farmers' observations and knowledge, visits, demonstrations, study of group, monograph, monitoring centres, surveys,.... To build a reference, the identification of a target (farmer, adviser, researcher, teacher...) whose needs can be divergent, and the use of a vector, are essential. The reference construction needs a work on the coherence of the data to reach to a convergence between empirical knowledge, studies of groups of farms, experimental results of another region or by an interpretation of the data (for instance: construction of typologies), and extrapolation of knowledge by confrontation.

## 2 - Towards the REF'AB framework

### ***From a conciliation of performances to a combination of properties***

Indeed, the frameworks are extremely correlated to the models to be estimated, and those conceived for the conventional agriculture (essentially based for example on the productivity / ha), are not necessarily relevant for the other models of production. As we investigated the links and the tensions that diverse performances maintain, and indicated the importance of the “non-marketable” performances, we show unambiguous correspondence between the performances of the systems and their properties. For instance input autonomy contributes at the same time to the agronomic (residues of pesticides and quality of products), ecological (increase of the ecosystematic interactions), economic (by reducing the costs of these inputs) and environmental performances (by limiting the risks of pollutions). But some other are more ambiguous : Specialisation combined with the growth in size has led to a range of negative consequences on the environment, biodiversity, landscape, etc. But on the other side, last datas of the French statistical Agency has again put the emphasis that the bigger the farms were also the ones with the more income.

### ***How to deal with complexity ? « Sustainability in practice »***

As proposed by Jackson et al. (2010), we proposed a temporal framework involving three groups of concerns and “levels”:

- *level 1* : first, the flow of goods and services for the “here and now”, where financial returns and **efficiency in the use of resources** are focused ;
- *level 2*: second, persistence and continuity through investment in assets and stocks, upon which **sustainability** is focused; **beyond the use of resources, sustainability is about protection and creation** (reproduction of all kind of resources) ; responses to short term concerns should also include long term goals.
- *level 3* : third, capacity to deal with change, to ensure future agro-ecosystem functioning in ways that include options that are still unknown, that is a **sustainagility** focus : operational criteria and indicators of sustainability, tend to focus on 'persistence', while change and agility may at a longer time frame contribute more to high-level sustainability goals. « Sustainability » often invokes persistence along current trajectories ...« Sustainagility » is to emphasize the importance of developing **adaptive capacity and transformability** of socio-ecological systems (Jackson et al, 2010). Beyond the classic properties such as productivity or maintenance of the fertility of the environment, other properties as autonomy, adaptability, resilience also at stake (Lopez-Ridaura et al ., 2005).

The heart of sustainability has often been depicted as the intersection of social, economic and ecological interests and initiatives. Accordingly, many approaches to sustainability oriented assessments have begun by addressing the social, economic and ecological considerations separately and have then struggled with how to integrate the separate findings. We were also facing this problem, and we advanced step by step with three groups to address the diverse issues.

In practice, some problems were raised:

- how to define the level of desirable detail for a framework? Any list is a continuation of fitted scores; we can always detail it by adding a level: there is no formal criterion allowing to define the degree of detail in which is advisable to stop.
- how to integrate and value OFF diversity, but also the territorial dimensions and the market structuring, while a prerequisite base of requirements will be defined ?

We met real difficulties:

- Indeed there are still lacks of references in OFF justifying the need to clearly invest the “classical” level of sustainability (means that are dedicated on this level are lacking on other levels).
- This project put emphasis on the difficulties to move beyond efficiency and sustainability towards a sustainagility paradigm for greater resilience and adaptive capacity.



- The evolution of the systems and the improvement of their performances, in particular environmental, can generate new systematic properties (robustness, autonomy, adaptability in particular) : how can the framework integrate trajectories of learning, and mobilizing new resources ?

- The harvest of data for certain indicator is sometimes very difficult: for certain products, like legumes for instance, prices can vary daily, and the quality diversity makes the establishment of an average price very difficult.

- We have chosen 5 "global" technical-economic performance indicators, 3 indicators for productivity of work, 2 indicators for the productivity of capital, 2 indicators of autonomy, 1 indicator bound to the competitiveness of products and one indicator linked to diversity. We have an hypothesis that there is more diversity and diversification in OFF farms. With two contradictory ideas: the less they are specialized, the less they are vulnerable (1); and the more they are specialized the more efficient they are (2). Therefore, it is interesting to put in relation the indicators of efficiency with an indicator of diversification (such an indicator can only be a composite indicator, which will only be rarely available for comparisons with conventional systems).

We insisted on the need to change criteria, to pass of an divided approach into a functional systemic approach. But finally, our analysis drives us to the evaluation of the durability such as it is generally practised, as the "classic fragmented approach", even if we tried to approach the properties of the systems approach on the preservation of a set of properties insuring the functioning of a system of production: **security, existence (level 1), reproduction of resources, and responsibility** (effects of choices in the shorter and longer term) (level 2), **autonomy and coexistence with other systems, adaptability, resilience (level 3)** (Bossel, 1999).

Therefore we tried to reorganize our framework with social, economical and ecological elements referred to properties such as autonomy, and resilience. A complex system approach implies explicit appreciation of uncertainty, need for flexibility, and adaptive capacity, which are difficult to assess. We met another methodological difficulty, because these proprieties are of course very much linked together : a system which is diversified can be more resilient, and can easier be autonomous. And finally cutting into these proprieties is also a division, and not a "holistic" approach.

Another limit of our work is that we restrict ourselves at the farm scale. But how is a quality of a production mode related to other qualities such as the quality of global/local food chain, scale of operations, equity/inequity in the distribution of costs and benefits ... ? A more sociological analysis of the transitions shows that it is on the scale of the wider socio-technical system, including the farms and their strategies, but also advice, selection, research, sectors, public policies, ... that foster models to change (Lamine and Bellon, 2009). But there are no methodologies that allow the assessment of the full performance (costs, benefices, robustness, resilience) of food systems in all dimensions (environmental, economic, social, ethical, and health) at a given time; and private goals do not always coincide with public ones.

Despite all these difficulties, we propose a global tool to develop OFF systems and networks. Every actor will use the framework according to the margins of the practices he has to implement and according to his strategy, his skills, his means, and the domains he has chosen to invest, as well as depending to his local organization.

Even if it was tackled by methodological problems of measurability, commensurability between different units, uncertainty and plurality of fields of interests, and the lack of transdisciplinarity outcomes, the added value of the project was still its integrative approach to full fill a "multi-criteria performance matrix". This kind of integrative approach will be pursued in an ambitious European project called "GLAMUR" (2012-2015) to assess local versus global food chain, where OFF systems will be studied as one of the case studies.

## CONCLUSION

The necessity of the development of a framework for OFF was established. There is a need of looking for the continuity, even for coherence, between the OFF specifications, which is a means obligation, and a OFF

framework, which is finally a results requirement in relation with a certain "vision" of OFF. The first step of our work underlined the need to better accurate the OFF systems with their environmental and social dimensions. In other words, there is a need to exceed the simple pooling of technico-economic references (even if for certain sectors it is an objective priority). The framework is required to answer the current stakes in OFF development, to integrate additional dimensions to the more "classical" technical and economic references: social, territorial, environmental, in a multi-annual approach to assess the values and the "public goods" produced by OFF systems. The construction of the framework is based on a set of sustainability performances criteria. We wish to insist on the necessity of recognizing the diversity of the OFF systems and their respective performances. Indeed, OFF systems present multiple combinations of criteria of performances, and certain non OFF systems can have more beneficial environmental impacts than certain intensive OFF. Therefore it seemed to us necessary to adapt OFF assessments by taking this diversity into account, firstly by characterizing this diversity (Sylvander et al., 2006; Desclaux et al., 2009; Sautereau et al., 2011). We underlined the necessity of reconsidering the relevant spatio-temporal scales: i) the long steps of time, which allow to measure the evolution of a set of performances bound to reconsidered objectives; and ii) relevant spatial scales, according to the considered processes.

We built our framework with 3 levels of key-issues with related proprieties: the level of the short term responses, which is related to security, through the efficiency of the use of resources, the level of longer term, where functions such as protection of resources are aimed in the view of sustainability, and the third one, which is the "sustainagility" level (Jackson et al., 2010), which is in a certain way a synthesis of both levels: being able to adapt and adjust (short term) in a sustainable manner by mobilizing capacities of learning (autonomy) and networking (coexistence).

Some tools such as the REF'AB begin to be used in some countries: RISE produced by the FIBL (2010), OCIS produced by Elm Farm in England (Gerrard et al., 2011). The last one does not include an economic assess: it is specially focused on environmental and social aspects, to assess the "public goods" produced in OFF. The REF'AB framework has just entered now in a test period and is not yet commonly used.

To build and to validate an OFF framework is a very ambitious project, but to make it "live" is another one. The framework should be evolutionary, to adapt the questions to the moving context. Its evolution and its management must be thus planned in a dynamic way, with the notion of "feedback" between reference needs, reference acquisition, and improvements to be brought, in a continued improvement strategy. The implementation of a national platform to manage this dynamics is an envisaged solution, which will be examined among the others.

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