Supporting elected representatives in the preservation of agricultural land: Suggestions for a methodological guide

Gaëlle Bernard

Norwegian University of Life Sciences
Department of IPM
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List of abbreviations and acronyms

AFIP	Association de Formation et d'Information Pour le développement d'initiatives rurales Association of training/education and information for the development of rural initiatives
AFOCG	Association nationale de Formation Collective à la Gestion National association for collective training in business management
AMAP	Association Pour le Maintien de l'Agriculture Paysanne Association for the maintaining of peasant agriculture
ARDEAR	Association pour de Développement de l'Emploi Agricole et Rural Regional association for the development of agricultural and rural employment
CAUE	Conseil d'Architecture d'Urbanisme et de l'Environnement Agency of architecture, urbanism and environment
CSAAD	Conseil Stratégique d'une Agriculture et d'une Agro-industrie Durables Strategic council for sustainable agriculture and agro-industry
CP	Confédération Paysanne
DATAR	Délégation interministérielle à l'Aménagement du Territoire et à l'Attractivité Régionale Inter-ministry delegation for land planning and regional attractiveness
EAFRD	European Agricultural Funds for Rural Development Fonds Européen Agricole pour le Développement Rural (FEADER)
EEA	European Environment Agency Agence Européenne de l'Environnement (AEE)
ENRD	European Network for Rural Development Réseau Européen de Développement Rural (REDR)
FADEAR	Fédération Associative de Développement de l'Emploi Agricole et Rural Associative federation for development of agricultural and rural employment
FNAB	Fédération Nationale d'Agriculture Biologique National federation of organic agriculture
FNCIVAM	Fédération Nationale des Centres d'Initiatives pour Valoriser l'Agriculture et le Milieu rural National federation of centers for initiatives to valorize agriculture and rural environment
FRCIVAM	Fédération Régionale des Centres d'Initiatives pour Valoriser l'Agriculture et le Milieu rural Regional federation of centers for initiatives to valorize agriculture and rural environment
GDP	Gross Domestic Product Produit Intérieur Brut (PIB)
GLCCD	Global Land Cover Characteristic Database

GRAB	Groupement regional des agriculteurs biologiques Regional group of organic farmers
InPACT	Initiatives Pour une Agriculture Citoyenne et Territoriale Initiatives for a socially aware and local agriculture
JAC	Jeunesse Agricole Catholique Catholic agricultural youth
MRJC	Mouvement Rural de Jeunesse Chrétienne Rural movement of Christian youth
NRN	National Rural Network Réseau Rural National (RRN)
PDO	Protected Designation of Origin Appellation d'Origine Contrôlée (AOC)
PLU	Plan Local d'Urbanisme Local urbanism plan
PNR	Parc Naturel Régional Natural Regional Park
RAD	Réseau Agriculture Durable Sustainable agriculture network
RRN	Regional Rural Network Réseau Rural Régional (RRR)
SAGE	center for Sustainability And the Global Environment
SCoT	Schéma de Cohérence Territoriale Territorial coherence schema
SPA	Special Protection Area Zone de Protection Spéciale (ZPS)
UAA	Used Agricultural Area Surface Agricole Utile (SAU)
ZAP	Zone Agricole Protégée Protected agricultural zone

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1. Introduction

Land is a resource for which we observe an ever increasing demand. We use land to produce food, raw materials and for waste absorption. Its agricultural functions feed the population and maintain population in rural areas. The loss of farmland is an important issue worldwide. In France, as in many countries, some agricultural land is regularly lost to urbanization: 745 km² of agricultural land – around 0.27% of UAA in 2000 – were turned into artificial surfaces between 2000 and 2006 (Antoni 2011). The Centre region is the French region losing the most important area of agricultural land every year: around 7,850 ha (DRAAF Centre 2010). The pressure on land, especially in peri-urban areas, leisure areas or housing areas of the rural outskirt of cities, leads to a high increase of land price and thus difficulties for new entrants into farming or for the maintaining of agricultural activities. A new law has been passed in 2006 (law for agricultural and fishing modernization – loi de modernisation de l'agriculture et de la pêche) to help preserve agricultural land. One of its objectives is to reduce by half the yearly consumption of agricultural land by 2020. In addition, the ARDEAR (Regional association for the development of agricultural and rural employment) – with whom I have done my thesis work – is also pushing for farmland preservation.

Territorial collectivities[1] have a role to play in agricultural land preservation. They have, through their policy and land tenure rights, the power to decide what they want to do with land within their jurisdiction, which use they want to give to it through zoning. For the project, it is thus considered that one of their roles should be to preserve agricultural land and activity. Several territorial collectivities have shown interest in agricultural land preservation; many more are looking for advice on how to preserve agricultural land, and to keep or create sustainable agricultural activities within their territory. This thesis explores what role the territorial collectivities can play, examines whether it is within their legal purview, and how different ones have pursued this issue.

After the presentation of the ARDEAR's project and the issues of urban sprawl and artificial soil sealing, I will briefly explain the functioning of collectivities in France and what their role could be in agricultural land preservation. I will then describe what is happening in the world, in

[1] "A territorial collectivity (French : *collectivité territoriale* and sometimes *collectivité locale*) within the French Republic is the generic name for all subnational entities and dependent areas which have an elected local government and a "certain freedom of administration"" (Wikipedia 2011) For terms such as "territorial collectivities" which are typically French, I chose to keep the French words or a direct translation.

Europe, in France and in the Centre region regarding agricultural land loss, urban sprawl and soil sealing. The methodology will present how experiences of and tools available to collectivities on this topic were collected, selected and synthesized on datasheets. The experiences and tools selected for the guide will be presented in the results, as well as the key factors of success. I will finally discuss the results and approach the issues of land rights' markets, farming practices and land scarcity.

1.1. The project

1.1.1. The project's owners

1.1.1.1. ARDEAR Centre

The ARDEAR is the regional level of the FADEAR (Associative federation for development of agricultural and rural employment) which was created in 1984 by farmers defending peasant[2], thriftier, more autonomous and environmentally-friendly agriculture (FADEAR 2011). These same farmers first created the farmer's union "*Confédération Paysanne*" (member of the international network Via Campesina and thus sharing the same ideas). The FADEAR was then created to offer farmers training, help them in using more economical, environmentally-friendly and job-creating practices, and support them in development actions (FADEAR 2011). ARDEAR Centre, created in 1995, defends peasant agriculture, supports new entrants into farming and short supply chains.

The ARDEAR answered the call for proposals issued by the State and the Regional Council for the Regional Rural Network (RRN). The project is a collective project of the InPACT network but the ARDEAR is conducting it.

1.1.1.2. InPACT network

The InPACT network (Initiatives for a socially aware and local agriculture) exists at a national (see Appendix 1 for more details) and regional scale. It is an associative platform grouping

[2] The definition of peasant agriculture given by the French farmers' union Confédération Paysanne is the following: "It should enable a maximum of farmers disseminated on the whole territory to live decently from their work on a "human-scale" farm that produces sound and quality food, without threatening tomorrow's resources. It should participate, with citizens, to make rural areas alive in a living environment appreciated by everyone." (Confédération Paysanne, FADEAR)

agricultural associative networks whose aim is to promote and put into action sustainable agricultural and rural development.

InPACT Centre mainly works on 4 axes:

- New entrants into farming,
- Sustainable agricultural practices,
- Short supply chains,
- Dialog with society.

It is composed of the AFOCG 45 (association for collective training in business management), the ARDEAR, the FRCivam (Regional federation of centers for initiatives to valorize agriculture and rural environment), BioCentre (inter-professional organization of organic agriculture), Alter'énergies (association promoting responsible ways of production and consumption), the MRJC (Rural movement of Christian youth) and Terre de Liens (civil society organization supporting collective ownership schemes and acquiring farmland to free it from the commodity market) (see Appendix 1 for more details).

There are many organizations working in the agricultural sphere. These are the ones promoting small-holders, peasant and organic agriculture in the Centre. There are some more such as the regional and *départementales* Agricultural Chambers, and the various farmers' unions. The primary focus of all these organizations is supporting farmers and not preserving land. However, they are all concerned about agricultural land loss and most of them are already intervening to preserve farmland. A current issue is that there is no clear and systematic way of preserving the land base on which farmers rely.

1.1.2. The Rural National and Regional Networks

The regional rural network (RRN) is part of the national rural network (NRN), itself part of the European Network for Rural Development (ENRD).

The ENRD was created in 2008 to bring together rural development stakeholders, and to implement the Rural development Programs of the EU (EU Commission 2011; Réseau Rural Français 2011). "Each Member State shall establish a national rural network, which groups the organizations and administrations involved in rural development" (EU Commission 2011).

The objectives of these three networks are – at regional, national and European level – to:

- promote an integrative and participative approach by enabling stakeholders from rural areas to meet, exchange and work together,
- exchange experiences and know-how for the better efficiency of rural development policies,
- analyze good and bad practices (content of rural development projects and methods used) to improve rural development projects financed by the EAFRD and valorize them,
- provide information on developments in rural areas,
- organize meetings and seminars (EU Commission 2011; Réseau Rural Français 2011).

In France, the NRN is run by the Ministry for agriculture and the inter-ministry delegation for land planning and regional attractiveness (DATAR). Regional Council presidents and Regional Prefects are responsible for the setting up of this network at the regional scale (Réseau Rural Français 2011). The RRNs develop territorial actions adapted to the local context and stakeholder interests.

The project proposed by the ARDEAR is on the general topic "country planning" and more precisely on the management of agricultural land in the Centre region. Its aim is to co-construct with various partners a methodology to help territorial collectivities in their strategy of land use management and their projects of creation or maintaining of sustainable agricultural activities on their territory.

The project is financed by the EAFRD (European Agricultural Funds for Rural Development) and the French State.

1.1.3. A response to needs

The project starts with the acknowledgment that the Centre region leads France in the loss of agricultural land. Moreover, the InPACT network observed that there is a real demand from civil society to maintain sustainable agricultural activities in some areas such as peri-urban areas and the Loire valley. More and more collectivities want to find solutions to these issues and thus act to maintain, create and plan agricultural areas in their territory.

As previously explained, the many organizations supporting farmers want to step in on farmland preservation. Some of them already intervene to help collectivities in such projects. Through the

pilot experiences of support to collectivities led by InPACT Centre, it appeared that it is difficult for collectivities to have a good knowledge of existing tools and to get their bearings in the many stakeholders from the agricultural sphere that might intervene. Increasingly, they are looking for advice on how to preserve agricultural land and thus keep or create sustainable agricultural activities on their territory. There is currently no clear way of preserving agricultural land and no coordination between the various organizations. By bringing them together, one of the project aims is to start discussing how they could coordinate to help collectivities.

Coordinators from the InPACT Centre networks were solicited by collectivities wanting to work on agricultural land and activities preservation and looking for help. As such a demand is new, the coordinators do not have any experience on supporting collectivities on such projects. They need a methodology to know how to respond to collectivities' solicitations. The ARDEAR's project results are thus intended for both the local coordinators as well as the collectivities.

Even if ARDEAR defends peasant agriculture, it has been decided that the first objective is farmland preservation, no matter what the production on this land is; intensive arable crops or organic market gardening. Raising awareness on agricultural practices would be the next step and will be included in the discussions with collectivities. It is however clear that peasant agriculture is the type of agriculture that will be favored by ARDEAR in the projects it will work on, especially projects including the creation of new agricultural activities.

1.1.4. Execution of the project

The ARDEAR's project was funded for one year starting in October 2010 and to be finished in September 2011. It is composed of various parts:

- Search and inventory of existing experiences on the national and regional territory
    - See what worked or didn't in other places
    - Deeper analysis of pilot experiences in regional territories
- Organization of thematic work groups: 3 work groups (stakeholder categories) – collectivities, agricultural sphere and civil society
- Comparison of points of view: meeting of the 3 groups of stakeholders – one or two meetings to collectively elaborate the methodology and to position each stakeholder on the general set up and implementation of a project
- Conception and realization of transferable tools at a regional scale (methodological guide, datasheets, experience catalogue)

- Start of a test-phase of the methodology with demanding collectivities – identify collectivities and offer them experimental support; put in practice the tools created

1.1.4.1. Meetings with the 3 stakeholders' groups

The stakeholders included in the project are divided into 3 groups: collectivities (*communes, communautés de communes, agglomérations*), civil society (consumers' associations, AMAP (association for the maintaining of peasant agriculture – equivalent to CSA schemes in the USA), Terre de Liens, parents-teachers associations, associations for nature preservation) and agricultural sphere (ADEAR (*départemental* level of ARDEAR), CIVAM, Chambers of Agriculture, farmer's unions). Meetings were organized by my supervisor with the stakeholders of the 3 groups to present the project to them and to get to know their experiences and their expectations. Following the first *départemental* meetings, a regional one was organized for each group to share what was expressed in all the *départements* and summarize each group's expectations and offers towards the two other groups. The 3 groups were then reunited twice at the regional level. The aims of those meetings were to confront the points of view of the various stakeholders and co-construct the support methodology.

1.1.4.2. Production of a methodological guide

As a result of the project, a methodological guide for elected representatives will be produced. This guide should also enable InPACT Centre coordinators to better know how to support a collectivity on a project linked to agricultural land or activities preservation. The guide will contain a section about the methodology, and experience, tool and stakeholders' catalogues. A questionnaire for collectivities will be produced as well. It should enable them to ask themselves appropriate questions in order to diagnose the situation of their territory and better define their project (e.g. which place does agriculture have on the territory? what kind of involvement is hoped for? which results are expected?). One or several collectivities should then test the methodology.

1.1.5. My work in the project

We were two people working on the project, my supervisor – Sophie Lemeunier, part-time project executive – and myself. Meetings with a technical committee bringing together coordinators from various structures of the InPACT network and the ARDEAR president were

regularly organized to follow the development of the project, give opinions on various questions and validate all the decisions that had to be taken (Figure 1).

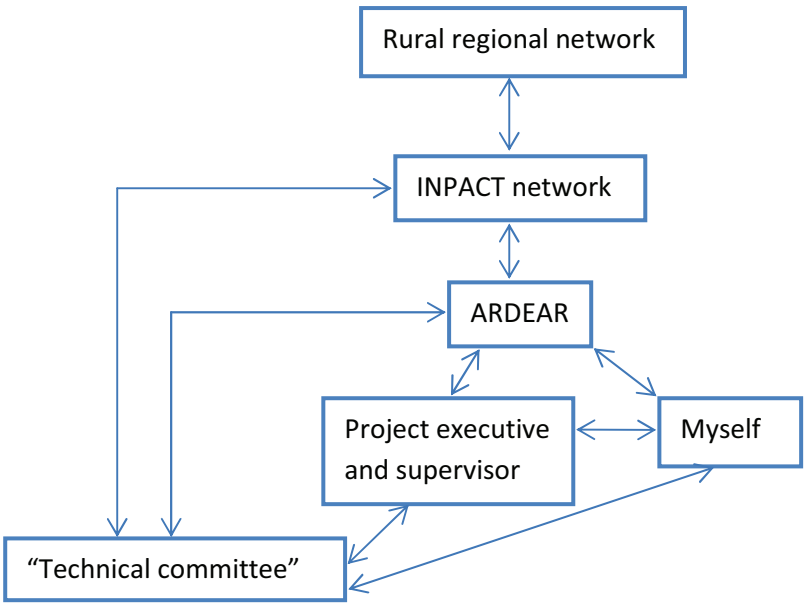

Figure 1: Project organization

My participation in the project consisted mainly in researching experiences – on the regional and national scale – of support to or initiatives of territorial collectivities in their management of agricultural land, analyzing and synthesizing them to highlight the reasons for success and failure. I also had to list and describe the tools available to territorial collectivities (e.g. land use planning and "agricultural protected areas"). The aim was to summarize the different experiences and tools on datasheets to create a sort of catalogue.

Besides this work, I participated in meetings with different stakeholders (e.g. associations and municipalities) in order to get information on their experience and to have an idea of their expectations for the project and for the guide. I attended all regional meetings where we presented our results and asked for the stakeholders' comments.

The methodology will partly be based on the work I did and on the meetings.

1.2. "State of the art" on what does already exist on agricultural land for elected representatives

Concerns for agricultural land are increasing, and more and more conferences on the topic are organized (e.g. COTITA 2010; Pays Sud Toulousain et al. 2009) and guides for elected representatives or development agents published (e.g. ADRET and GAL Gévaudan-Lozère 2010; APPETI 2007; RELIER and AVRIL 2010). Farmer's organizations such as the Confédération Paysanne and the ARDEAR/ADEAR are working on the preservation of agricultural land and how to help collectivities that wish to do something against farmland loss (e.g. ARDEAR Rhône-Alpes and ADDEAR Isère 2010 ; CP and ADEAR Languedoc Roussillon 2008; CP and ARDEAR Midi-Pyrénées 2004). Collectivities themselves and State services are

working on the topic, realizing various studies or producing practical documents (e.g. Blezat Consulting 2008; Préfecture du Loiret 2009). In Centre, the Regional Council ordered studies on the situation of agriculture and farmland in the region and on the actions that could be set up to preserve it. The results are expected by the end of 2011. Alter'énergie, association of the InPACT network in the region started in February a cycle of conferences for elected representatives on the preservation of agricultural land and what role they have to play, and what they may be able to achieve.

Many guides published recently are already available: some on farmland preservation (e.g. ADRET and GAL Gévaudan-Lozère 2010; Chambre d'agriculture du Var 2009; CP and ADEAR Languedoc Roussillon 2008), some on access to land for new entrants into farming (e.g. ARDEAR Rhône-Alpes and ADDEAR Isère 2010; CP and ARDEAR Midi-Pyrénées 2004 ; RELIER and AVRIL 2010 ; Site de proximité sud Ardèche and AMESUD 2010; Terre de Liens NPdC 2011), some on agricultural policy design (e.g. Terres en Villes 2008) or more specifically on one particular type of action on farmland (e.g. encouraging amiable land exchanges between farmers - ADASEA du Puy-de-Dôme and Réseau installation foncier en Livradois-Forez 2008), and others on short supply chains (e.g. AFIP Bourgogne Franche-Comté and CFPPA Montmorot 2010; CERDD 2010; Heinisch 2010), organic food in public cafeterias/catering (e.g. Civam and Fondation Nicolas Hulot 2010 ; Consom'acteurs 2010; Réseau Grand Ouest 2010; WWF and SNRC 2009) or also on preserving water quality with organic agriculture (e.g. FNAB 2010) that acknowledge the importance of working on agricultural land preservation and its access to farmers. Some organizations such as the PNR (Natural Regional Parks) or the CIVAM have published experience and tool datasheets (FRCIVAM Bretagne and FPNRF 2010). There has been some applied and participative research on the topic as well (Gerdal et al. 2009).

In other regions of France, the RRN also works on land use planning and agricultural land. Some works are very similar to ours. For example, in Limousin they work on agricultural land, issues and existing tools (Audoin 2010), in Midi-Pyrénées the title of the project is "Land use planning, uses and territories" (RRR AFUTer 2010). The work of the RRN in Languedoc-Roussillon on "Space management, development and preservation of agricultural land" led to the creation of a guide of existing tools available to rural stakeholders (ADRET and GAL Gévaudan-Lozère 2010). Such a presentation of tools is planned in the methodological guide the ARDEAR will publish at the end of the project.

Agricultural land preservation is a topic currently discussed throughout France. There are already numerous guides on the subject available on the internet. So why would ARDEAR want to

produce another one? There is no guide about and adapted to the Centre region. The guide that will be created will show some experiences from the region or others that could be transferable to the region. The tools will be adapted as well. Furthermore, the guide will not only be an experience or tool catalogue. ARDEAR's ambition is to have a guide offering a methodology that elected representatives, with the help of local coordinators, can apply. The guide should offer some guidance. The questionnaire, for example, is a new tool. Additionally, this methodology will be constructed by ARDEAR with the participation of various local stakeholders through their participation in meetings organized at the regional scale. The idea is to base the guide on local experiences and the knowledge and competences of stakeholders. The aim is also to gather various stakeholders and encourage them to discuss the possibility of coordinating themselves (especially stakeholders in the agricultural sphere) to help collectivities and increase agricultural land preservation. Stakeholders from different fields do not often have the opportunity to meet and exchange ideas on topics such as this one. The project is a way to start a dialog.

1.3. Issues linked to the loss of agricultural land and urban sprawl

1.3.1. Urban sprawl

1.3.1.1. Definition

The definition of the European Environment Agency given in its report "Urban sprawl in Europe – The ignored challenge" (EEA 2006) is the following:

> "Urban sprawl is synonymous with unplanned incremental urban development. It is the physical pattern of low-density expansion of large urban areas, under market conditions, mainly into the surrounding agricultural areas. Development is patchy, scattered and strung out, with a tendency for discontinuity. Urban sprawl is commonly used to describe physically expanding urban areas. Sprawling cities are the opposite of compact cities — full of empty spaces that indicate the inefficiencies in development and highlight the consequences of uncontrolled growth."

1.3.1.2. Causes

City growth is not driven by urban population increase anymore. Urban sprawl is generated by the increase of households' number, by the discrepancy of the offer in housing to their needs (SOeS 2010) or by a change in behavior (Scalenghe and Marsan 2009). Indeed, in Europe, even where population pressure is low or non-existent, various factors (Table 1) – mainly socio-

economic – are still driving sprawl: transportation means, land price, individual housing preferences, commercial investments decisions, cultural traditions, attractiveness of existing urban areas and land use planning policies at both local and regional scales (low coherence and effectiveness).

One major factor is the development of transportation and personal mobility. In regions where incomes are high and commuting costs low, urban sprawl quickens: people tend to live in residential areas out of the city. They are looking for a better quality of life and new lifestyles in suburban environments (DREAL du Centre 2010b; EEA 2006; SOeS 2010). Negative aspects people associate with city life such as poor environment (pollution, noise, lack of green spaces), social problems (unemployment, poverty, drug abuse, integration problems) and safety issues are drivers of urban sprawl (EEA 2006). The quality of life associated with "more rural areas", including suburbs, has increased. A new house outside the city is considered by many Europeans as the prime investment to be made (EEA 2006).

New transport links, and commercial and industrial areas grow twice as fast as residential areas (EEA 2006). In Europe they occupy between 25 % and 50 % of all built-up land (EEA 2006). They are also motors of urban sprawl as they lead to the development of residential areas nearby.

Table 1: Factors driving urban sprawl in Europe – After EEA (2006)

<table>
<tr><td>Macro-economic factors:
– Economic growth
– Globalization
– European integration</td><td rowspan="2">Inner city problems:
– Poor air quality
– Poor quality of schools
– Lack of green open space
– Social problems
– Unsafe environments
– Noise</td></tr>
<tr><td>Micro-economic factors:
– Rising living standards
– Price of land
– Availability of cheap agricultural land
– Competition between municipalities</td></tr>
<tr><td>Demographic factors:
– Population growth
– Increase in household formation</td><td>Housing preferences:
– More space per person
– Housing preferences</td></tr>
<tr><td>Transportation:
– Private car ownership
– Availability of roads
– Low cost of fuel
– Poor public transport</td><td>Regulatory framework:
– Weak land use planning
– Poor enforcement of existing plans
– Lack of horizontal and vertical coordination and collaboration</td></tr>
</table>

The price of agricultural land is universally much lower than the price of land zoned for housing, or than the price of urbanized land (such as brownfield sites) or former industrial waste land

(EEA 2006). Agricultural land is therefore a highly attractive target for investors and developers. Although building permission on agricultural land increases its value substantially, it still remains much cheaper than land in the city centers (EEA 2006).

Urban sprawl mainly occurs where development is unplanned and decentralized. It can be limited by effective planning strategies. With a strong urban policy, more compact forms of urban development are observed (EEA 2006). Competition among municipalities for new income generating jobs and services drives urban sprawl, and many municipalities thus relax controls on agricultural land development and even favor enterprises settling down (EEA 2006).

1.3.1.3. Consequences

Urban sprawl has many impacts: on environmental resources, natural and protected areas, rural environments, the quality of urban life and health, as well as socio-economic impacts. It involves the consumption of natural resources, among which soil – a non-renewable resource – is the major component (EEA 2006). Urbanization of farmland is considered as permanent as it only is partly reversible at very high costs (EEA 2006; Environment Agency Austria 2011; Etudes actions and Ecotone 2010).

Agricultural and natural land loss has major obvious, direct and irreversible impacts on biodiversity with the loss of valuable biotopes (DREAL du Centre 2010a; Environment Agency Austria 2011; Laroche et al. 2006; Scalenghe and Marsan 2009; SOeS 2010). According to Scalenghe and Marsan (2009) "urbanization is considered a key factor of biological homogenization". Natural ecosystem functions such as the production of food, recreation activities, water retention and storage are also impacted by urban sprawl. Transport and urban-related infrastructure developments cause fragmentation whose barrier effects degrade natural habitat ecological functions, making it more difficult for plant and animal species to fulfill their life cycle, or leaving them with too small or too isolated areas to survive (CESER 2010; EEA 2006; Environment Agency Austria 2011; Scalenghe and Marsan 2009; SOeS 2010). Noise and air pollution around urban areas stress ecosystems and species (EEA 2006). Such environmental impacts also affect the quality of life and human health in cities. Green spaces in urban environment not only support ecosystems, they also have positive effects on the well-being of the population (Scalenghe and Marsan 2009).

Urban sprawl is induced by and induces changes in lifestyles which contribute to increases in resource use and increase the environmental impact (DREAL du Centre 2010; EEA 2006).

Energy consumption increases with urban sprawl (DREAL du Centre 2010; EEA 2006). Compact urban developments with higher population densities are more energy efficient. Up to 20-45 % in land resources, 15-25 % in the construction of local roads and 7-15 % in the provision of water and sewage facilities could be saved by more compact cities (Burchell et al. 1992 in EEA 2006). With the predominance of car transportation, transport related energy consumption grows and CO_2 emissions are higher, which plays a role in global warming and climate change (EEA 2006; SOeS 2010).

Segregation according to income can be observed where urban sprawl occurs. It thus increases social and economic divisions (EEA 2006; Etudes actions and Ecotone 2010).

Sprawling cities threaten to consume the best agricultural lands, displacing agricultural activity to both less productive areas (requiring higher inputs of water and fertilizers) and more remote upland locations (with increased risk of soil erosion) (EEA 2006; Etudes actions and Ecotone 2010). Farmland loss and the additional increase in farmland prices makes it extremely difficult for new entrants into farming to find some land to settle on, especially when they are not from a farm family.

1.3.2. Artificial surface growth and soil sealing

1.3.2.1. A few definitions

The following definitions are given in the recent report (April 2011) on "best practices for limiting soil sealing and mitigating its effects" from the Environment Agency Austria for the European Commission (Environment Agency Austria 2011).

Artificial Surfaces

> "The term "artificial surface" is used in the CORINE Land Cover nomenclature and refers to continuous and discontinuous urban fabric (housing areas), industrial, commercial and transport units, road and rail networks, dump sites and extraction sites, but also green urban areas."

Sealed soils

> "Sealed soils can be defined as the destruction or covering of soils by buildings, constructions and layers of completely or partly impermeable artificial material (asphalt, concrete, etc.). It is the most intense form of land take and is essentially an irreversible process. An indicator of the intensity of land take is the proportion of the total built-up land area which is sealed."

Artificial surfaces and sealed soils are consequences of urban sprawl. Driving forces of artificial surface increase and soil sealing are thus the same as those of urban sprawl. Artificial soil sealing is usually extensive and irreversible (Antoni 2011; DREAL du Centre 2010a; Laroche et al. 2006; Scalenghe and Marsan 2009). Sealed soils do not have exchanges with other ecological compartments (biosphere, hydrosphere and atmosphere) anymore (Environment Agency Austria 2011; Scalenghe and Marsan 2009). Many of soil functions and processes are thus affected: the water cycle, biogeochemical cycles, and gas and energy transfers (Table 2). Soils have many important functions: "the production, the carrier, the filter, the resource, the habitat, and the cultural function are usually recognized" (Scalenghe and Marsan 2009).

1.3.2.2. Impacts on energy and gas transfers

Heat and gas exchanges between the soil and the atmosphere are affected by soil sealing (EEA 2006; Scalenghe and Marsan 2009). Temperature affects chemical processes and organic matter decomposition in soils. The temperature of a sealed soil depends on the sealing material properties (e.g. thermal properties) and is usually higher than for non-sealed soils, as temperature regulation due to the surface exchange is disturbed (Scalenghe and Marsan 2009). Temperature of the sealed surface is higher as well (Environment Agency Austria 2011; Scalenghe and Marsan 2009). Soil sealing will modify the micro-climate and increase the temperature in the cities contributing to the creation of urban heat islands (UHI) (Environment Agency Austria 2011; Foley et al. 2005; Scalenghe and Marsan 2009). Non-sealed soils have a role on mitigation of UHI.

Soils play an important role as carbon sinks. The sealing of soils leads to less carbon sequestration and storage: the carbon cycle is affected, as well as the related CO_2 emissions (Environment Agency Austria 2011; Scalenghe and Marsan 2009).

1.3.2.3. Impacts on water

The sealing of soils makes them impermeable and increases the surface runoff, which contributes to the alteration of the water regime and the increase of flood risk (Environment Agency Austria 2011; Foley et al. 2005; Laroche et al. 2006; Scalenghe and Marsan 2009; SOeS 2010). The water storage capacity of the soil is lost and a decrease in water table levels is observed in urban areas (Scalenghe and Marsan 2009). According to Brun and Band (2000 in Scalenghe and Marsan 2009) 20% of impermeable surfaces would be enough to have a serious impact on

runoff. Moreover, the change in the repartition of precipitations into soil water, evapotranspiration and runoff impacts the local climate (Foley et al. 2005).

Water quality can also be affected. Soils lose their function as a pollutants filter (Antoni 2011; Laroche et al. 2006; Scalenghe and Marsan 2009) and, with as little as 2% of sealed surfaces, water characteristics (e.g. pH and salinity) are impacted (Conway 2007 in Scalenghe and Marsan 2009). Unsealed surfaces are affected by the increased amount and speed of runoff reaching them: the risk of ponding and erosion is increased, and the run-off water transports pollutants from the sealed area (Scalenghe and Marsan 2009). Water pollution is increased by sealed areas: before being washed into rivers, rainwater charges itself with heavy metals, dust and tire abrasion when falling on sealed surfaces (EEA 2006).

1.3.2.4. Other impacts

Biota is impacted by soil sealing. Added to natural habitat loss and fragmentation, and the induced biodiversity loss is the fact that unsealed areas close to sealed areas are more exposed to pollution (e.g. pollution from traffic)(EEA 2006). Higher air and soil temperatures in cities increases the evolutionary pressure on plants (e.g. shift in flowering time) and animals (Scalenghe and Marsan 2009).

Other less obvious impacts of soil sealing could be observed such as the amplification of seismic waves in specific sites (Scalenghe and Marsan 2009).

Soil sealing has many negative effects (Table 2). It is considered one of the major threats to soils (Laroche et al. 2006). It compromises soil function to produce food or other agricultural products; available fertile soils decrease (Environment Agency Austria 2011; Laroche et al. 2006; Scalenghe and Marsan 2009). Even with low agricultural potential, soils maintain ecosystems, manage water flows and filter water. Soils, by the functions they perform, are environmentally, economically and socially important and should be taken into account in land management policies (Laroche et al. 2006; Scalenghe and Marsan 2009). The recommendation of the Soil Thematic Strategy of the European Commission (2006) is to achieve sustainable use of soil by preserving its functions and restoring degraded soils. Scalenghe and Marsan (2009) however state that in order to do so more quantitative data would be needed: too little is actually known about the soil sealing phenomenon and its impacts.

Table 2: Consequences of soil sealing (Scalenghe and Marsan 2009)
ST: short-term; MT: medium-term; LT: long-term

	Effects	Time	Consequence
Heat	Increased radiation absorption	ST	Less reflective surfaces
		MT	Heat island (HUI)
Water	Less infiltration	MT	Reduced chemical reactivity
		LT	Less filtering action
		MT	Cracking
		ST	Loss of biomass
		LT	Diminishes the natural recharge of aquifers
	More runoff	ST	Increased water through adjacent areas
		MT	Increased ponding time
		MT	Probability of anaerobiosis
		ST	Transfer of contaminants
		LT	Increased risk of flash-floods
	Barrier for perched water table	ST	Increased risk of anaerobiosis
		MT	Release of contaminants
Gas	Reduced/interrupted exchanges	LT	Risk of anaerobiosis
		ST	Partial trapping
Biota	Loss of plant cover/biomass	MT	Reduced biodiversity
		LT	Reduced carbon sink
	HUI	MT	Thermal specialization
Landscape	Increased wind erosion	MT	Increased air-born particulate
	Increased water erosion	MT	Increased erosion of adjacent areas
	Uniformity	ST	Reduced aesthetic appeal
		MT	Reduced attractiveness

1.4. What role can territorial collectivities play?

1.4.1. French territorial collectivities

1.4.1.1. What is a territorial collectivity

Territorial collectivities are administrative structures which are in charge of people's interests in a defined territory (Caisse des Dépôts 2011a). The different territorial collectivities defined in the constitution are:

- The *communes*
- The *départements* (including 4 overseas *départements* - DOM)

Figure 2 : Regions of metropolitan France
Source : www.regions-ce.com/regions.php

- The regions (including 4 overseas regions – ROM)
- The overseas collectivities (Mayotte, Wallis and Futuna, French Polynesia…)(Caisse des Dépôts 2011a)

There are 22 regions (Figure 2) and 96 *départements* (Figure 3) in metropolitan France plus the overseas collectivities, regions and *départements* (Ministry of foreign affairs 2008). The *commune* is the smallest administrative division. There are 36,778 of them (Ministry of foreign affairs 2008).

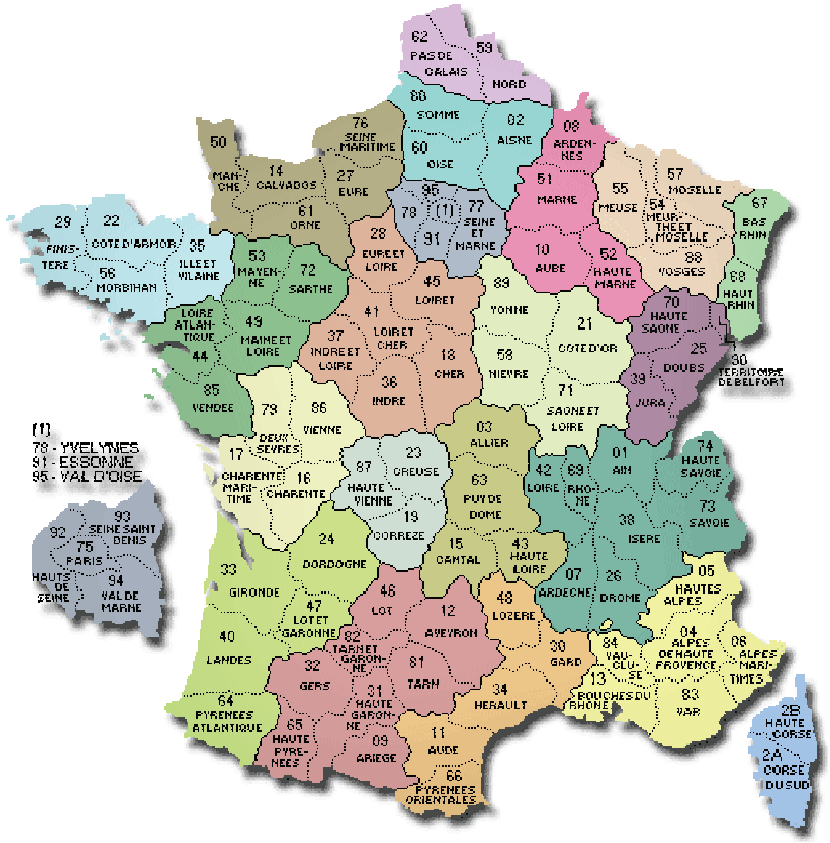

Figure 3: *Départements* of France
Source : www.cartesfrance.fr

The "*intercommunalité*" enables *communes* to group in a public establishment to ensure some services (e.g. sanitation and urban transports) or to elaborate economic development, land use planning or urbanism projects (Caisse des Dépôts 2011a). Unlike territorial collectivities, inter-communal structures are not additional administrative levels but structures whose missions are delegated by the *communes* constituting it (Caisse des Dépôts 2011a). There are diverse forms of "*intercommunalité*" (Appendix 2) and even if they are not collectivities, as they do not have their own purviews, they represent collectivities and are thus considered as political entities for the ARDEAR's project.

1.4.1.2. France, a centralized State undergoing decentralization

The following paragraphs are based on the explanations given by the Ministry of foreign affairs' website (2008).

France is a centralized State. Local structures and structures of the decentralized territorial units of regions, *départements* and *communes* coexist. For example, Prefects in the regions and *départements* are ramifications of the central government whereas General and Regional Councils are directly elected by the citizens. Mayors represent the State in their communes and

also head the local governments' executive branch. The central government doesn't have authority over territorial units since the decentralization laws of 1982-83: it enters into contracts with them. It remains, however, responsible for major budget priorities. The regions gained some responsibility for economic matters: encouraging company location or supporting threatened sectors. The Constitution was modified in March 2003 to make decentralization a founding principle of the Republic. Since then there has been further extension of decentralization and the government now encourages development projects initiated locally. Responsibilities are delegated to the local authorities but not decentralized.

France is managed in a hierarchical way: each level has specific responsibilities. For instance, major transport infrastructures (motorways, international airports, and ports) as well as culture (universities, research bodies, and national museums) are the State's responsibility whereas local authorities are in charge of lower levels of infrastructure (e.g. minor roads). The *département* administration complements that of each *commune*.

Since the 1980s various reform programs have been undertaken by the governments. The three main aspects covered by the reforms are: "narrowing the scope of State tasks, affirming the principle of local services and improving efficiency" (Ministry of foreign affairs 2008). Efficiency improvement is achieved through changes in the territorial collectivities' structure which is the object of the last reform – the territorial collectivities' reform law of December 2010.

The aims of this law are to rationalize the territorial structures, achieve *intercommunalité* development and redefine the purview of each collectivity level (IAAT 2011). The issues leading to the production of this new law are: too many administrative structure levels, unclear purview, and cost management (IAAT 2011). With this reform, the collectivities would be reorganized into two poles: *département*-region and *communes-intercommunalité*, the national territory would be covered by *intercommunalités*, and the purview of the different collectivity levels would be clarified (IAAT 2011).

1.4.1.3. Agriculture, a collectivities' purview?

Agriculture is not clearly identified as the purview of the collectivities. It could be considered as part of "economic development" which is a purview, but it is not often the case. Collectivities do not usually consider agriculture their purview and believe they do not have a role in this matter. They have however other identified purviews that directly or indirectly impact agriculture such

as urbanism, land use planning, transportation, environment, and roads (DGCL 2008). Various land use planning "tools" (land tenure rights) exist that enable collectivities to take actions for the preservation of agricultural land. They are usually attributed to one level of collectivity.

The clarification of purview required by the new reform law is currently under examination (IAAT 2011). What has already been decided is that purviews attributed to a category of territorial collectivities (e.g. *communes*, *départements*, regions) should be exclusive: other collectivities cannot intervene in the considered field (Ministère de l'Intérieur 2011). Exceptionally a purview can be shared as it is the case for tourism, sport and culture because of their specificity (Ministère de l'Intérieur 2011). The *communes* keep their "clause of general competence", *départements* and regions should have specialized purviews (Ministère de l'Intérieur 2011). The General and Regional Councils should elaborate together a scheme defining the division of purviews between the region and the *départements* (Ministère de l'Intérieur 2011).

The official report ordered by the French Ministries for Agriculture and Ecology, "Preserving agricultural and natural areas from urban sprawl" (Balny et al. 2009), acknowledges the fact that no collectivity has explicit responsibility for preserving natural and agricultural areas. This may be the reason tools that might contribute to this preservation are seldom or poorly utilized, or not used at all (Balny et al. 2009). The report, however, states that it is the responsibility of local collectivities to preserve agricultural and natural areas.

1.4.2. The benefits to collectivities of agricultural land preservation

Agriculture is not often seen as an economic activity, because the number of jobs it produces is usually considered low. Moreover, agriculture only accounts for 1.4% of France GDP in 2007 (Bergot 2011). Bontron (1995), however, showed that jobs created by agriculture in rural areas, when "agriculture related workers" (working in agriculture related industrial or tertiary activities like food industries or services) are also taken into account, remained the backbone of the rural economy in many French *départements*. In Rennes (Brittany) and its surrounding area, agriculture represents 10,500 jobs of which 3,000 are direct which is more than the number of jobs offered by the PSA-Peugeot company there (Le SCoT du Pays de Rennes 2010). Some of the elected representatives encountered during the various meetings organized by ARDEAR liked however to remind people that jobs in agriculture are non-delocalisable jobs, which is an important positive argument regarding the impacts of the last economic crises.

Agriculture is more and more seen as a multi-functional activity and the environmental services it produces are often the reason why it is considered in urban projects. According to Bertrand and Rousier (2003), Duvernoy et al. (2005), Fleury (2004), and Jouve and Vianey (2009) agricultural and natural open spaces have a strong social utility, as green belt, green space or recreational areas for instance. Among the environmental services it produces are space and landscape maintenance and creation (Bertrand and Rousier 2003; Duvernoy et al. 2005). It thus contributes greatly to the attractiveness of territories and to the quality of living environment. It is also considered as a way to develop and preserve local identities (Bertrand and Rousier 2003) partly through local products and "*terroir*" (Duvernoy et al. 2005). Agriculture can be seen as an activity that for a low cost ensures various environmental services such as the maintaining of the living environment and the hindering of natural hazards (Bertrand and Rousier 2003; Duvernoy et al. 2005). Duvernoy et al. (2005) state that agriculture should be recognized as a public good because of the many environmental services it produces.

With the various food crises during recent decades, the demand for quality food locally produced increases (Aubry and Chiffoleau 2009). Consumers are more interested than before in having some agricultural production close to the city they live in. Quality is associated with proximity. An increase in the demand for short supply chains is thus found in France and they are supported not only by consumers (e.g. through the AMAPs, equivalent to CSA schemes in the USA) but also by producers and territories (Aubry and Chiffoleau 2009). Short supply chains are also a way to maintain some agriculture close to cities and thus to preserve farmland in peri-urban areas.

Acknowledgement of the many roles of agriculture by elected representatives is increasing: food production, spatial management, risk management, recreation, "ramparts" against urbanization, landscape production and maintenance, employment, waste treatment, and biofuel production (Bertrand and Rousier 2003 ; Duvernoy et al. 2005). By maintaining or creating agricultural activities on their territory they have the possibility to answer the social demand: local quality food, landscape amenities, and recreational areas.

Agriculture in the peri-urban context needs, however, to be defined more precisely to be taken into account in urban planning (Bertrand and Rousier 2003; Colliot and Bertrand 2009). What type of agriculture is wanted close to cities? Agriculture has to adapt to demand in order to survive in peri-urban areas. Vegetable production is often found in these areas (Bertrand and Rousier 2003).

1.5. Problem statement, objectives, research questions and hypotheses

The aim of this work is to collect information on different approaches taken in French collectivities that will serve as the foundation for the ARDEAR guide for elected representatives interested in preserving agricultural land.

This work has two main objectives encompassing five research questions.

Objective 1: to determine what is possible for collectivities to do to preserve agricultural land

- What has already been done in France by collectivities to preserve agricultural land?
- What are the tools available to / especially designed for the use of collectivities to preserve agricultural land?
- What are the key factors for success?

Objective 2: analyze different approaches and make suggestions for a methodological guide to help collectivities to protect agricultural land

- What (do I think) would help them in their reflection/projects about preserving agricultural land?
- Which sequence of events could they follow in order for them to meet their goal?

For the whole project, we made the following hypotheses:

- There are many possibilities and tools available to collectivities for them to preserve agricultural land
- There is a sequence of events they could follow to meet their goal
- There are factors for success identifiable and common to many collectivities' actions

2. The situation: loss of agricultural land, urbanization and soil sealing – global phenomena?

2.1. The situation in the world

Changes in land use such as the increase of croplands, pastures and urban areas, impact the capacity of ecosystems to sustain food production, maintain freshwater and forest resources, regulate climate and air quality, and ameliorate infectious diseases (Foley et al. 2005). They also lead to a higher consumption of energy, water, and fertilizer, and to major biodiversity losses (Foley et al. 2005). According to Foley et al. (2005), human activities use one-third to one-half

of global ecosystem production and the pressure on those resources is increasing as the global population keeps growing and developing.

According to the SAGE (center for Sustainability And the Global Environment, Wisconsin University, Madison) 12% of the world's land (without Greenland and Antarctica) are crops and 22% pastures (Pinson 2009). Based on this method it is considered that 34% of the land is used for agriculture. The highest proportions of cultivated land are in South Asia (39% of the area), in Europe (27%), East of Mississippi in the US (31%) and in tropical Africa (30%); the lowest proportions are in Canada, developed countries of the Pacific and northern Latin America (Pinson 2009).

According to the GLCCD (Global Land Cover Characteristic Database) urbanized areas occupy surfaces much smaller than other land cover types: a total of 25.6 million hectares – less than 0.2% of the world's land – mainly concentrated in the developed continents Europe and North America (Pinson 2009). The global area of sealed soils is estimated at over 500,000 km², which is larger than the whole of France (Elvidge et al. 2007 in Scalenghe and Marsan 2009).

Urban sprawl was first a US phenomenon "associated with the rapid low-density outward expansion of US cities, stemming back to the early part of the 20th century" (EEA 2006) but is now a global problem that has reached developing countries (Scalenghe and Marsan 2009; UN Habitat 2010). UN Habitat (2010) gives the example of the Mexican city of Guadalajara where the urban area grew 1.5 times faster than the population between 1970 and 2000, and states that the same occurred for Chinese cities, Antananarivo (the capital of Madagascar), Johannesburg, Cairo and Mexico City. Urban sprawl in developing countries increases the urban divide and social segregation: low income groups are gathered in peri-urban areas with no public facilities, services or infrastructure, and high- and middle-class income groups are found in suburban residential zones with high-valued commercial and retail complexes (UN Habitat 2010). It also causes "significant loss of prime farmland" and degrades the environment as can be observed around many Latin American cities (Panama City's Canal Zone, Caracas' coastline, San José de Costa Rica's mountainous area, São Paulo's water basins)(UN Habitat 2010). Urban sprawl is the main cause of soil sealing (Scalenghe and Marsan 2009).

According to De Schutter (2010c), pressures on land and water are increasing at an unprecedented speed. Worldwide, up to 30 million hectares of farmland – the equivalent of Italy's surface – are lost every year due to environmental degradation (5 to 10 million hectares), and industrialization and urbanization (19.5 million hectares) (De Schutter 2010c). The

competition for land between food and energy crops, and speculation on farmland by private investors are factors amplifying this trend (De Schutter 2010c). De Schutter (2010b) states that smallholders' cultivated land is decreasing every year and, as they compete against larger productive units for access to land, farmers are relegated to less fertile areas, which threatens the right to food of rural populations and is one of the factors leading to 500 million people depending on small-scale agriculture being hungry. Land grabbing is a serious problem in developing countries: 40 million hectares of arable land are targeted by investors every year (AFP 2010).

2.2. In Europe

Agricultural land surfaces are decreasing since the 1960's: the EU (22 countries) lost 30 million hectares of agricultural land between 1961 and 2003 (770,000 ha/year) (FAO 2007 in Pointereau and Coulon 2009). Agricultural land surfaces have however recently (1993-2003) increased in Spain and Belgium whereas the highest losses (in percentage of UAA) were in the new EU countries (Baltic countries, Poland, Slovenia, Bulgaria) (Pointereau and Coulon 2009). The EEA assessment on land use changes for 23 EU countries (2005) showed that 48% of sealed soil was once arable land or permanent crops (up to 80% for Denmark and 72% for Germany), 36% were pastures and mixed areas (the most sealed soils in Ireland and the Netherlands) (Laroche et al. 2006). In southern Europe soil sealing mainly occurs on natural areas and forest (Spain 31%, Portugal 35%, Greece 23%) (Laroche et al. 2006).

From 1990 to 2000 around 800,000 ha have been converted to artificial surfaces (a 6.8% increase) mainly due to conversion to residential, industrial and commercial areas (Laroche et al. 2006). Big differences in the yearly growth of urbanized surfaces are observed in Europe (Laroche et al. 2006). About 1000 km² – about the size of Berlin – are taken for urbanization every year in the EU (Environment Agency Austria 2011). The EEA's report (2006) estimates the cost of soil degradation at about US$ 56 billion per year. According to the EEA's Soil Sealing Map of Europe from 2009 – which has a higher resolution than the CORINE Land Cover map – sealed surfaces represented 2.3% of the EU's territory in 2006 and artificial surfaces 4.4% (Environment Agency Austria 2011). In the EU, on average 51% of artificial surfaces are sealed but there are important variations depending on the country (Environment Agency Austria 2011).

The land use intensity represents the amount of artificial and sealed surfaces per capita. Between 1990 and 2006, land use intensity decreased in the EU (Environment Agency Austria 2011; Pointereau and Coulon 2009). The averages in 2006 for EU citizens were 389 m² artificial

surface and 200 m² sealed surfaces (Environment Agency Austria 2011). Cyprus has the lowest land use intensity: 1,032 m² artificial surface and 437 m² sealed surface per capita (Environment Agency Austria 2011). Evolution of land use intensity, as well as the one of artificial surfaces, is very different depending on the country and its context (Table 3). In the EU 27 the annual growth of artificial surfaces – which was about 2.8% between 2000 and 2006 – decreased by 9% between the periods 1990-2000 and 2000-2006: the equivalent of a decrease from 2.1 m² per inhabitant to 1.9 m² (Environment Agency Austria 2011). The Environment Agency Austria (2011) observed that despite rapid artificial surface increase, most regions still have very low sealing rates (Appendices 3 and 4).

In most of the countries, the increase in sealed surfaces in the last decades is mainly due to behavior changes and not to population growth: the main causes of soil sealing are urban and infrastructure extensions (Laroche et al. 2006; Scalenghe and Marsan 2009).

Land on which soil sealing occurs often is the best agricultural land (Scalenghe and Marsan 2009). As European cities have mostly grown on former agricultural land, urban development and agriculture are competing for the same land (EEA 2006; Etudes actions and Ecotone 2010). Agricultural lands adjacent to existing urban areas are ideal for urban expansion and farmers selling their land for new housing or other urban developments make substantial financial benefits (EEA 2006).

The CORINE land cover data are not very accurate as the scale is broad. The situation of artificial and sealed surfaces in Europe is thus underestimated (Environment Agency Austria 2011). In Europe urbanization and soil sealing are considered threats to soils. Switzerland for example developed legislation on soil protection and the EU released the Thematic Strategy for Soil Protection (Scalenghe and Marsan 2009).

EU policies can indirectly lead to urban sprawl. For example, transportation networks are supported by the EU and as urban sprawl often occurs alongside transportation axes, EU indirectly favors urban sprawl (EEA 2006). According to EEA (2006) coordination and coherence of land use policies and Structural and Cohesion Funds investments would be needed to avoid such effects; EU Funds could be used to encourage the redevelopment of city-centers. EEA's report (2006) considers it an EU obligation to act to address the impacts of urban sprawl and combat it. It also suggests that "policies at all levels […] have an urban dimension that tackles urban sprawl".

Table 3: Sealed soils and artificial surfaces and their causes in the EU
(After Environment Agency Austria 2011)

		Member States	**Causes**
Sealing rates	Highest	Malta (13%), the Netherlands (8%), Belgium (7.4%), Germany and Luxembourg (5%), Cyprus and Denmark (3.6%)	
Land use intensity	Low	Cyprus, Finland and Estonia Bulgaria and Romania (large mining areas categorized as artificial surfaces)	Second homes, small disperse settlement structures, large touristic infrastructures
	High	Malta, Spain, Greece, Italy	Majority of inhabitants living in large urban agglomerations
Artificial surface	Lowest increase	Malta, Belgium, Romania and Luxembourg	Already high shares of artificial surfaces before 2000
	Highest increase (> 10%)	Spain, Cyprus, Ireland, Portugal	High population increase, total shares of artificial surfaces were among the lowest
Artificial surface per inhabitant	Decreased slightly (1990-2000)	Austria, France, Luxembourg, UK	Strong population growth, population growing faster than artificial surface, appropriate policy measures, saturation of major infrastructure projects' development
	Decrease (1990-2006)	Luxembourg, Belgium, France, Malta, the UK, and Austria	
	Highest increase (1990-2000)	Estonia* (+111 m²), Ireland (+68 m²), Bulgaria* (+48 m²), and Portugal (+45 m²)	Major population losses in new Member States (*)(e.g. -12.6% in Estonia from 1990 to 2000)
	Increase (2000-2006)	Spain, Portugal, the Netherlands, Bulgaria*, Estonia*, Romania*, Lithuania*, Hungary*, and Latvia*	
Annual growth of artificial surface (2000-2006)	Decrease > 25%	Belgium, Czech Republic, Germany, Luxembourg, Poland, and Slovakia	Slowing down of building booms
	Decrease < 25%	Ireland, Italy, Latvia, the Netherlands, and Portugal	
	Increase	In all other EU countries	Shrinking population, lack of planning restrictions, building boom
Annual growth of artificial surface per capita (2000-2006)	Highest decrease	Belgium, Germany and Luxembourg	High land use pressure, development of new land geographically limited or restricted by planning
	Increase	Bulgaria, Estonia, Latvia, Lithuania, Hungary, Slovenia, Romania, Austria and Denmark	Major infrastructure projects, sustained building boom, lack of planning restrictions
	Highest increase	Cyprus, Ireland and Spain	Large touristic infrastructure, sustained building boom

2.3. In France

2.3.1. Agriculture

According to the last data from CORINE Land Cover, metropolitan France is 60% covered by agricultural land, 34% by forests and semi-natural areas, with artificial surfaces accounting for a bit more than 5% of coverage (SOeS 2010). The UAA occupies 29.3 million hectares in 2008 (SOeS 2010). In 20 years, the number of farms was cut by half and farms got bigger: 77 ha on average in 2007 against 42 ha in 1988 (SOeS 2010). Farms specializing in arable crops are the most numerous (23% in 2007); in 2008 cereals, oleaginous and proteaginous covered more than 65% of the arable land (SOeS 2010). The four main crops are wheat, rape, barley and corn. Organic agriculture represents 2.1% of the UAA in 2008 (SOeS 2010).

In comparison to other EU countries, France has a higher agricultural surface per inhabitant: 0.48 ha UAA (0.21 in Germany, 0.12 in Netherlands) but space needs are increasing (for renewable energies and bio-materials among other things) (Pointereau and Coulon 2009). The objectives of 23% of renewable energy production in 2020 among which 10% of bio-fuels will require large surfaces of agricultural land (Pointereau and Coulon 2009). Renewable energy production with solar panels, for example, directly competes with agricultural land as the creation of "solar parks" with panels on the ground is planned. France is not self-sufficient regarding food production. According to Pointereau and Coulon (2009) in 2006 France lacked 1.42 million ha to produce the equivalent in photosynthesis produce of what had been imported (soy to feed animals, fruit and vegetables, cotton, rubber, wood...).

2.3.2. Loss of agricultural land

The UAA decreases every year. From 1990 to 2008, 1,230,000 ha – 4% of the UAA – disappeared (more than 68,000 ha per year) which is twice as much as in Germany (DDAF Loiret and DDE Loiret 2009). This loss is observed since 1950 to the benefit of woods and artificial surfaces (SOeS 2010). From 1960 to 2007 France lost 5.1 million hectares of agricultural land, a mean loss of 111,000 ha/year (Pointereau and Coulon 2009).

Agricultural land decreased in all the French regions from 1995 to 2003 except in Limousin (+1000 ha)(DRAAF Centre 2010). The coastal regions are particularly affected by agricultural land loss, occupying 8 of the 10 first places (DRAAF Centre 2010). The UAA decrease is accompanied by a change in agricultural production: there is less grassland, fewer meadows, and

more arable crops like industrial rape (SOeS 2010). This phenomenon increases the pressure on the environment (landscape homogenization, crops requiring more inputs, reduction of carbon storage...) (SOeS 2010).

According to Pointereau and Coulon (2009) for a long time the UAA loss was believed to be due to agricultural land abandonment. This "fear" of the country's desertification concealed the phenomenon of soil sealing and the importance of urbanization (Pointereau and Coulon 2009). SOeS (2010) however states that, based on the Teruti-Lucas data, growth of woodland areas due to agricultural abandonment is the first factor of agricultural land decrease, before artificial surfaces increase. Pointereau and Coulon (2009) estimate agricultural abandonment at about 30,000 ha/year.

2.3.3. Artificial surface increase

Large scale increase of artificial surfaces is a recent phenomenon, thought to have really started after the 1960's, from a net flow of 17,000 ha/year before the 1960's to more than 73,000 ha/year between 1984 and 1995 (Pointereau and Coulon 2009). Artificial surfaces occupied 8.8% of the French territory in 2009 (Antoni 2011). Data from CORINE Land Cover indicate an increase of artificial surfaces by 3% (more than 82,000 ha) between 2000 and 2006; 90% of this surface was agricultural land (76 000 ha) (Antoni 2011; SOeS 2010). It is mainly arable land (44%) that is used for artificial surfaces, followed by heterogeneous agricultural areas (31%) and meadows (18%) (Antoni 2011). Based on Teruti-Lucas data, more than 60,000 ha are urbanized every year (0.11% of the national territory) (Etudes actions and Ecotone 2010). The last data showed that artificial surface increase accelerated between 2006 and 2009, equivalent in size to one middle-sized French *département* such as Indre-et-Loire (6,100 km²) in 7 years, against one in 10 years between 1992 and 2003 (Antoni 2011).

It has been observed that in about half of the French regions, the soils most affected by artificial surface increase are the ones with the highest agricultural potential (Antoni 2011). They represent more than a third (34.8%) of agricultural land converted to artificial surfaces between 2000 and 2006 (Antoni 2011). As a consequence, the percentage of poorer quality land tends to increase in the UAA (DDAF Loiret and DDE Loiret 2009). Soil quality is very rarely taken into account in planning documents, but soil maps could orientate regionally or locally the choices made in land use planning (Laroche et al. 2006).

Already strongly urbanized regions like Alsace, Ile-de-France and Nord-Pas-de-Calais had the highest decrease of agricultural land along with Pays de la Loire, Rhône-Alpes and the Mediterranean littoral (Antoni 2011). Artificial surfaces increased mainly around big cities, hydrographic networks, transportation infrastructures and close to the littoral (SOeS 2010). Artificial surface increase can be of two types: continuous (i.e., non-linear vegetation and naked soils are rare) or discontinuous, scattered, along transportation axes (Antoni 2011). Scattered urban areas, industrial and commercial development and large-scale transportation infrastructure represent 90% of artificial surfaces; continuous urban areas only 1.6% (SOeS 2010). Peri-urbanization, first due to urban exodus, is caused today by economical constraints due to land scarcity, and the cost of housing in the city-centers and their suburbs (DREAL du Centre 2010).

Spatial needs per inhabitant increased by 7m² every year from 1982 to 2003 (Pointereau and Coulon 2009) due to increased demand for: individual housing instead of collective housing, higher surfaces, green and leisure spaces. The demand for individual housing (Table 4) is the main driving force of urban sprawl and soil sealing. Increased spatial demand per inhabitant is responsible for 50% of soil sealing and secondary housing for 20%, against only 23% due to population increase (Pointereau and Coulon 2009). Sealed surfaces are much higher per inhabitant in rural areas (1800m²) than in urban areas (>50,000 inhabitants: 100m²) and it is estimated that 4.7 million ha (17% UAA) are under soil sealing pressure (Pointereau and Coulon 2009). Soil sealing and urbanization are speeding up and land planning policies supposed to control it are not efficient (Pointereau and Coulon 2009).

Table 4: Space consumption for individual housing in France

Proportion of individual housing	Between 1949 and 1974: 41% Nowadays: 62%	(Jaquot 2003 in Pointereau and Coulon 2009)
Increase in house surfaces	+ 15m² between 1984 and 2006	(Pointereau and Coulon 2009)
Increase in garden surfaces	+ 210 m² between 1974 and 1999 (= 720m² in 1999)	(Pointereau and Coulon 2009)
Proportion of space consumption due to individual housing	51% between 1992 and 2004	(Pointereau and Coulon 2009)

2.4. In the Centre region

2.4.1. A large region with diversified landscapes and a low population density

Figure 4 : Centre region
Source : www.europa-planet.com/france/cartes/carte_centre_val_loire.htm

The Centre region (Figure 2 p.15 and Figure 4) is one of the largest French regions with 39,000 km². It is composed of 6 *départements*: Eure-et-Loir, Loiret, Loir-et-Cher, Indre-et-Loire, Cher, Indre (Figure 4). In 2009, the region counts around 2.5 million inhabitants (DREAL du Centre 2010b). 46% of the population is urban and 26% live in peri-urban areas (DREAL du Centre 2010b – numbers from 2006).

Except for the large cereal plains, woods are present and increasing everywhere, covering more than 940,000 ha (DREAL du Centre 2010b). With natural areas, they represent 26% of the territory, which is similar to the national mean (DRAAF Centre 2010). 17% of the regional territory is part of the Natura 2000 network of protected areas (Habitats and Birds Directives) and 10% is SPA (Special Protection Area) for birds (DREAL du Centre 2010a; 2010b).

According to the DREAL du Centre (2010b), Centre is characterized by a low population density: 64 inhabitants/km² (national mean: 113 inhabitants/km²) (DREAL du Centre 2010b). Urban density is 1.7 times lower than the national mean; large agglomerations are sprawling and low-density (DREAL du Centre 2010b).

2.4.2. An important agricultural region in France and in Europe oriented towards intensive agriculture

In 2008, Centre represented 7% of the total national surface, 8% of the UAA and 11% of the arable land (SOeS 2010). With a bit more than 2.4 million ha of UAA in 2009, agricultural land covered around 62% of the region's area which was more than the national mean of 54% (DRAAF Centre 2010). It is the second French region for UAA (Agreste Centre 2010). In 2009,

53% of the land surface is arable land (34% for France) (Agreste Centre 2010). There is a high diversity between the 6 *départements* of the region. Eure-et-Loire and Indre have 77% and 71% of agricultural land and thus less natural areas, whereas Loir-et-Cher and Loiret have a large part of their territory covered by woods (DRAAF Centre 2010).

2% of the region's population works in the agricultural sector (only 1% for France) (Agreste Centre 2010). The number of farms decreased from 85,032 in 1970 to 25,537 in 2007 (-3.6% from 2000 to 2007) (Agreste Centre 2010). The farm UAA increased; with an average of 119 ha in 2007 Centre has the 4th highest average UAA per farm (77 ha national mean) (Agreste Centre Informations 2010). More than half of the farms have 100 ha and more, and cultivate 80% of the regional UAA (Agreste Centre Informations 2010). Those large surfaces are favored by the predominance of arable crops: more than 60% of the farms were producing arable crops in 2007 (Agreste Centre Informations 2010).

Traditionally associated with intensive agriculture, the region remains an area where cereal production is important (Table 5) and has to face related pressures such as nitrogen pollution (SOeS 2010). It is first in Europe in cereal production (Agreste Centre Informations 2010). However, the region's agriculture is diverse (Appendix 5). There are many specialized, traditional productions – mainly in the Loire valley – many famous vineyards, orchards (apples and pears), vegetable production (market gardening, open fields and greenhouses), ornamental plant production (nurseries), various animal productions: beef, lamb and pork meat, cow milk, poultry, and goat cheeses (5 PDO) (Agreste Centre Informations 2010; DREAL du Centre 2010b). It is also the leading French region in the production of oleaginous seeds (Table 5) (Agreste Centre Informations 2010). Total area of organic production is low: 21,071 ha in 2008, which represents 0.9% of the total UAA (national mean: 2%) (DREAL du Centre 2010b).

Table 5 : Main productions in the Centre region

Production	**Importance**	**Source**
Cereals and oleo-preoteaginous	82% of UAA in 2008	(SOeS 2010)
Common wheat	29% of UAA in 2009	(Agreste Centre Informations 2010)
Oleaginous seeds	1/5 of the national surface in rape	(Agreste Centre Informations 2010)
Biofuel production	2nd French region	(SOeS 2010)

2.4.3. Urban sprawl, increase of artificial surfaces and soil sealing

Loss of agricultural land

Between 1995 and 2003, Centre became the leading French region in the loss of agricultural land with about 5,500 ha lost every year, representing a loss of agricultural production of 4.4 million Euros per year (DRAAF Centre 2010). The agricultural land surface loss (around 44,000 ha from 1995 to 2003 – Teruti-Lucas data) is higher than in larger regions such as Aquitaine, Rhône-Alpes and Midi-Pyrénées (DRAAF Centre 2010). The rate of agricultural land loss was about 1.2%, ranking it 5th (behind the coastal regions) and as the continental region where the pressure on agricultural land is the strongest, even worse than in Ile-de-France (Parisian region) (DRAAF Centre 2010). More recently, from 2007 to 2009, the region lost 7,850 ha of agricultural land per year (DRAAF Centre 2010). From 1999 to 2009, the reduction of regional UAA is equivalent to the average surface of 15 towns in the region (32,700 ha) (DRAAF Centre 2010).

3/5 of the agricultural land surface lost goes to artificial surface increase and 2/5 to natural areas (mainly woods) (DRAAF Centre 2010). The increase of natural and woodland areas is a characteristic of Centre, and is a result of agricultural abandonment and the increase of hunting, which leads to higher agricultural land loss in rural than in urban areas (DRAAF Centre 2010). The environmental homogenization due to agricultural abandonment is highly problematic for biodiversity in the region: many areas with high biodiversity are jeopardized in their totality (siliceous and calcareous grasslands, wet and hay meadows, moorlands) (DREAL du Centre 2010a).

Increase of artificial surfaces

Although Centre leads France in agricultural land loss, it is only ranked 6th for the increase of artificial surfaces (DRAAF Centre 2010). The rate of artificial surface increase is the same as the national mean: 0.8% of the regional land surface – 3,800 ha/year between 1995 and 2003 (DRAAF Centre 2010). However, it increased up to 5,100 ha/year from 2007 to 2009, to reach a total artificial surface of 320,000 ha in 2009 (DRAAF Centre 2010). The proportion of artificial surfaces is slightly lower than the national mean: 8.6% against 9%, and Loir-et-Cher and Loiret are the most artificialized *départements* (10% and 12%) (DRAAF Centre 2010).

Of the 10,200 ha of land turned to artificial surface between 2007 and 2009, 58% were before agricultural land, and 21% natural and woodland areas (DRAAF Centre 2010). In the Loiret *département* artificial surfaces increased by 24% between 1993 and 2003, making it one of the

10 French *départements* and the first of the region where the increase is the strongest (DDAF Loiret and DDE Loiret 2009). A high augmentation of agricultural land prices has also been observed: +29% from 1997 to 2007 (5% more than the national mean) (DDAF Loiret and DDE Loiret 2009).

The various factors driving urban sprawl in France (e.g. increased space needs, increased home-workplace distance) are amplified in Centre due to a flat relief (DREAL du Centre 2010b). The development of urbanization mainly affects the periphery of agglomerations and valleys: pressure is particularly high on the Parisian fringes and on the Loire valley where agricultural wastelands appear (DREAL du Centre 2010b). Paris' area of influence already reached the North of the region and continues to extend (DREAL du Centre 2010a). However, because of the productive value of agricultural land and the low attractiveness of the landscapes, this pressure is moderate in the cereal plains (DREAL du Centre 2010b). In peri-urban areas and some rural areas, urbanized surface growth can be very quick. From 2000 to 2005, some rural or peri-urban *communes*' urban area increased from 15 to 40% (Etudes actions and Ecotone 2010).

Between 2000 and 2006, according to CORINE Land Cover, 50% of the increase in artificial surface in Centre was due to urban sprawl (discontinuous) and a third to the development of commercial and industrial areas (DREAL du Centre 2010a). The main reason for artificial surface increase from 2007 to 2010 was road works (around 8,400 ha) (DRAAF Centre 2010). Almost 50% of the urban area extensions are linked to the development of transportation networks with an even higher contribution in rural areas (Etudes actions and Ecotone 2010). The building of a new highway is one of the factors explaining artificial surface increase and the loss of UAA in recent years (DREAL du Centre 2010b).

Depending on the sources, between 4,000 and 6,000 hectares – about the surface of 3 middle-sized *communes* – are lost to urbanization every year (0.11 to 0.15%) (CESER 2010; Etudes actions and Ecotone 2010). For almost 20 years, the rate of artificial surface increase was 3 to 4 times higher than the rate of population growth, which is partly due to new housing construction (Table 6) (DREAL du Centre 2010a).

Table 6 : Surfaces for housing in the Centre region

Total housings built per year	12 000 of whose 60% single houses 9th region	(DREAL du Centre 2010a)
Average surface for a housing	1 200 m² (close to national mean)	(DREAL du Centre 2010a)
Surface dedicated to housing	1 300 ha per year for the last 10 years	(Etudes actions and Ecotone 2010)

The region is one of the ten most affected by urban sprawl (Etudes actions and Ecotone 2010). Currently, urbanized surfaces are increasing faster than in most other French regions; if this rate stays stable urbanized surfaces will have doubled in less than 50 years (Etudes actions and Ecotone 2010).

Agricultural land loss, urban sprawl, artificial surfaces' growth and soil sealing are global phenomena. In France, the Centre is one of the regions the most affected by them and if the urbanization rate does not slow down, a large amount of agricultural land will disappear over the coming years.

3. Methodology

3.1. Catalogue of different approaches to agricultural land preservation

3.1.1. Experience collection

My main task was to catalog the experiences of collectivities that intervened on agricultural land preservation in France. In order to do so, I first used the networks. By that I mean that we asked the local coordinators of InPACT Centre and some national networks such as the FNCivam, the FNAB, the FPNR (Federation of Regional Natural Parks), the ADEAR, and the MRJC what experiences they knew or had heard of. A few experiences were found this way. I then looked into some magazines (e.g. Campagnes Solidaires, Transrural Initiatives, La France Agricole) and searched the Internet (official websites such as the one of the RNN (Réseau Rural Français 2011) or Mairie Conseils (Caisse des Dépôts 2011b), and via Google). We learned about some regional experiences during the meetings we had with the various stakeholders: some were their own and some others they had heard of. A few meetings enabled us to learn firsthand about these experiences. For others, the local coordinator forwarded its notes. When more details on a particular case were needed the reference person of the project was directly contacted.

I entered all the experiences in a table with a short description of each of them and the references to where the information was found. The analysis grid contained the following entries:

- Collectivity concerned: name, type of collectivity and the *département* where it is located
- Stakeholders: who participated in the project (other than the collectivity itself)
- Period of time: how long ago did it start

- Actions: tool used or type of action in a few words, no description – this entry is the most important one when searching for a particular type of project in the table (e.g. if someone wants to know which collectivity created a ZAP (Protected agricultural zone)
- Details: more detailed description of the project – important facts
- Objectives: why did the collectivity launch the project
- Project characteristics: e.g. in a peri-urban area with strong urbanization pressure or in a rural area where agricultural abandonment is important.
- Results: what results were observed at the end of the project, or even before the end (e.g. number of new farmers in the area, number of hectares made available to agriculture)
- Technical help: stakeholders who helped in technical matters
- Financial help: stakeholders who helped financially
- Contacts: who to contact to know more about the project
- Sources: where the information was found

The experiences of about 140 collectivities (Appendix 6) are found in this table which will be available to InPACT Centre coordinators. It will enable them to search for experiences that were not selected for the guide. With the table, they can, for instance, find many experiences using the same tool, or various possibilities of actions to reach the same objective.

3.1.2. Sharing experiences with ARDEAR Rhône-Alpes

While researching experiences, I found the guides produced by ARDEAR Rhône-Alpes (ARDEAR Rhône-Alpes and ADDEAR Isère 2010) and RELIER (RELIER and AVRIL 2010). They have the same layout but different contents. The form and part of the contents of the guides correspond to the kind of "experience catalogue" we planned to produce for our project. I thus contacted ARDEAR Rhône-Alpes to know more about how they did it, how they distributed it, and if and how we could use the same layout and/or some of the datasheets. During the discussion with the coordinator, I learned that ARDEAR Rhône-Alpes also tests a methodology to support collectivities in the creation of economic activity (agricultural or not) in rural areas. The methodology was created by the Caprural platform (regional platform for rural development in Rhône-Alpes).

As many of the local coordinators of the Centre region were interested in the work of ARDEAR Rhône-Alpes, we decided to organize a one-day workshop with the coordinator from Rhône-Alpes and all ADEAR coordinators of Centre to discuss their experience. I took charge of the organization of the meeting which took place at the beginning of June.

The possibility to use the same layout and some of their datasheets was discussed, as well as other practical points such as the number of guides to print, delays and costs. The guide distribution and promotion was an important point, as some follow up is needed once the guide is printed in order to ensure its use and the work with collectivities. ARDEAR Rhône-Alpes organized three thematic meetings in three different places of the area they worked on. Elected representatives and development agents were invited.

We saw an example of the current projects of collectivities' support and discussed the eventuality of organizing a formation on this methodology with the Caprural coordinator for the InPACT Centre coordinators once the guide will be produced.

3.1.3. Selection of experiences to be analyzed

The type of guide that will be produced and its presentation was discussed during the technical committee meetings. During one of these, the possibility to present it according to the primary concerns of elected representatives when they decide to intervene on the preservation of agricultural land was suggested. These primary concerns were identified using the interviews conducted with elected representatives and the national experiences collected (the column "objectives" of the table). In both cases, those concerns were similar. We identified 9 primary concerns.

I grouped the 140 experiences from the table according to these concerns and made a first selection. All the regional experiences were kept and the criteria to select the others were the following:

- Experiences should be detailed enough
- Original experiences, different from what has been done in the Centre region
- Transposition of the national experiences to the Centre should be possible (similar context – e.g. experiences in mountain areas were not selected or productions that are not important in Centre or declining such as vine production)
- Experiences illustrating specific tools
- The selection of experiences should be varied: presenting a variety of tools, actors and productions, and a variety of collectivities (*communes, agglomérations, communautés de communes*) and contexts (peri-urban area, rural area)

The final selection was then made together with my supervisor and validated by the technical committee. A few selection criteria were added:

- Regional experiences have priority
- Experiences should be completed whenever possible
- Focus on experiences that worked well and managed to find solutions to the problems encountered
- 2 to 5 experiences for each of the 9 primary concerns

3.1.4. Analysis of the chosen elements

For each selected experience, based on the documents found on the internet and meetings with regional stakeholders, I wrote a datasheet of about 2 pages. The following information is found on the datasheets:

- Information on the collectivity: name, type, number of inhabitants, *départements*, region, important elements of context (e.g. strong urbanization pressure or rural area)
- Aim
- How

  } In a few words, the aim and the type of action implemented, the tools used – at the top of the sheet to quickly know what the experience is

- Which stakeholders gave technical and financial help
- Why/Context: What led elected representatives to take action for the preservation of agricultural land; state of agriculture on the territory
- Implementation: Sequence of events
- Results observed or expected
- Key factors: what made it work, what made it difficult
- Financial plan
- Contacts: who could elected representatives or their development agents contact in the collectivity that run the project in order to know more about it. We tried to have an elected representative's name for each experience because it easier for elected representatives to talk together as they have the same difficulties and questions. Whenever possible the contact of a technical agent was also given.
- Documents: interesting documents related to the experiences (i.e. documents giving more detailed information or documents resulting from the project – e.g. "Guide méthodologique : Réaliser des échanges amicables entre agriculteurs à l'échelle du territoire" (Methodological guide : realizing amicable land exchanges between farmers at the local scale - ADASEA du Puy-de-Dôme and Réseau installation foncier en Livradois-Forez 2008)

Once the datasheet was done, I created a diagram representing the sequence of events, the tools used and the stakeholders intervening (Figure 5 p.51). This diagram gives a clearer idea of the different steps of the experience and helps to point out the key factors that made the experience a success. The aim was then to group the diagrams in one "step by step" diagram for each primary concern (Figure 6 p.52) that could be used to suggest steps to achieve the main goal and then a general methodology.

3.1.5. Tool catalogue

To start the tool list, I first listed the tools encountered in the experiences. I then completed with the help of already existing guides such as "Guide pratique Languedoc Roussillon: Gestion, développement de l'espace et préservation des terres agricoles – Boîte à outils des acteurs ruraux" (Practical guide : Space management, development and preservation of agricultural land – Tool box for rural stakeholders – ADRET and GAL Gévaudan-Lozère 2010) or "Livre blanc des moyens d'action sur le foncier agricole : Département du Var" (Means of action on agricultural land – Chambre d'agriculture du Var 2009).

I also entered the tools in a table, in order to have a quick overview of what they could do, who could use them and how. The analytical grid contained the following entries:

- Tool name
- Objective
- Who can use it
- Description of the tool, how does it work?
- Conditions to be fulfill in order to use the tool
- Legislative framework
- Experience illustrating the tool
- Sources

Like the experience table, the tool table will be available to the local coordinators.

We decided not to present the big State orientations such as the SSCENR[3] (Collective Services Schema for Natural and Rural Areas) or the SRADDT[4] (Regional schema of land planning and

[3] The SSCENR "details the important environmental issues for France's rural areas and formulates recommendations for strengthening their environmental functions. […]The task is to identify paths for developing the multi-functionality of rural areas" (Cemagref 2003).

[4] The SRADDT gives "the fundamental orientations on the mid-term of the sustainable development of the regional territory" (Conseil Régional d'Aquitaine 2011).

sustainable development of the territory), as they are not binding and local collectivities do not have any power over them. We rather focused on what can directly be implemented by collectivities and what could be offered by the other stakeholders such as Terre de Liens or the Cré-Sol (Réseau d'économie solidaire en region Centre – Network of solidarity finance in the region Centre). 35 tools will be presented in the guide.

Various classifications were tried for the presentation of the tool list. I first tried to class them by type: statutory tools, operational tools, etc. and by the level of collectivity that can use them: region, *département, commune*. These two possibilities were not particularly interesting or practical. We then had the idea to class them by the objectives they seek to achieve. It was decided to describe each tool in a few sentences: about half a page each.

3.2. Methodology and guide co-construction with the stakeholders

Concerning the co-construction of the methodology, the expectations of the stakeholders we met were taken into account for the guide's content and design. For example, elected representatives expressed the need to know who the agricultural sphere stakeholders are, what the differences between them are and what they can offer. To answer this demand, each stakeholder will have a datasheet to fill in that will be found in the guide. Regarding experiences, some stakeholders insisted on the need to present experiences of collectivities having taken strict measures in their planning documents in order to limit urban sprawl and preserve agricultural land. A datasheet with the experience of three different collectivities was thus created on the SCoT (see datasheet example p. 47) and the corresponding tool datasheet also explained how to take agriculture into account in the elaboration of planning documents (see datasheet example p.48).

All the results of our work were presented to the stakeholders during the meetings for validation: synthesis of their needs and expectations, how we plan the guide, the 9 primary concerns we defined, and the list of tools and experiences selected. During the first regional meeting the 3 groups of stakeholders were divided into small groups for a workshop during which we gave them an experience datasheet and asked them to identify the stakeholders, the tools used, the major action steps, the key factors for success and to evaluate if the same type of action could be carried out in their region. The aim was, from a particular case (the given experience) and with the stakeholders' experience, to draw a general step by step diagram that could be useful for all kind of projects regarding agricultural land preservation and to highlight the key factors for the realization of a project. The diagrams produced will be integrated in the methodology that will be created.

The tool datasheets will be verified by the competent participating stakeholders. For example, the description of planning documents (PLU – Local urbanism plan – and SCoT – Territorial coherence schema) will be verified by a CAUE (Agency of architecture, urbanism and environment). All the experience datasheets will have to be corrected and approved by the collectivity concerned.

4. Results

4.1. Experiences

The 9 primary concerns of elected representatives when they decide to intervene on agricultural land and activities we identified are to:

- Combat urban sprawl
- Combat waste land and agricultural abandonment to preserve landscapes
- Maintain economic activity
- Develop local production for quality food provision
- Preserve water quality through suitable farming practices
- Preserve biodiversity
- Preserve *terroir*, and the cultural and touristic heritage
- Valorize the collectivity's land property
- Install new farmers and respond to their solicitations for land

The 140 examples reviewed show that several collectivities decided to take action in order to preserve agricultural land and activities and that there are many possibilities to do so. 30 experiences, among which 11 are regional ones, have been selected for the guide (Table 7). They represent a variety of tools, stakeholders, collectivities and contexts. Some changes might still happen depending on the authorizations we get to publish the experience from the concerned collectivities, the number of pages that will finally be decided for the guide and the opinion of the technical committee on the relevance of the experiences compared to the local context once it has read all the datasheets. Three datasheets were taken from the ARDEAR Rhône-Alpes guide.

In the guide, the experience datasheets will be presented according to the main concerns of the experience responded to. This way, elected representatives can directly go to the experiences that are closest to their own main concerns. The datasheets for urbanism documents (PLU and SCoT) are a bit different than the others (see datasheet examples p.44 and 47). My suggestion was to

present a variety of possibilities to take agriculture into account in these planning documents. Elected representatives usually know these tools but not how to use them to preserve agriculture. Three experiences of SCoT and one of PLU were thus chosen. Only the details regarding agriculture were developed in the datasheet (about one page for each experience).

Table 7 : The 30 experiences described in the guide

Collectivity	Main tools used	Productions
Combating urban sprawl		
Communes de Canohès et Pollestres (66)	PAEN	Vine
Commune de Chécy (45)	ZAP	Vine and cereals
Communauté de communes du canton de Prayssas (47)	PLU intercommunal	
Piémont des Vosges (67), Pays de Rennes (35), Agglomération Tourangelle (37)	SCoT	
Combating waste land and agricultural abandonment to preserve landscapes		
Commune de Drevant (18)	Apprehension of properties with no owner	Vine and cereals
Agglomération Nantes Métropole (44)	Territorial diagnosis, land ownership control, financial support	Cattle and cereals
Commune de Grusse (39)	GFA	Vegetables, vine, fruit trees, snails
Commune de Sarzeau (56)	State helped delayed plot buying, amicable exchanges, reparcelling	Vegetables
Maintaining an economic activity		
Communauté de communes Cher-Sologne (41)	Financial support, survey on farms' transmission	Goats
Commune de Montlouis (37)	ZAP	Vine
Communauté de communes de l'Est Tourangeau (37)	Land purchase and lease	Vegetables
Agglomération de Blois, SIAB (41)	Agriculture incubator, agriculture watching program, ZAP	Vegetables and vine
Livradois-Forez - communautés de communes (63)	Agricultural land diagnosis, GIS and active land watch, land ownership control, amicable exchanges, support to farm transmission, state helped delayed plot buying, waste land inventory	Cattle and sheep
Commune de Saint-Dizier en Diois (26)	Collective ownership schemes, SCI, « foncière » Terre de Liens	Goats

Developing local production for quality food provision		
Agglomération de Besançon (25)	Diagnosis, agriculture charter, short supply chain development, agriculture incubator, training for projects' owners, work the employment agency.	Cattle, cereals, vegetables
Commune de Mouans Sartoux (06)	Municipal management of agriculture (régie municipale agricole), market allotment, land purchase	Organic vegetables and fruit trees
Preserving water quality by suitable farming practices		
Communauté d'agglomération Seine-Eure (27)	Creation of an organic vegetable production area	Organic vegetables
Communautés de communes Pays des Sorgues Monts du Vaucluse (84)	Land purchase/leasing/retrocession, charte r for local organic agriculture	Organic productions
Communauté d'agglomération de Châteauroux (36)	Land purchase	
Preserving biodiversity		
Commune d'Evreux (27)	Shepherd hiring, communal sheep flock	Sheep
PNR de la Brenne (36)	Eco-pastoralism	
Preserving the terroir, and cultural and touristic heritage		
Communauté de communes de la Tinée (06)	AFA	Chestnuts
Commune de Montrevel en Bresse (01)	Land purchase/leasing/retrocession, building construction	PDO Poultry
Valorizing the collectivity's land property		
Pau (64)	Community garden, agriculture incubator, food production for public catering	Vegetables
Communes de St Cyr en Val et Orléans (45)	Land purchase and leasing, building renovation	Eco-matériaux, bio-combustibles
Installing new farmers and respond to their solicitations for land		
Département Ile et Vilaine - Commune de Bruz (35)	State helped delayed plot buying	Innovative agri-rural projects
Communauté de communes Beaume Drobie (07)	Building and lease-purchase of dairies and butchery facility	Goats and poultry
Commune de La Riche (37)	Land leasing, eco-building construction	Vegetables

4.2. Tools

The 35 tools were classified in the following 7 categories of action (Table 8):

- To plan land use
- To anticipate and get to know the territory
- To "restructure" land
- To preserve agricultural land use
- To purchase land
- To manage land
- To lease or lend land

This way it is more intuitive for elected representatives to use the guide. Depending on the type of action they decide to undertake, the different possibilities they have are presented.

Tool datasheets briefly describe each tool, its use and who can use it (see datasheet examples p.46 and 48). For tools illustrated by experiences in the guide, a reference is made at the end of the description. For the others, when available, I gave an example by describing an experience in a few sentences. Moreover, when I found more detailed guides on some tools (e.g. guides on how to take agriculture into account in a PLU or a SCoT elaboration), I gave the internet link at the end of the datasheet. Sometimes a reference was made to the stakeholders able to help the collectivities with the use of a specific tool. Stakeholders are also welcome to state on their description datasheet with the implementation of which tool they can help.

Table 8: The 35 tools described in the guide

To plan land use	- SCOT, InterSCOT - PLU communal, PLU intercommunal - Carte communale (communal map)	
To anticipate and get to know the territory	- Territorial diagnosis - Veille foncière (Land watching program) - Convention d'intervention foncière SAFER (Agreement for operations on land by the SAFER)	
To restructure land	- AFAF – Reparcelling - Mise en valeur des terres incultes (Valorization of uncultivated land) - ECIR – Amicable exchanges and transfer of rural real assets	
To preserve agricultural land use	- ZAP – Protected agricultural zone - PAEN – perimeter of protection and valorization of peri-urban agricutlural and natural areas	
To purchase land	*Preemption rights:* - DPU – Urban preemption rights - ZAD – Zone of « postponed spatial planning » - PIG – Project of public interest - Appréhension des biens vacants et sans maître (Apprehension of properties with no owner) - Agreement for operations on land by the SAFER	*State helped delayed plot buying :* - EPFR/L – Etablissement public foncier régional/local (public organization in charge of buying and retroceding land to collectivities) *Collective land purchase :* - SCI – Real estate civil society - GFA – Agricultural land grouping - Foncière Terre de Liens
To manage land	- Agreement for operations on land by the SAFER - AFA – Agricultural land association - Régie municipale agricole (Municipal agricultural production)	
To lease or lend land	- Crédit-Bail (Lease-purchase) - Location -Vente (Lease-purchase) - Ferme et bâtiment relais (Farm and building lease-purchase) - Inter-communal farm - Atelier relais (Lease-purchase of processing facilities)	- Régime du commodat (Lending land) - Bail rural (Agricultural lease) - Emphyteutic lease - Bail rural environnemental (Agri-environmental lease)
New tools from the Grenelle, and Agriculture and Fishing Modernization laws	- Trames vertes et bleues – Schéma de Cohérence Ecologique (Ecological coherence schema – networks of green corridors and water bodies) - Observatoire de la consommation des espaces agricoles (Watching program of agricultural space consumption) - Commission de la consommation des espaces agricoles (Agricultural space consumption committee) - PRAD – Regional plan of sustainble agriculture - Taxes	

4.3. Examples of datasheets

A ZAP to maintain vine production in Montlouis-sur-Loire

- Communauté de communes de l'Est Tourangeau (CCET), 5 communes, 24 223 inhabitants
- Commune de Montlouis-sur-Loire, 10 381 inhabitants
- Indre-et-Loire, Centre

Aim : To preserve agriculture in peri-urban areas

How : ZAP, actions of the agri-urban project

With the technical help of : the DDAF, Polytech'Tours, the ENSNP ("Ecole Nationale Supérieure" for nature and landscape), the Agriculture Chamber, the Safer, the INAO, the winegrowers' union, the vegetable producers' union, the "Maison de la Loire", the Urbanism agency of the of Tours agglomeration

With the financial help of: the Ministry for Agriculture

Why/Context: In 2001, the Communauté de commune de l'Est Tourangeau (CCET) was selected by the Ministry of Agriculture as a pilot site to study peri-urban agriculture. At that time agriculture (cereals and vines) covered more than 50% of the territory but urban pressure on land, and conflicts about land use favored land retention. Farmers that did not own the land could not rent or buy land anymore.

In Montlouis, many plots that became constructible since the end of the 1970s were previously vineyards. The municipality elaborated, with the help of vineyard professionals, a plan of action: reparcelling, wine promotion, etc. These actions, combined with the PDO covering more than the half of the communal territory enabled the installation of a dozen young winegrowers. Permanent dialog with the professionals led the municipality to cross a new step in its policy towards vineyard protection and development: the creation of a ZAP, with the support of the CCET.

Implementation

The commune's objectives, through the setting up of the ZAP, are to combat land retention and speculation, to offer conditions needed to maintain and develop a local agriculture with strong identity, and to preserve the living environment. The ZAP also took into account landscape preservation in an area with touristic importance.

The DDAF sold the ZAP to the elected representatives who saw the innovative side of it. The CCET led the project; the commune realized the statutory part related to the ZAP. The diagnosis phase took place in 2002 and was done by the DDAF, Polytech'Tours, and the ENSNP. A leading committee composed of elected representatives of the different communes, representatives of the Agriculture Chamber, of the Safer, of the INAO, of the winegrowers' union, of the vegetable producers' union, of the "*Maison de la Loire*", and of the Urbanism agency of Tours agglomeration.

In 2005 the commune elaborated its PLU. A technical committee gathering all the partners suggests the ZAP perimeters. These have been elaborated according to the areas dedicated to urbanization on the long term, the best wine "terroirs", and the necessary over-protection of territories threatened by their proximity to housing. The municipal Council validated the perimeters and the ZAP was created by "arrêté préfectoral" (bylaw) in 2007.

Results

The ZAP is only one part of the agri-urban project of the CCET which contains many actions: circulation of agricultural machines, flowered fallows, awareness campaign about agriculture and landscapes, etc. The ZAP ensured the protection of the agricultural zone defined in the PLU, which is not protective enough. Moreover, it is an innovative and valorizing project for elected representatives that are asked to share their experience.

The ZAP is 322 ha (10% of the communal territory) divided into six perimeters which cover almost the whole surface of the PDO area. A seventh perimeter will be added soon. Other actions on land use planning and the support of the wine professionals is currently under discussion.

Key factors

- Strong political will and involvement
- Permanent dialog between the municipality and the wine profession in the long-term
- ZAP part of a bigger project planning various actions to support local agriculture
- Diagnosis phase involving many stakeholders
- Young farmers (winegrowers) wishing to install in the area
- Difficulty: some farmers did not want the constraints imposed by the ZAP, they wanted to be able to sell their land as constructible for it to pay for their retirement

Financial plan :

4000€ from the Ministry of agriculture

Contacts :

Fabienne POISSON - 02 47 45 85 72

Documents :

http://www.indre-et-loire.equipement-agriculture.gouv.fr/IMG/pdf/Agri_D_01_ZAP_Montlouis_cle037ae5.pdf
http://www.reseaurural.fr/files/contenus/2160/bn-_zap_montlouis.pdf
http://www.ville-montlouis-loire.fr/urbanisme/actualites/54-un-vignoble-protege.html

Preserving agricultural land use

The ZAP – Protected agricultural zone

Art. L.112-2 and R.112-1-4 à R.112-1-10 of the Rural Code
The ZAP delimitation is an appendix of the PLU according to the conditions given in article L. 126-1 of the Urbanism Code.

"The ZAP are agricultural zones whose preservation represents a general interest due to the quality of their production or to their geographical situation […]" Article L 112-2 of the Rural Code.

The ZAP are delimited by "*arrêté préfectoral*" (bylaw) on the proposition of or after agreement of the communes or "*intercommunalités*" concerned, after opinion of the Agricultural Chamber, of the INAO in the AOP areas and of the CDOA. A public survey is also realized. The classification of the area as a ZAP enables to protect agricultural land from urbanization.

A change in land use affecting the agricultural, biological or ecological potential of a ZAP on the long term is submitted to the opinion of the Agriculture Chamber and of the CDOA. In case of negative opinion, the change can only occur with the reasoned opinion of the Prefect.

Steps of action to set up a ZAP:

- Deliberation of the Municipal Council
- Perimeter delimitation
- Deliberation of the Municipal Council on the perimeter
- Opinion of agricultural organizations
- Public inquiry
- Final deliberation of the Municipal Council
- "*Arrêté préfectoral*"

In the region Centre, one ZAP already exists: the one of Montlouis-sur-Loire (37) (see experience datasheet X), and others are planned among which those of Chécy (45) and Vineuil (41) (see experience datasheets X and X)

SCoT du Piémont des Vosges

- 35 communes
- 57 015 inhabitants (2006)
- 391 km²
- Bas-Rhin, Alsace
- Started in 2001, approved in 2007

The "SCoT du Piémont des Vosges" is very constraining regarding space consumption. On the SCoT territory, the population increased by 7% between 1999 and 2006 and the communes are expecting 21 000 new inhabitants from now until 2025. In a peri-urban context (close to Strasbourg) where urbanization is strong (+120% of urbanized surfaces in 40 years) the communes wish to limit urban sprawl.

In the SCoT, quotas of agricultural land maximum consumption per commune (from 8 to 60 ha) have been defined. It represents a total of 520 ha for urbanization on the whole SCoT territory from now until 2025, against 1100 ha if urbanization was left to increase at the same rate as in 1999. An urban area has been defined on each commune (areas already urbanized, currently under construction and non-built areas surrounded by buildings). Surface outside the urban area that would be taken for urbanization will be deduced from the quotas. Quotas are divided in two periods until 2015 and 2025.

The building of 8 500 housing units is planned. 30% of the new housing units have to be built in the urban area and 60% should be "grouped housing". Housing density per hectare was defined from 17 to 25 depending on the communes. For business parks, inter-communal parks are privileged. The quota for these parks is 220 ha. Wine PDO areas are non-constructible. Nine non-constructible centers (15% of the SCoT territory) have been delimited for the protection of fauna and flora. On this surface preserved from urbanization are 2 400 ha of cultivated and meadow surfaces which represent one fourth of the territory's agricultural land.

	2015	**2025**
Housing	145 ha	240 ha
Infrastructure	30 ha	60 ha
Business parks	150 ha	220 ha
Total	**325 ha**	**520 ha**

The enforcement of the SCoT is verified by the "syndicat mixte". Observation programs for housing and economy are created.

Contacts : Baptiste Kugler, director of the "syndicat mixte", kugler.piemont@orange.fr – Gilbert Scholly, president of the "syndicat", mayor of Barr

http://www.scot-piemont.org/
http://www.developpement-durable.gouv.fr/IMG/pdf/DGALN_P4_BKugler_piemont_Vosges_cle2a616c.pdf
http://www.adeus.org/Ressources/Publications_Periodiques/trame-verte-et-scot

Land use planning

Urbanism documents

The SCoT – Schéma de Cohérence Territoriale (Schema of territorial coherence)
(Art. L 122-1 and following of the Urbanism Code)

The aim of a SCoT is to define the general orientation relative to land use planning. The SCoT covers a population catchment area. An InterSCoT can be set up in order to ensure the coherence between neighbor SCoTs. The SCoT is a binding document: PLU (Local urbanism plan) should be compatible with the SCoT concerning them.

The SCoT is composed of several documents:

- A presentation report with a diagnosis of the territory
- A "land use and sustainable development project" (PADD) defining the political objectives
- A "document of general orientations" (DOG) giving the orientation for land use
- Graphical documents (maps)

Agriculture should be taken into account in the diagnosis phase (Law for agricultural orientation of 2006) by integrating the potentialities and characteristics of agricultural activities on the territory. "Agricultural areas of community interest" ("espaces agricoles d'intérêt communautaire") can be delimited, what gives them an additional stautoryprotection. The SCoT can also define objectives to reach such as the development of short supply chains.

During the elaboration of the SCoT, State services have information and consultation roles, as well as the département, the region and the "Consular Chambers". A consultation is carried out during the elaboration in order, among other things, to obtain the population opinion. It is useful to include farmers and local associations in the consultation.

Following the Grenelle laws, the SCoT are submitted to a compatibility obligation with the directives of landscape protection and valorization, and to taking into account the "regional schema for ecological coherence" (regional level of the "Trame verte et bleue") and the territorial climate-energy plans. The Grenelle II law imposes to local collectivities to determine in the SCoT indicators of space consumption and to fix numbered objectives to combat the loss of agricultural and natural areas (area of space to urbanize, stock of surfaces to preserve for agriculture, etc.). The preservation of agricultural spaces by the SCoT goes through the identifications of agricultural issues (diagnosis). The SCoT can localize areas where to maintain an agricultural use and limits to urbanization. Written principles can enable to ensure the maintaining of the capacity to exploit the land, for instance: keeping urbanization in the continuity of existing buildings.

In the SCoT, agricultural land preservation is notably achieved through the limitation of space consumption for urbanization (see experience datasheets on SCoTs).

Documents available for more details:
Certu documents on how to take agriculture into account in the SCoTs:
http://www.certu.fr/catalogue/p1858/DEMARCHE_SCOT_TEMOINS/product_info.html

4.4. Diagrams and key factors

As explained in the methodology. For each experience datasheet, I made a step by step diagram (Figure 5 p. 51). The key factors for the experience success identified thanks to this diagram were used to complete the datasheet. For the 30 experiences developed in the guide, the key factors found in Table 9 have been identified. In addition to a poor knowledge of elected representatives of what would be possible for them to do and who might help them, a factor often limiting the projects' scope is strong financial constraints. For instance, many collectivities do not have the means to purchase land even if it would sometimes be necessary in order to preserve agricultural land.

Table 9 : Key factors identified in the 30 experiences

Concerning	**Key factors**
Elected representatives	- Strong political will - Political involvement for better visibility of the project - Acknowledgement of the many roles of agriculture and its importance in the *commune*'s development - Similar objectives between different collectivity levels (e.g. *commune-intercommunalité*) - Population support to the policy led by elected representatives - Answer to a population demand
Stakeholders' involvement	- Local partnership between structures with complementary purviews and skills (political and institutional stakeholders, development, spatial planning and agricultural sphere stakeholders) - Use of the stakeholders' expertise - Dialog between and consultation of stakeholders – involvement of the various stakeholders (e.g. farmers, population, associations, institutions) - Awareness of the issues linked to the maintaining of agriculture by all stakeholders
The project	- Project on the long-term durability of partnerships and actions - Various aspects of agriculture taken into account (e.g. maintaining and development of local market, social and economic, food quality, economy relocation, landscape management and valorization, producer-consumer link) - Action part of a more general reflection/project - Support of projects' owners (elected representatives, new entrants into farming) by the population (through CSAs for example) and by professionals (farmers, development agents, associations)
The productions	- Development of local market opportunities - Value added productions (PDO, short chain supply) and innovative projects

To insist on these key factors in the guide, some will be developed in the stakeholder's catalogue as stakeholders' skills. They are complementary to the tools presented in the tool catalogue to

achieve the objective of the maintaining of agricultural activity. Some of these skills also present tools offered by stakeholders that are not directly linked to agricultural land preservation. The following skills are found:

- Organizing dialog and consultation
- Structuring of the market
- Support of new entrants into farming
    - Solidarity finance for new entrants into agriculture
    - Agriculture incubator: business incubator with exclusive focus on agriculture – a place where people wishing to become farmers can test themselves before starting on their own
    - Education and training in agriculture
- Support of farmers retiring to ensure the transmission of the farm
- Agri-environmental projects

Key factors

Tools offered by stakeholders

Other key factors such as the need of a strong political will or partnerships between structures will appear in the proposed methodology. The various parts of the guide will also help set up actions that are identified as key factors. For example, the stakeholder catalogue will help collectivities know who the various stakeholders are and what they can do for them. This way, they will be able to ask for the stakeholders' help and expertise.

- Orange : main steps
- Green : stakeholders
- Red : tools
- Key factors

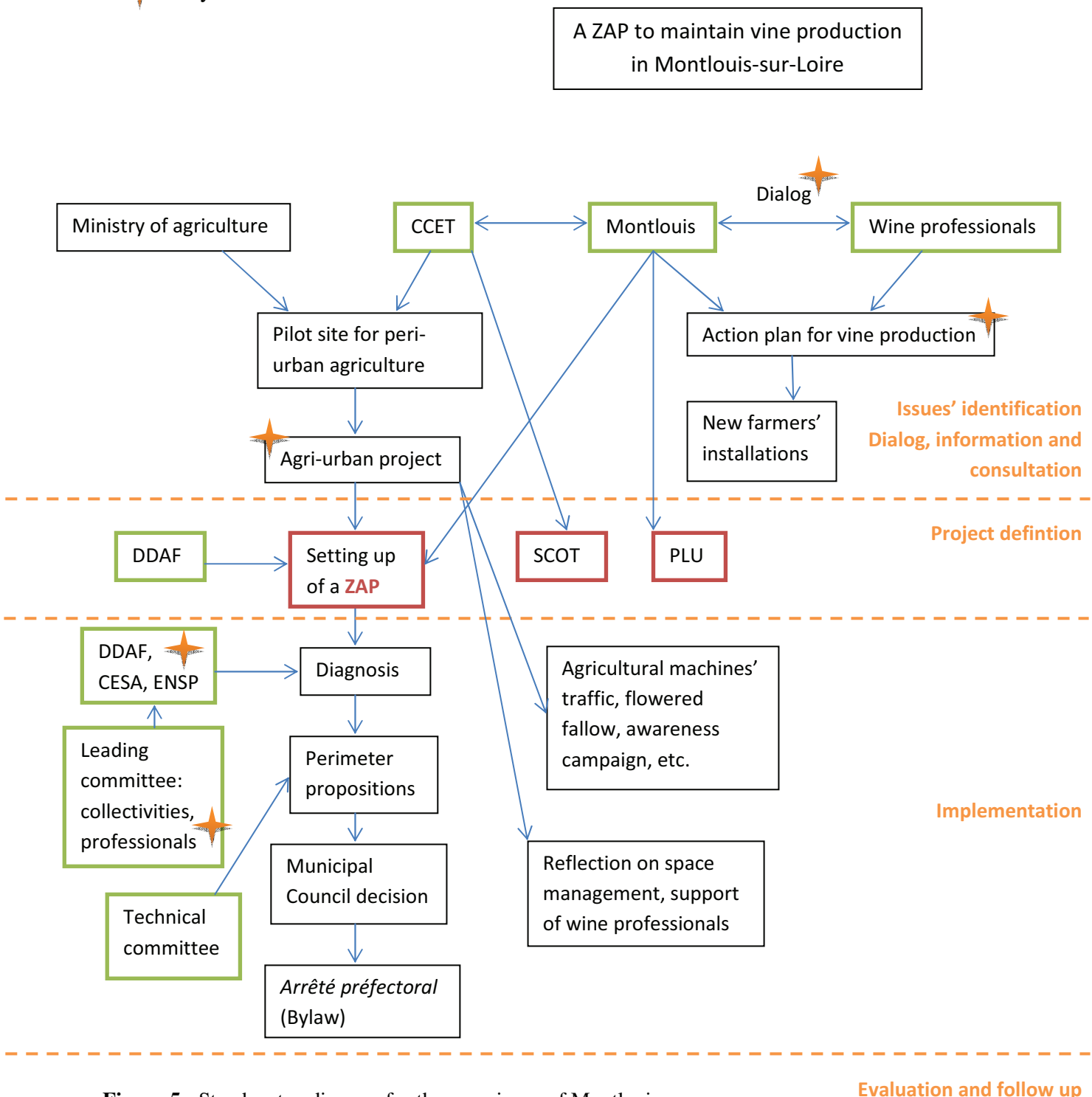

Figure 5 : Step by step diagram for the experience of Montlouis

By combining the diagrams of each experience with a particular primary concern, I made a general diagram of what is possible to do to achieve each goal (Figure 6). The diagram is not, however, exhaustive but only based on the few selected experiences.

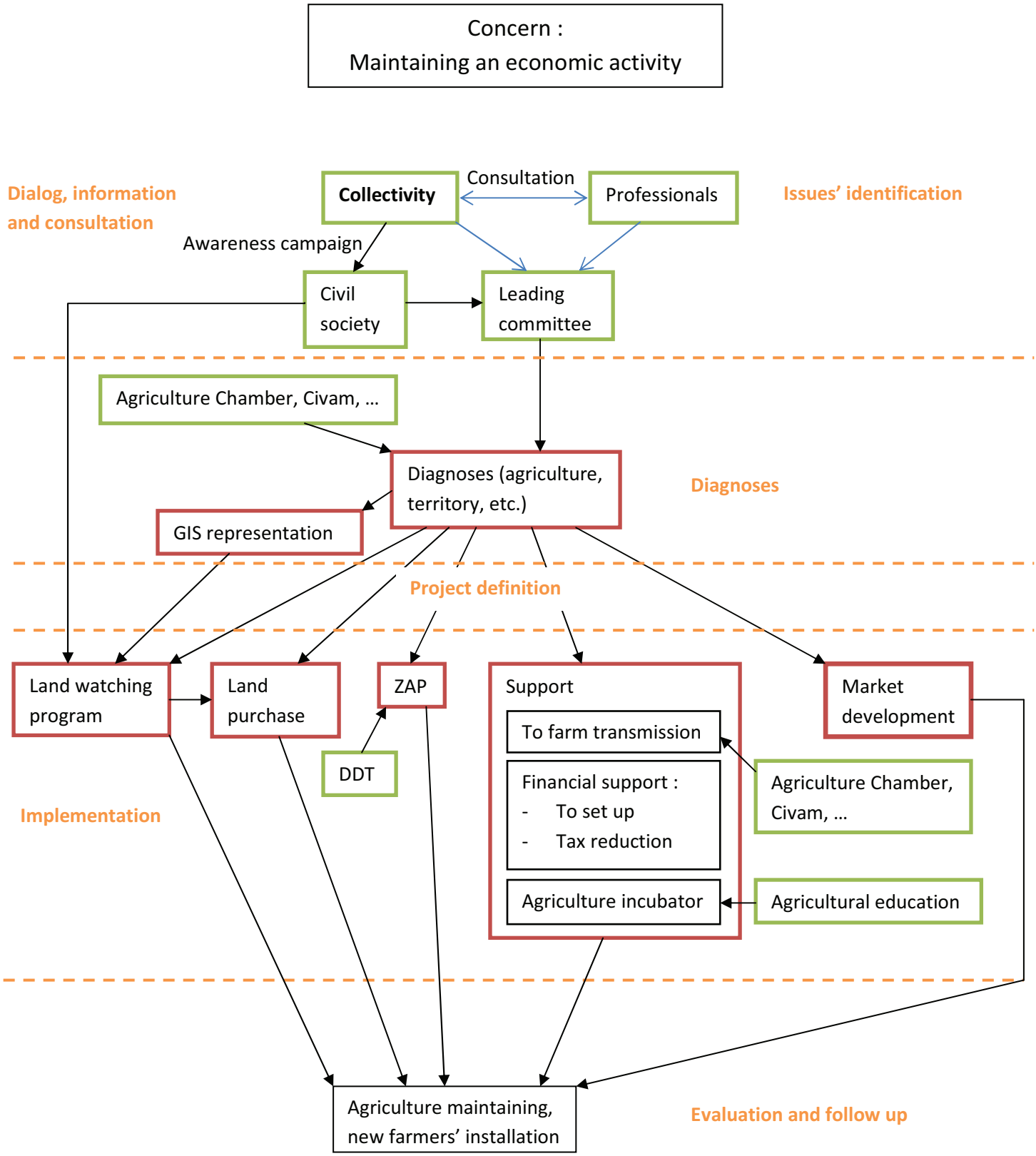

Figure 6: Diagram for the concern "maintaining an economic activity"

These diagrams will be available to local coordinators that will have to support collectivities in their projects but will not be included in the guide.

Based on the experiences' analysis and the stakeholders' expectations, the 6 main steps we identified with my supervisor are the following:

- To identify the territory issues
- To make diagnoses
- To inform and engage a dialog on the territory
- To define the project
- To implement
- To evaluate and follow up

Each main step will be developed in a datasheet. It will be decomposed in smaller steps. References will be made to the other guide elements: the experience, tool and stakeholder catalogues and the questionnaire. For example, the main step "to identify the territory issues" is composed of 5 steps:

- to ask questions about the territory and make needs emerge (using the questionnaire)
- to identify the stakeholders and human means (using the questionnaire and the stakeholders' guide)
- to learn about other experiences (using the experience catalogue)
- to create a political will (using the experience and stakeholder catalogues)

These datasheets, as well as the questionnaire and the stakeholder catalogue, will be done by my supervisor.

During the workshop with the regional stakeholders, the same 6 action steps were identified, as well as similar key factors (e.g. strong political will, technical support from other stakeholders, general coherence of the project, consultation and information during the whole project). Our work was thus validated by the participating stakeholders.

What is currently planned for the guide contents is:

- A methodology: for development agents and elected representatives to have a better idea on "where to start" and "where to go" in order to reach their objective of maintaining agriculture on their territory – this constitutes the central part of the guide
- A questionnaire: to enable collectivities to ask themselves the right questions in order to assess the territory's issues
- An experience catalogue: presenting actions taken in the region and in France
- A "tool box": describing the tools a collectivity can use to maintain agriculture
- A stakeholder catalogue: describing the abilities and purviews of each stakeholder and what it can offer to collectivities

Regarding the guide's layout, it was finally decided not to use the same layout as the ARDEAR Rhône-Alpes guide. The guide's presentation and layout is however not defined yet. Computer

graphics designers were asked for an estimate. The one that will be chosen will have to make propositions for a layout.

5. Discussion

The number of experiences and tools found shows that there are many possibilities for collectivities to act on agricultural land preservation and that it is possible. By showing elected representatives a selection of 30 experiences, including some local ones, and not only a list of tools, we want to show that they too could attain these results, that they can find various ways to overcome their primary concerns, and that this can be achieved in France and in their region as well. The methodology is here to guide them and point out the key factors for success.

Among the key factors is political will, which certainly is the key condition for a project to take place. As stated by Balny (2009), "there could be no preservation of agricultural and natural areas without the will and involvement of local collectivities, whose responsibility it is". A prerequisite to agricultural land preservation is adapted land use planning and in France, as well as throughout the EU countries, municipalities are responsible for land use zoning (EEA 2006).

Another of the key factors identified was for the different collectivity levels to have similar objectives. The EEA's (2006) report indeed observes that conflict with policy objectives at national, regional and local levels can undermine local efforts to combat urban sprawl; interconnectedness between the various scales is necessary. Moreover, in order to combat urban sprawl efficiently, decisions on urban development cannot be taken at the local level only; the problems have to be tackled as an integrated issue and understood in their regional context (EEA 2006). Decisions have to be taken at the most appropriate level and it has to be ensured that they are coherent with those taken at a broader level (EEA 2006). A study comparing American and French tools for farmland and natural areas preservation concludes that, even if both countries have developed similar kinds of tools (development directives, zoning, land purchase, incentives) with different practical details, the French system probably is more efficient than the American one due to a higher coherence on the national territory (Dissart 2006). Indeed, the intervention of the central government in France leads to the application of the same regulations all over the territory. Dissart (2006) however recommends completing the French set of tools by copying some specific American tools such as agricultural mitigation ordinance, and purchase and transfer of development rights.

The project being part of the larger consideration of the issues it concerns (e.g. preservation of agricultural land and limitation of urban sprawl) is also a key aspect we identified. According to

Dissart (2006), the most efficient protection combines various tools adapted to the local situation. Collectivities should, for example, work at the same time on land use planning to limit urban sprawl and on more direct actions to preserve farmland. The comprehensive aspect of the project is important too. The city of Munich, for instance, managed to limit urban sprawl and ensure the compactness of the city by using integrated urban development providing guidelines for all municipal responsibilities (economy, social issues, and town planning), as well as various policy initiatives such as reuse of brownfield land or reinforcement of regional cooperation (EEA 2006).

We suggest to elected representatives that they include a variety of stakeholders (e.g. farmers, civil society, organizations of the agricultural sphere, the water agency) in their project, at least through consultation in order to learn about their expectations, their experience and their suggestions, and to favor their support of the project and its implementation. Collaboration between stakeholders leads to coordinated efforts to tackle an issue (Koontz 2003). The use of stakeholder's expertise also helps to ensure the project's success. For example, in its study on collaborative planning to develop farm preservation plans in Ohio (USA), Koontz (2003) observed that the intervention of professional planning consultants fosters the development of more sophisticated plans. More sophisticated plans do not however necessarily mean that the outcomes will be better but the intervention of experts gives better insight into what might be done.

5.1. Market for land rights and alternative ownership systems

When comparing what is happening in the world regarding the loss of agricultural land and urban sprawl, it is clear that the causes and impacts are not the same everywhere, even if they are similar. The difference is mainly observed between developed and developing countries where the impacts seem to be heightened. In developing countries a major issue regarding agricultural land is land tenure rights. Smallholders are often evicted "for large-scale development projects, for the creation of special economic zones, for mining activities, or for the creation of large plantations" (De Schutter 2010c). Land grabbing is a recent issue linked to food and economic crises that is added to already existing land tenure and food security issues. According to the World Bank between 2006 and 2009 50 million hectares, the equivalent of almost the half of China's arable land, were sold, leased out or are being negotiated in Africa, Asia and Latin America (GRAIN 2009). The countries selling are mostly countries where hunger is already a major issue (GRAIN 2009). According to De Schutter (2010b) "access to land and security of

tenure are essential for the enjoyment of the right to food" and land should be recognized as a human right.

De Schutter (2010c) identified land titling leading to the creation of a market for land rights as an important issue in developing countries as it sometimes results in land becoming the property of those who can afford it and not of those who need it most or could use it most productively. He concludes that alternatives to Western titling schemes should be proposed. His suggestions, beside the strengthening of customary land tenure systems and the reinforcement of tenancy laws to improve land-users' protection, include the creation of communal ownership systems.

Titling and the market for land rights are also the source of problems for farmers in developed countries. Speculation on constructible land and price increases lead to difficulties for farmers needing more land and new entrants into farming to find a land while creating wasteland at the same time. It also leads owners to favor their own financial benefits rather than maintaining land as agricultural land. For example, many farmers when retiring sell their land as constructible land (for a higher price than agricultural land) – when possible – in order to make money that will pay for their pension, instead of transmitting their farm to a new farmer. This is of course also due to the very low pension they get. Often agricultural land prices are not related to their economic value (production value) anymore but rather with their patrimonial value. Terre de Liens was created in order to combat this problem and take agricultural land out of the market for land rights through collective ownership schemes and to ensure its agricultural purpose on the long term. This plus the intervention of some collectivities buying land to lend or lease it to farmers for a reasonable price are solutions close to what De Schutter (2010c) suggests.

Terre de Liens currently leads, with Forum Synergies and the participation of various European associations, a European project titled 'Access to land for Community-Connected Farming in Europe' (Terre de Liens et al. 2011). Among the examples given in their preliminary report, are the two following initiatives of collectivities in Spain and in Germany.

In Spain, the provincial government of Galicia created in 2007 a Land Bank named Bantegal whose aims are: to fight against UAA decrease and to promote its increase, to help farmers get more land to make their farms viable and combat the fragmentation of farmland, and to reduce risks (e.g. fires) caused by abandoned lands. Areas of special agricultural interest were defined where landowners of uncultivated or abandoned land can be subjected to a penalty (300€ to 3000€). There are two possibilities to avoid the penalty: cultivating the land according to conservation agriculture principles or transferring it to Bantegal. The land transferred to Bantegal will be leased to farmers needing to extend their farm or who want to settle. Priority is given to

young people and women. A land watching program was launched by the provincial government at the same time.

In Germany, Hamburg municipality is working since the 1990s to preserve peri-urban agriculture. The city owns three large farms (700 ha altogether) and decided to convert them to organic agriculture to lease them to organic farmers that would also engage in social and economic activities (e.g. catering, educational activities, food processing).

These two examples are similar to what has been done by some collectivities in France. The concept of a Land Bank, however, does not exist. It would be closer to the valorization of uncultivated land (mise en valeur des terres incultes): owners are asked to cultivate their land or to lease it to a farmer, if they do not the Prefect can expropriate them and/or designate someone to cultivate it, preferably a young farmer who plans to settle there.

5.2. Type of agriculture

In the Hamburg example, the municipality made the choice of organic agriculture. With the question of agriculture maintaining comes the question of the type of agriculture that is wanted. Through their intervention on farmland, collectivities can orientate the type of agriculture on their territory. Most of the time, when collectivities take actions in favor of agricultural land and activities, the type of agriculture concerned is not intensive agriculture but organic production or market garden. We have seen that soil sealing affects soil functions but intensive cultural systems can have similar effects: impacts on soil fertility, compaction, permeability, water reserves and quality, salinization, and erosion (DREAL du Centre 2010b; Foley et al. 2005). Salinization for example causes the loss of about 1.5 million hectares of arable land per year worldwide, representing a production loss of $11 billion (Wood et al. 2000 in Foley et al. 2005). Many ecosystem services that intensive agriculture negatively impacts are actually important to agriculture and have to be preserved.

However, it has been observed that it is usually more difficult for peasant farmers, and especially for the ones not coming from a farmer's family, to find land. The same issue is encountered in many European countries and the project led by Terre de Liens and Forum Synergies also raises the issue of "the land barrier" and how to lift it (Terre de Liens et al. 2011). The associations of the InPACT network support peasant farmers wishing to establish farms. Partnerships with collectivities would thus be very positive as the InPACT network could bring together collectivities offering land and peasant farmers looking for land.

5.3. Land scarcity

Roudart (2009) compares Pinson's (2009) study results on potential land surfaces for rainfed agriculture and the scenarios of food and agricultural prospective elaborated by the FAO and Agrimonde1 and concludes that rainfed cultivable land surfaces in the world are superior to surfaces needed to ensure humanity food security and some crop development for bio-fuels by 2050. This would still be true even with very little growth in crop yields, with forests and areas currently protected excluded and with the possible effects of global warming taken into account (Roudart 2009). She then suggests that agricultural production and food availability issues are due to the way humankind uses the resources and that it is a political issue of economic and social organization. Roudart (2009) argues that an alternative agricultural development model should be promoted: diversified agriculture with relatively low yields, with low inputs and few negative effects on the environment, maybe even producing environmental services and ensuring a decent life for farmers. This would require appropriate policies regarding agricultural prices and access to land (land tenure rights), and participative research, education and counseling (Roudart 2009). To the conclusion that there is enough potential agricultural land available to satisfy humanity needs by 2050, Koohafkan (2011) counters that agriculture already is the main cause of environmental degradation and that the number of regions in the world where the sustainability limit has already been reached and crossed is increasing rapidly, as well as land and water scarcity. His conclusion concurs with Roudart's (2009): most current production systems are not sustainable anymore and they cannot resolve the hunger issue; a new type of agriculture, more efficient and more sustainable is needed (Koohafkan 2011).

De Schutter's report "Agroecology and the right to food" (2010 a), based on an extensive review of the scientific literature, demonstrates that agroecology raises productivity at the field level, contributes to improving nutrition, adaptation to climate change and to reducing rural poverty. He thus describes agroecology as a mode of agricultural development that "shows strong conceptual connections with the right to food", "has proven results for fast progress in the concretization of this human right for many vulnerable groups in various countries and environments" and "strongly contributes to the broader economic development". De Schutter (2010 a) calls for States to reorientate their agricultural systems towards agroecology and recommends public policies for the scaling up of agroecology.

5.4. Limits of the study

As explained in the context, many guides on the topic already exist. The ARDEAR's was designed a bit differently and contains elements of methodology. It is expected that the collectivities of Centre working on agricultural land preservation will use the guide and benefit from it. However, it is clear that because of the datasheet concision and the information available, not every detail of the experiences is known and explained in the guide. Not all collectivities were contacted in order to write the datasheets, only the regional ones. For the others, I wrote the datasheets based on documents found on the internet. Direct contact with the collectivities might have given us more details on the difficulties they encountered and how they solved them, thus giving additional key factors. Also, not all collectivities advertise their actions on agricultural land preservation, especially not when it did not work. It would have been interesting to know about experiences that did not work and why in order to know what to avoid or try to find ways to solve the problems that occurred by comparing them with similar experiences that worked.

Tools' descriptions are purposefully short and concise. The datasheets only give an idea of what the tool is. As we are not experts on these tools, we made the choice not to go into details in order not to write anything wrong. Besides, longer datasheets would make it more difficult and demanding for elected representatives to get to know all of the available tools. They can easily find more details on the tool they select and links to more complete tool guides are given on the datasheet when available.

Because of the many possibilities of action and the many concerns of elected representatives the methodology is general and does not go into much detail. Support by one of the InPACT network's coordinator could make up for this. But in order to be able to do so, coordinators would need some training on agricultural land preservation and on the guide contents. The possibility of them being trained by a coordinator of the Caprural platform working on the methodology to support elected representatives in the creation of activities on their territories has been discussed but nothing has yet been decided.

We have seen with ARDEAR Rhône-Alpes that the distribution of a guide like the one ARDEAR Centre will produce needs some follow up in order for it to be used and useful. Moreover, one of the InPACT network's expectation following the guide publication is that collectivities will solicit the local coordinators for support. The guide is designed to be used by collectivities with the help of local coordinators. Its distribution should be organized in such a

way that it facilitates the initiation of partnerships between collectivities and the local associations. It has not yet been defined how this would be done. The associations of the InPACT network have however limited human means. If many collectivities would be interested in some support from the coordinators the question of their availability and remuneration would be raised. It has not yet been decided if and how the InPACT network would ask for financial participation from the collectivities.

Among the ARDEAR's project objectives are the followings:

- to increase efficiency in the methods used by agricultural and rural development structures to support territorial collectivities
- to improve the knowledge stakeholders have of each other and if possible to promote the setting up of partnerships
- to re-localize production and distribution of agricultural products
- to promote and valorize sustainable agricultural practices, respecting citizens and the environment

The guide should help reach the first one. However, it has to be tested with a few collectivities in order to check its efficiency and to improve its presentation, contents or use. The stakeholders' description that will be part of the guide and the meetings gathering the regional stakeholders contribute to realization of the second objective listed but political divergences might hinder the setting up of partnerships. I think the guide will not directly contribute to realize the two last objectives listed above if they are not what elected representatives are already looking for. It is the intervention of coordinators with collectivities that will help reach these objectives. Through their intervention, coordinators will have the opportunity to broaden elected representatives' perspective on agriculture and guide them to tackle the issue in a comprehensive way. For example, the issue of local food production would be discussed with a collectivity wishing to serve organic food in its public catering: where should the organic products come from? should they not be local as well? how could we manage to serve local organic products?

The ARDEAR project was not about how to make elected representatives aware of agricultural land issues and of the necessity to preserve it, or how to create the indispensable political will. It was decided by the InPACT network to first focus on helping collectivities who are asking for help. The methodological guide is thus designed for elected representatives already willing to take action. It would also be interesting and useful to study the factors leading to the emergence of political will. Such a study would enable awareness campaigns to be adapted to tackle agricultural land issues with elected representatives and encourage the political will to do so. As observed by Koontz (2003), when the threat of farmland loss is perceived as high by the local stakeholders, these will respond with sophisticated plans for farmland preservation.

6. Conclusion

More than 140 French collectivities already experienced possibilities to preserve agricultural land. Every experience is unique because of its context and the choices that were made. However, they show that elected representatives, with the many tools available to them, have the ability to contribute to farmland preservation. It has already been done and it works. 30 experiences and 35 tools will appear in the guide that will be produced by ARDEAR Centre for elected representatives and local coordinators. These 30 experiences highlight several key factors of success. The presentation of the selected experiences and tools, together with the methodology and the questionnaire will enable elected representatives, with the support of a coordinator, to have a better overview of their possibilities, better define their projects and have a better idea of where to start and where to go. The guide is initially designed for stakeholders of Centre but might also be used by other coordinators and elected representatives in France. It has not been designed to create political will but might nevertheless serve to increase the interest of elected representatives. It would be interesting to know more about what gives rise to political will, in order to have more collectivities participate in agricultural land preservation. The intervention of ARDEAR on this topic will also enable the collectivities that will work with the coordinators of the InPACT network to reflect on the type of agriculture and the type of relation to agriculture they wish to develop in their territory.

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Appendices

Appendix 1. The InPACT network and the structures composing it

The InPACT network (Initiatives for a socially aware and local agriculture) exists at a national and regional scale. The national InPACT network is an associative platform grouping 6 agricultural associative networks (www.agricultures-alternatives.org/):

The FADEAR (Associative federation for development of agricultural and rural employment)

The AFIP (Association of training/education and information for the development of rural initiatives) works on the emergence and support of development groups in agricultural and rural project management linked to their territory – its coordinators/trainers have competences in various fields: agricultural and rural development, land use planning, sociology, pedagogy and project methodology. (www.afip.asso.fr/)

The InterAFOCG (National association for collective training in business management) objectives are farmer's autonomy in decisions and responsibility towards the future of their farm and of the rural environment. They offer training for farmers in accounting and on the tax system, project support, and a place to share their experiences. They are run and managed by farmers. (www.interafocg.org)

The FNAB (National federation of organic agriculture) is a professional organization with a union purpose. It represents 70% of organic farmers. It ensures the coordination of the actions for the development of organic production, the animation and information of its network, the organization of professional consultations, and the representation of French organic farmers. Its aim is a coherent, sustainable and united development of organic agriculture. (www.fnab.org)

The FNCIVAM (National federation of centers for initiatives to valorize agriculture and rural environment) works on sustainable agriculture, high value-added production systems, employment promotion and creation of employment opportunities in rural environment by agriculture and local development. (www.civam.org)

The RAD (Sustainable agriculture network) unites 28 groups of farmers which for almost 20 years have practiced an autonomous, thrifty and environmentally-friendly agriculture. Its objective is to promote this kind of agriculture that also is economically efficient, socially equitable and ecologically sound. (www.agriculture-durable.org)

These 6 networks were formed in order to promote a more sustainable agriculture and to propose concrete alternatives to farmers on their farms. InPACT's missions are:

- To elaborate and broadcast references on sustainable agriculture,
- To support change in practices,
- To promote employment and encourage new entrants into farming,
- To develop links between farmers and territories.

Altogether the InPACT network includes 50,000 farmers and employs 400 coordinators and project executives.

InPACT Centre

Not all 6 networks are found at the local scale. The AFIP and RAD are not represented in the region Centre. The regional InPACT network is composed of the AFOCG 45, the ARDEAR, the FRCivam (regional level of the FNCivam), BioCentre (interprofessional organization of organic agriculture), Alter'énergies (association promoting responsible ways of production and consumption), the MRJC (Rural movement of Christian youth) and Terre de Liens.

Bio Centre is an association representing all the stakeholders working in organic agriculture in the Centre region, from producers to distributors. It was created in 2007. Its mission is to coordinate the development of organic agriculture. It's a structure of exchange, consultation and cooperation between the various stakeholders. Bio Centre offers technical support and training to organic farmers, and defends their interests (politically). The GRAB (Regional group of organic farmers – Regional level of the FNAB) is part or BioCentre. (www.bio-centre.org)

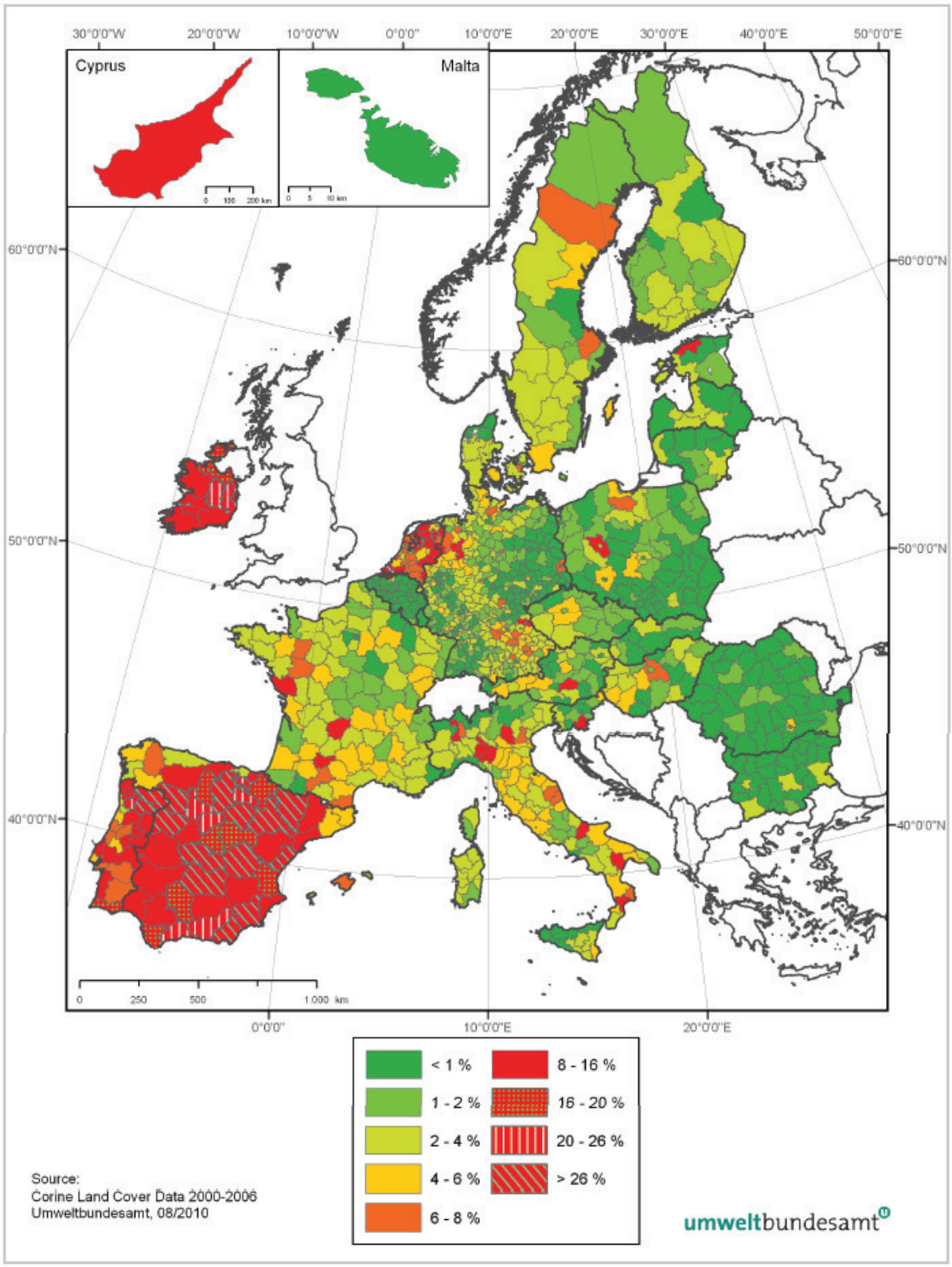
Alter'énergies is an association offering a place to reflect on, exchange, co-construct and elaborate ecological solutions. It works on energy savings, renewable energies, sustainable agriculture and ecological housing. Its objective is to participate in changing lifestyles, consumption and production patterns in order to reduce our ecological footprint. It develops local experimentation favoring short supply chains, energy savings and a comprehensive analysis of the impacts, in a participative way. (www.alterenergies.org)

The MRJC (former JAC – Catholic agricultural youth) was created in 1929 to improve the living conditions of young farmers. Through its work, it contributed to agricultural modernization. Its three areas of action are agriculture, employment and schools. Its current project in the Centre region is to help and support rural youth participate in rural development. It particularly works on the socio-economic integration of youth in rural areas. Concerning agriculture, the MRJC supports youth wishing to become farmers. (www.centre-mrjc.org)

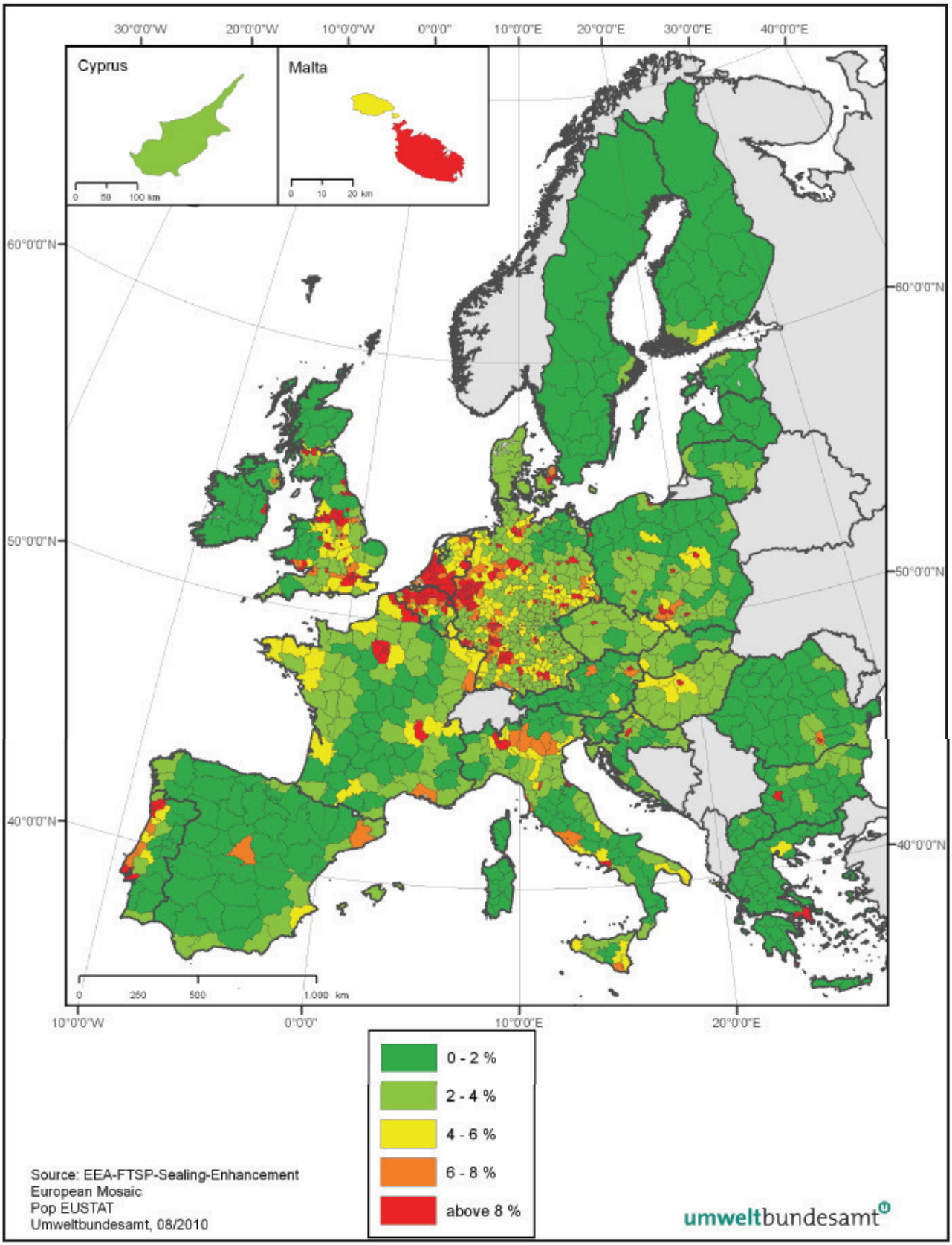
Terre de Liens is a civil society organization created to address the difficulties faced by organic and peasant farmers in securing agricultural land. It supports collective ownership schemes (farmers receive contributions from their kin, consumers or local community to set up an investment business to buy their land) and also directly acquires farmland to free it from the commodity market and ensure that the land will keep its agricultural vocation for the very long-term. Land owned by Terre de liens is rented to organic, biodynamic or peasant farmers farming in an environmentally-friendly way. Terre de liens works with two financial tools it created: the "*foncière*" - a solidarity investment company; and an Endowment Trust which collects investment or donations in cash or kind. By the end of 2010 Terre de liens owned 71 farm estates, representing 1,900 hectares where 220 adults live and/or work. This has been made possible by the support of 1,200 members, about 5,000 (mostly individual) shareholders bringing over 15 million Euros, local inhabitants and local authorities. (Terre de Liens 2010 – www.terredeliens.org)

Appendix 2. Different *intercommunalités* (After Caisse des Dépôts 2011a)

Form	Group
Communauté de communes	Several neighbor *communes*
Communauté d'agglomération	Several neighbor *communes* gathering more than 50 000 inhabitants around one or several center *communes* of more than 15 000 inhabitants
Communauté urbaine	Several neighbor *communes* gathering more than 500 000 inhabitants
Syndicat Intercommunal à vocation unique (SIVU)	Association of *communes* gathering in order to manage one activity of communal interest
Syndicat Intercommunale à vocation multiple (SIVOM)	Association of *communes* gathering in order to manage several activities of communal interest
Syndicat mixte	Should have at least one collectivity and allows the association of *communes, départements*, regions, public establishments

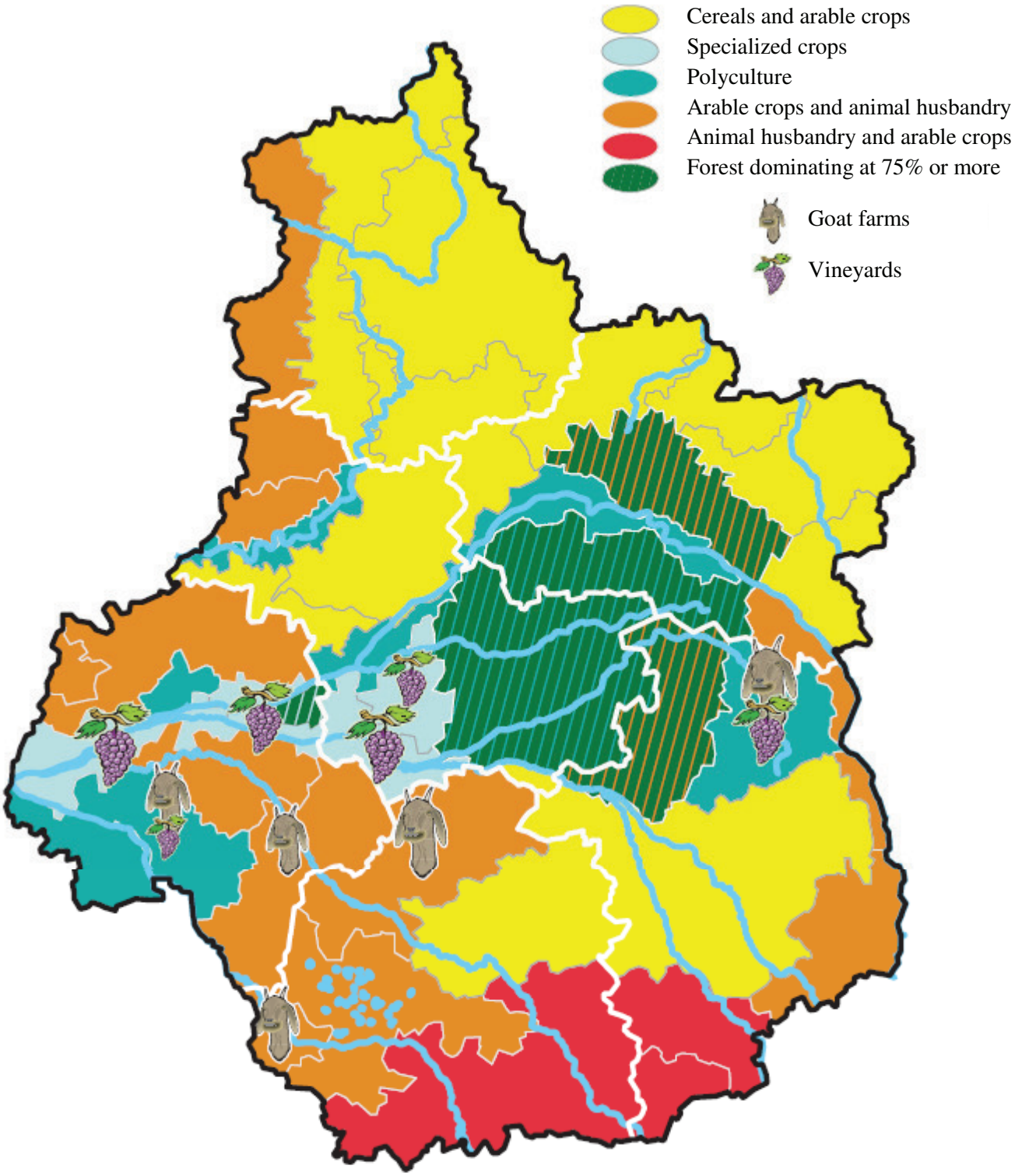


Appendix 3. "EU27 : Increase in artificial surface per region, 2000-2006" (Environment Agency Austria 2011)



Appendix 4. "EU27: Share of sealed soil per region" (Environment Agency Austria 2011)

Appendix 5. Agricultural productions of the Centre region (Agreste Centre 2010)



Appendix 6. Table containing the 140 experiences

ZAP	Abries (Hautes Alpes)
	Auberives en Royans (Isère)
	Avapessa (Haute Corse)
	Bourg-Saint-Maurice (Savoie)
	Chaleins (Ain)
	Champagny en Vanoise (Savoie)
	Chatte (Isère)
	Chécy (Loiret)
	Grande Plaine du Mont Blanc (Savoie)
	Grésy-Sur-Aix (Savoie)
	Izeron et Cognin-les-Gorges (Isère)
	La Bâtie Rolland (Drôme)
	La Ravoire (Savoie)
	Le Genevois : Archamps, Neydens, Saint-Julien (Haute-Savoie)
	Les Essarts le Roi et St Rémy l'Honoré (IdF)
	Lucciana (Haute Corse)
	Méry (Savoie)
	Montardon (Pyrénées Atlantique)
	Pic Saint Loup (Hérault)
	Rumilly, St Félix, Marigny et Boye (Haute Savoie)
	Sadirac (Gironde)
	Saint-Girod (Savoie)
	SCOT du Grand Clermond (plaine de la Limagne) (Puy-de-Dôme)
	St André en Royans (Isère)
	St-Germain la Chambotte (Savoie)
	St-Julien en St-Alban (Ardèche)
	Thurins (Rhône)
	Vernouillet (IdF)
	Vescovato (Haute Corse)
	Villemagne - l'Argentière (Hérault)
	Vineuil (Loir-et-Cher)
	Vulbens-Valleiry (Haute Savoie)
ZAP + help to install a vegetable producer	Communauté de communes de l'est Tourangeau
ZAP + PLUI + landscape charter	Communauté de Communes du canton de Prayssas (Lot-et-Garonne)
ZAP + AFA	Drumettaz Clarafond (Savoie)
ZAP + Agro-touristic zone	Perigny sur Yerres (Val de Marne)
ZAP + farm lease-purchase	Sigoyer (Hautes Alpes)
Land purchase	Communauté d'agglomération du Choletais (Maine et Loire)
Land purchase	Communauté de communes du Pays de Massiac (Cantal)
Land purchase	Communauté de communes du Plateau de Gentioux (Creuse)
Land purchase	Communauté de Communes du Seignanx (Landes)
Land purchase	Commune de Montségur (Ariège)
Land purchase	Hantay (agglo Lilloise)
Land purchase	Haute-Goulaine (Loire Atlantique)
Land purchase	Jarrie (Isère)
Land purchase	La Rochelle (Charentes Maritime)
Land purchase	PNR des volcans d'Auvergne (Puy de Dôme)
Land purchase	Sciez (Haute-Savoie)

Land purchase + organic vegetable production area	Communauté d'agglomération Seine-Eure (Eure)
Land purchase + apprehension of properties with no owner + communal farm + PIG	Beaumont (Ardèche)
Land purchase + vines lend	Communauté de communes de la Côte Roannaise et communauté de communes de l'Ouest roannais (Loire)
Land purchase + OGAF + schema of agricultural areas	Communauté de Communes du Val Guiers (Savoie)
Land purchase to install a vegetable producer + action program for 15 years	Communautés de communes de la Plaine dijonnaise et d'Auxonne Val de Saône (21)
Land purchase + PRIF + area reserved for agricultural activities + charter for sustainable agriculture + waste land inventory	Communes de Marcoussis, Saulx-les-Chartreux, Champlan, Nozay et Villebon-sur-Yvette (91)
Land purchase + apprehension of properties with no owner	Drevant (Cher)
Land purchase + Installation of new farmers	Dun (Ariège)
Land purchase + land watching program + taxes	Laboule (Ardèche)
Land purchase + Lease-purchase of agricultural buildings	Lusse (Vosges)
Land purchase in partnership with new entrants into farming	Saint-Martin d'Uriage (Isère)
Land purchase + reparcelling	Sarzeau (Morbihan)

Land purchase + EPF	SICOVAL Communauté d'agglomération du Sud-Est de Toulouse
Land purchase + agreement with farmers + inter-communal goat farm	Syndicat mixte des Monts d'Or (Rhône)
Land purchase + municipal agricultural production (organic)	Toulouse
SCI – Land purchase	Communauté de communes du Pays des Sorgues et des Monts du Vaucluse
SCI – Land purchase	Plateau Saclay (IdF)
SCI – Land purchase	Saint-Dizier-en-Diois (Drôme)
AFA	Communauté de communes de La Tinée (Alpes Maritimes)
AFA	Ispagnac (Lozère)
AFA	St-Guilhem-le-Désert (34)
AFA + SCEA + charter on natural and rural areas + waste land rehabilitation	La Chapelle sur Erdre (Loire Atlantique)
AFA + waste land rehabilitation + uncultivated land valorization + financing of agricultural buildings	Nantes Métropole
Communal farm	Allemont (Isère)
Communal farm	Curel (Alpes de Haute Provence)
Communal farm	La Chapelle du Bard (Isère)
Communal farm	Villard Reculas (Isère)
Communal sheep farm	Evreux (Eure)

Communal shepherd	Communauté d'agglomération du Val de Fensch avec Communauté de communes du Pays Orne-Moselle et Commune de Fontoy (Moselle)
Communal goat farm + OCAGER	Lamelouze (Gard)
Communal farm + Financing of agricultural buildings + Local program for rural area management (PLGE)	Communauté de Communes de Montrevel-en-Bresse (Ain)
Inter-communal sheep farm	Communauté de communes de la Haute Meurthe (Vosges)
Lease purchase of processing facility	Syndicat Intercommunal du bassin versant de la Beaume et de la Drobie (Ardèche)
Farm lease-purchase	Communauté de communes des Hautes Combes (Jura)
Farms' lease-purchase	Communauté de communes de l'Argentonnais
Orchards' lease-purchase	Communauté de communes de Saint-Yrieix-la-Perche (Haute-Vienne)
Sheep farm lease-purchase	Veyreau (Aveyron)
Farms' lease-purchase + Inter-communal landscape project	Communauté de Communes de la Haute Bruche (Bas-Rhin)
Installation of a vegetable producer	La Riche (Indre-et-Loire)
Installation of a vegetable producer	Manspach (Haut-Rhin)
Installation of animal production	Crozon (Finistère)
Installation of animal production + AFP	Caixas (Pyrénées Orientales)

Installation of organic vegetable producers	Ambert (Puy de Dôme)
Installation of vegetable producers	Poitiers
"Réseau Installation Foncier en Livradois Forez" + diagnosis of agriculture + GIS on agricultural land	6 Communautés de communes du PNR Livradois-Forez
Diagnosis of agricultural activity	Pays du Neubourg (Eure)
Diagnosis of agriculture	Ballan-Miré (Indre-et-Loire)
Diagnosis of agriculture - SCoT	Pays du Grand Pau (Pyrénées Atlantique)
New SCoT - Peri-urban diagnosis	Tours +
SCoT + local program for agriculture	Pays de Rennes
SCoT	Syndicat mixte de la Boucle du Rhône
SCoT	Syndicat mixte SCOT du Grand Douaisis (Nord)
SCoT	Syndicat mixte SCOT du Piémont des Vosges (Alsace)
State helped delayed plot buying	Région Auvergne
State helped delayed plot buying	Bruz (Ille et Vilaine)
State helped delayed plot buying	Conseil général d'Ille et Vilaine
State helped delayed plot buying	Région Aquitaine
State helped delayed plot buying	Région Limousin
State helped delayed plot buying + Regional financial help for diversification	Région Bretagne
Amicable land exchanges	Communauté de Communes de l'Emblavez (Haute Loire)

Agricultural land exchanges or sales	Communauté de Communes Rhône Alpilles Durance
Départemental land watching program	Conseil général de l'Isère
Agriculture watching program	Syndicat mixte du Pays des Mauges (Maine et Loire)
Land watching program	Communauté de communes de Cognac
Land watching program	Communauté de communes du Pays Mornantais (Rhône)
Land watching program + active research of agricultural land	Communauté de Communes du Pays de Lunel (Hérault)
Community garden	Pau (Pyrénées Atlantiques)
Construction of animal husbandry buildings	Aulon (Hautes-Pyrénées)
Coordinator hired to favorize farmers' installation and transmission of farms, inventory	PNR du Haut-Jura
Exoneration of 50% of the tax on non-constructed land	Caussade (82)
Financial help to eliminate coniferous trees	Communauté de communes du Pays d'Arlanc (Puy de Dôme)
Financing of territorial diagnosis	Conseil général du Puy-de-Dôme
GFA	Grusse (Jura)
Land lend + land purchase	Communauté d'agglomération Perpignan Méditerrannée
Land owners inventory, lend of buildings	Commune de l'île d'Arz – Morbihan
Landscape plan + waste land rehabilitation + GERPlan	Communauté de Communes de la Vallée de St Amarin (Haut-Rhin)

AFP + landscape plan	La Grande Fosse (Vosges)
Local provision of public catering by muncipal direct management	Saint-Martin-en-Haut (Rhône)
Municipal agricultural production + hiring of a farmer + market allotment	Mouans-Sartoux (Alpes Maritimes)
PAEN	Canohès (Pyrénées Orientales)
PLUI	Communauté de communes du Perche Senonchois (28)
Projects of agricultural development	Domont (Val d'Oise) - La plaine des Cercelets
Regularization land in joint tenancy	Valgorge (Ardèche)
Revalorization of market garden	Eysines (Gironde)
Sensibilisation of farmers retiring to ensure the transmission of the farms	Communauté de Communes Entre l'Alène et la Roche (Nièvre)
Sensibilisation of land owners	Planzolles (Ardèche)
Short supply chains development	Association patrimoniale de la plaine de Versailles et du plateau des Alluets
Short supply chains development + charter on agriculture	Communauté d'agglomération du Grand Besançon (Doubs)
Study on land policy strategy + SCoT	Pays de la Provence Verte
Survey on agriculture and land use planning + waste land rehabilitation + investment in the modernization of the milk cooperative	Communauté de Communes de la Vallée des Entremonts (Savoie)
Waste land rehabilitation	Tourves (Var)

Confidential: No

Author: Gaëlle Bernard **Year: 2011** Department:

SUPPORTING ELECTED REPRESENTATIVES IN THE PRESERVATION OF AGRICULTURAL LAND: SUGGESTIONS FOR A METHODOLOGICAL GUIDE

Key-words : agricultural land preservation, territorial collectivities, methodological guide, urban sprawl, artificial surfaces, soil sealing

Mots clés: préservation du foncier agricole, collectivités territoriales, guide méthodologique, étalement urbain, artificialisation des sols

Résumé:

L'étalement urbain, l'artificialisation et l'imperméabilisation des sols sont des phénomènes rencontrés dans le monde entier. Ils sont induits par des facteurs économiques et démographiques, les préférences en termes de logement, le développement des moyens de transports, les problèmes spécifiques à la vie en milieu urbain et les décisions règlementaires. Les conséquences sont, elles aussi, multiples : perte de foncier agricole, de paysages et réduction de la biodiversité, perturbation des transferts d'énergie, des cycles de l'eau et de l'air, et impacts socio-économiques. Le maintien des activités agricoles a de nombreux effets positifs, comme le maintien des services rendus par les écosystèmes et celui de la qualité du milieu de vie. Suite à la capitalisation d'expériences de collectivités intervenues dans la préservation du foncier agricole en France, et l'identification des outils à leur disposition, des fiches ont été créées pour résumer les expériences et outils sélectionnés. L'analyse de 30 expériences aide à souligner les facteurs de succès de l'action des collectivités. Les fiches feront partie de la méthodologie qui sera proposée par les animateurs locaux aux élus à travers un guide pratique. Elles devraient offrir à ces derniers un meilleur aperçu des alternatives possibles pour agir sur la préservation du foncier agricole et les guider dans la mise en place de programmes de préservation du foncier agricole.

Abstract:

Urban sprawl and artificial soil sealing are global phenomena induced by economic and demographic factors, housing preferences, growth of transportation, inner city problems and regulatory decisions. The consequences are as well multiple: loss of agricultural land, biodiversity and landscape; disturbed water, energy and air cycles; and socio-economic impacts. Maintaining agricultural activities has many important positive consequences, such as maintaining ecosystem services and quality of the living environment. After the assembly of experiences of collectivities that have intervened to preserve agricultural land in France and the identification of the tools available to them, datasheets have been created to summarize the selected experiences and tools. The analysis of 30 selected experiences helps to highlight key factors of success for collectivities. The datasheets will be part of the methodology that will be proposed by local coordinators to elected representatives through a practical guide. They should provide a better overview of their possible alternatives to act for agricultural land preservation and guide them through the implementation of agricultural land preservation "programs".

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