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**The territorial management contracts (TMC): a practical tool to reduce the risk in land resources management and to improve the multifunctionality of agriculture.**

Ciani<sup>1</sup> A., Boggia<sup>1</sup> A., Paolotti<sup>1</sup> L. and Rocchi<sup>1</sup> L.

Department of Agricultural Economics and Appraisal, Perugia, Italy

[ciani@unipg.it](mailto:ciani@unipg.it)

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## **The territorial management contracts (TMC): a practical tool to reduce the risk in land resources management and to improve the multifunctionality of agriculture.**

Ciani A., Boggia A., Paolotti L. and Rocchi L.

### *Abstract*

*Payments to the agricultural sector are designated to decrease gradually. One of the consequences of such a process will be a reduction in the number of farms and thereby in the defence of territory. The expansion of areas with hydro geological problems is a global matter. During the 2011 the damage caused by disasters around the world cost 380 BILIONS of USD. For the future, it is possible to suppose an increase in extreme events and disasters of hydro geological nature, also because of a reduction in territory protection by agriculture. The objective of this study is to propose an instrument to involve farmers in territory management, but before that disasters happen. We are looking for an ex-ante solution. In the paper, we propose a potential model, that of Territorial Management Contracts (TMC).*

*Keywords: Territorial Management Contracts, Environmental protection, hydro geological risk*

*JEL classification: Q01, Q15, Q28*

### **1. INTRODUCTION**

Payments to the agricultural sector are designated to decrease gradually, both because of budget and international reasons. One of the consequences of such a process will be a reduction in the number of farms and thereby in the defence of territory. Proper agricultural practices may hold back hydro geological problems. Therefore, a reduction of farms could have bad consequences for the territory.

The expansion of areas with hydro geological problems is a global matter. During the 2011 the damage caused by disasters around the world cost 380 BILIONS of USD. For the future, it is possible to suppose an increase in extreme events and disasters of hydro geological nature, also because of a reduction in territory protection by agriculture.

The last Report on the state of Italian territory, made by the National Council of Geologists (2010), shows that landslides and floods are in Italy a real national emergency (Mazzette, 2011). Many tragic events have occurred during the last 60 years: Polesine, 1951, 1966; Firenze, 1966; Genova, 1970; Ancona, 1982; Val di Fiemme, 1985; Valtellina, 1987; Piemonte, 1994; Versilia, 1996; Sarno, 1998; Soverato, 2000; North-West of Italy, 2000; Valbruna, 2003; Varenna, Nocera inferiore, 2005; Cassano delle Murge, 2005; Ischia, 2006; Vibo Valentia, 2006; Messina, 2009; Laces, 2010. The increasing incidence of catastrophic

events corresponds to a progressive increase of hydro geological risk, that is connected to the anthropic development of territory in not stable areas (Mantarro, 2010).

The objective of this study is to propose an instrument to involve farmers in territory management, but before that disasters happen. We are looking for an *ex-ante* solution. In the paper, we try to find preliminary answers to several questions. First of all: which are the mechanisms and the methods for a precautionary action? But also: which mechanisms for managing and controlling? Our solution is a model which we call Territorial Management Contract (TMC). In the paper, we give a general outline of TMC (section 1) and then, we propose a possible model for TMC. Finally, we present a case study located in Umbria, central Italy. Main conclusions end the paper.

We chose an Italian area as a case study because, except for some single and fragmentary examples, in Italy an idea of global development oriented to the protection of territory is not present, and a really effective planning oriented in this direction still misses. At the contrary, a particular form of “private govern of territory” has generally developed during the time (Mazzette, 2011), intending with the term “private” the meaning of “isolated, single”, in the sense that private and particular interests have influenced strategic territorial choices, penalizing in this way collective interests, not considering at all the environmental and social questions. An application in this context will be an interesting case.

## **2. THE IDEA OF TERRITORIAL MANAGEMENT CONTRACTS**

In the management of territory local communities are often not involved directly. Moreover, some productive activities, as agriculture, are not considered for *ex-ante* solutions. In the second pillar of the CAP, for example, farmers are incentivized to correct some harmful practices or to reduce their impacts on the environment. This approach lacks a global planning approach. With an *ex-ante* overall view of the management of the territory, it could be possible to prevent environmental problems and to enforce the social role of agriculture in the territory.

Some attempts have been made in France, with the “contrats d'aménagement du territoire”, that in any case are related more to options for an active participation of local communities in the management of territorial sustainable development projects, than to actions of defence and preservation of environment, adopted by single citizens or farmers. Until the beginning of the 1980s, land planning and urbanization efforts in France were rather centralized. Since the decentralization laws (1982) were enforced, the urban development process is under local control by means of the development of contracting agreements between the State and territorial communities (Henocque, 2001). This kind of contracting approach has more and more taken up an important role, and environmental protection is one of the major issues at stake in most of the urban communities.

Some typologies of contracts regulate the use of natural resources within a certain area. The Toulon Bay Contract (Henocque, 2001), for instance, is a typical contracting agreement between local, regional and national authorities about water quality and uses, in the frame of an

integrated coastal area and river basin approach. It follows the idea that territorial solidarity is crucial, and that it has to be treated from an integrated coastal area and river basin management perspective.

Again, the 1999 French Law of Agricultural Orientation (Loi d'Orientation Agricole, LOA) established a "new" territorial governance by taking territorial and cultural dimensions of productive systems into account (Chia and Dulcire, 2008). The LOA proposed a Land Management Contract (contrat territorial d'exploitation, CTE) to farmers, allowing them to be paid for non-marketable products of their activities. It meant to associate de facto the civil corporation with the definition and implementation of local policies. The authors Chia and Dulcire (2008), showed by means of a case study in Guadeloupe, how the CTE was diverted from its initial objective, consolidating the interests of the production systems and models rather than promoting territorial development dynamics. Definitely, these contracts have rarely served to help develop the practices of participating farmers or to incite new projects (Dulcire et al., 2006).

In Italy, an example of territorial contract, but with a different aim, is the Paper of Forests. Within the processes of activation of local partnership and promotion of instruments for sharing and actively planning the management of forest properties, the Lombardy Region and ERSAF (Regional Body for Agriculture and Forests Services) have undersigned the "Paper of the Forests of Lombardy" – for a sustainable and durable management of the State property forests and of regional mountain areas. (Calvo *et al.*, 2008).

It is a document supporting a sustainable model for development and management of forests. The paper underlines principles and assumes engagements for the good management of the Forests of Lombardy. The contracts are made between public and private subjects; however, in this case, the main objectives are the collaboration and participation of local communities in the process of territorial development and valorization, and the establishment of common actions, for an integrated, unique and active management of the territory, made from all the stakeholders involved. Two contracts have been made in two different areas of Lombardy (Valgrigna and Val Masino), within which some commons objectives were established for the forest patrimony conservation and development in the areas, with a unitary and integrated vision (e.g. anthropic development, forests maintenance, new road system and paths, new infrastructures, new forms of income). However, this cannot be considered a form of prevention contract against environmental problems and risks.

The idea of the territorial management contracts consists in establishing, within a well defined normative context, a contract between farmers and local institutions that regulates all the necessary actions for the safeguard and the environmental protection of territory, as for example drainage, cleaning of ditches, construction of dykes, soil consolidation, setting of trees rows, exc., both on their own property surfaces and the surfaces surrounding a certain farm. The farmers are engaged in making these activities, in respect of precise technical parameters, and they receive a payment that can be related to the surface involved and to the degree of risk of the zone. In this way, permanent or temporary damages caused by landslides and mudslides are

avoided, and the role of garrison farmer is reaffirmed; moreover, this kind of contracts gives greater functionality to the role of the agricultural sector, improves cash flow business of farmers, stimulates the use and dissemination of ICT for monitoring and control activities.

An important remark is that these contracts must be “strictly localized”, it means that they must be constructed on the basis of the specific characteristics of the territory they refer to. According to the specific environmental problems of a certain zone, *ad-hoc* contracts must be established with the farmers protecting that same zone. Therefore, the territorial management contracts could involve different types of preservation activities, according to different specific environmental problems involved.

In force of the decentralization, present since many years in Italy as in France, the territorial management contracts, established directly with citizens and farmers could constitute the most effective expression of this type of law regulation.

### **3. A POSSIBLE MODEL FOR THE TERRITORIAL MANAGEMENT CONTRACTS**

In this paragraph, we try to identify a possible reference model for the implementation of the Territorial Management Contracts (TMC). The core idea for the success is that the TMC should be defined, also on the basis of the French experience, in such a way that the different stakeholders can develop a sense of ownership once they have identified shared objectives and a common vision for the management and preservation of their territory.

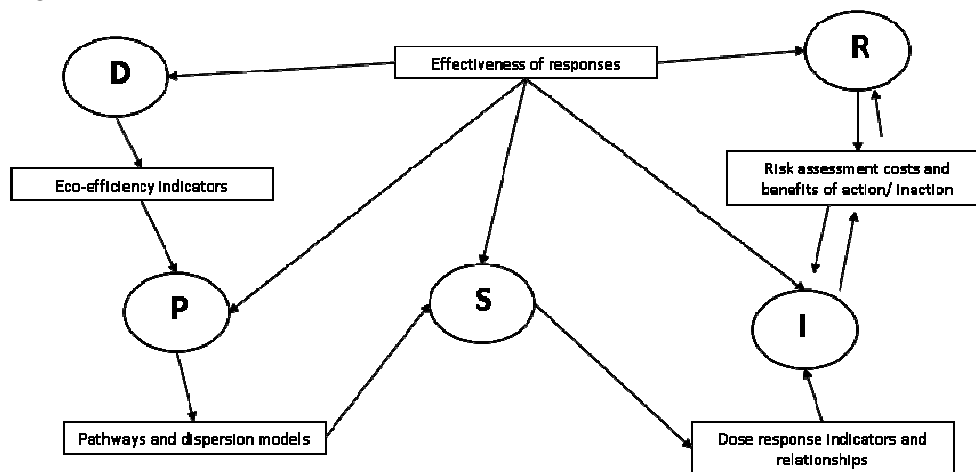
The preliminary step to carry out would be the definition of homogenous portions of territory, where applying the different contracts. The area where applying a certain type of contract should be characterized by homogeneity in the territorial framework, in the specific environmental problems present, and there should be a recognized local community insisting on that territory. The identification of different areas should lead to the definition of different contracts.

The next step, after the identification of the homogenous areas, is to make an environmental assessment for that area. This phase should be aimed to highlight the specific environmental problems of the area and the critic points in terms of environmental risks (e.g. damages caused by potential landslides or mudslides, risk of floods, exc.). Moreover, the environmental assessment could allow to identify what are the general and specific objectives to reach, the priority actions to implement, and the related costs for implementation, coordination and control of the actions.

Subsequently, in order to monitor the current situation and the on-going changes linked to the application of the contracts, a set of indicators should be constructed. As stated in the Urban Indicators Programme of the United Nations Centre for Human Settlements (UNCHS), “the collection of indicators is to be regarded as a process rather than a product, and the collection is expected to be accompanied by reviews of the indicators and their usefulness, and procedures to institutionalize the collection and use of indicators as a part of national and local policy development and evaluation” (Henocque, 2001). The set of indicators collected would be very

useful for monitoring the results obtained with the contracts, and also to identify objectives in a quantitative way. In particular, it could be useful for this aim the so called DPSIR environmental assessment system (Gabrielsen and Bosch, 2003; EEA, 2011). The model name is an acronym for Drivers-Pressures-States-Impacts-Responses and is widespread used in the field of environmental evaluation. It allows to classify indicators on the basis of their effect on environment. A schematic representation of the DPSIR model is reported in the Figure 1.

Figure 1: The DPSIR scheme



Source: Gabrielsen and Bosch, 2003

To integrate the objective data coming from indicators, with the subjective preferences of the local communities, it will be very useful to adopt techniques such as contingent valuation or choice experiments (Adamowicz *et al.*, 1998). Through these methods it is possible to identify the set of actions which aggregate the preferences of a local community: a complete participation of the local community is fundamental for the success of the contracts. Both contingent valuation and choice experiments are used in case of elicitation of willingness to pay or accept (Horowitz and McConnell, 2002). In particular, with the choice experiments, it is possible to understand preferences of population about some attributes (as for example the level of environmental quality) or about some types of prevention actions.

Therefore, the potential scheme for constructing the territorial management contracts can be summarized in the following steps:

- Definition of the portion of territory, within which applying the contract.
- Environmental Assessment of the portion of territory.
- Definition of environmental problems, critic points, environmental risks.
- Definition of general and specific objectives.
- Setting of indicators, for the current situation and for monitoring changes.
- Definition of the actions to implement within the contracts, to reach the objectives.
- Definition of the payment for the farmers implementing the actions.
- Control and monitoring.



#### **4. CASE STUDY: DESCRIPTION**

##### ***4.1 Park of Trasimeno***

For a first application of TMC, we selected contiguous areas of Park of Trasimeno (Italy). The term “contiguous” denotes “located in the surroundings” and has the same meaning as “adjacent” (Devoto and Oli, 1991). Therefore, the park’s territory and contiguous areas are physically in continuity. Contiguous areas constitute the connective tissue ensuring the functional continuity of protected territories (Borchi, 1996). These areas have a functional relation to the park, contributing to maintain and preserve its resources. For these reasons, particular environmental measures can be established in these areas to ensure the continuity of environment and biodiversity protection. The distinctive features of such areas make them suitable to specific Territorial Management Contracts. Moreover, contiguous areas of Park of Trasimeno are also vulnerable nitrate zones (VNZ).

The regional Trasimeno Park is located in the Umbria Region, central Italy. It was established in 1995 (regional law of March 3, n. 9) and it is the biggest of the six existing regional parks. The park has a surface area of about 12,994 hectares, including the entire Trasimeno Lake and some areas surrounding it. The Trasimeno Lake is located in the Northwest part of the region and has a surface area of 120.73 km<sup>2</sup> (Burzigotti *et al.*, 2003), with a volume of water of 590 km<sup>3</sup>. The area surrounding the lake is relevant from a historical point of view, and nowadays it hosts important agricultural activities. Concerning its naturalistic characteristics, the Trasimeno Park is a very important *wetland*, in which huge flora and fauna populations co-exist within protected areas. The park also includes two Natura 2000 sites. Abundance of biodiversity and integrity of habitats are the best indicators of the effectiveness of protected areas’ management. For this reason, an in-depth monitoring of flora and fauna species inside the park territory has been ongoing since several years.

Protected areas in Italy are managed by two instruments: a management plan comprising nature conservation actions, and a socio-economic plan for promoting activities compatible with the objectives of the parks. Both plans had to be implemented by the park management authority, comprehending the possibility to include specific measures for contiguous areas. In the case of Trasimeno, because of the great importance of agriculture in the area and its strategic role in landscape and territory management, the majority of the measures included will involve farmers. Unfortunately, the application of the socio-economic plan is in a stalemate.

##### ***4.2 Indicators/attributes***

The contiguous areas of Trasimeno were involved in a previous study (Ciabattini and Rocchi, 2010) in which the main aim was to find a mix of measures for increasing farmers participation in park management. The basic idea was to submit to the farmers a cluster of measures to be implemented jointly. By using choice experiments, in the study the preference of farmers for each measure was evaluated. The measures planned concern the conversion of

agriculture areas and their naturalization, the improvement of biodiversity, both of animals and plants, the valorization of landscape and the reduction of lixiviation problems (Ciabattoni and Rocchi, 2010).

Using the Willingness to Accept derived by Ciabattoni and Rocchi, 2010, we calculated a premium of 160 € per hectare. The measures included to receive the premium are: reduction of 5% of nitrogen in comparison to the VNZ limits; introduction of hedges; conversion to pasture of agriculture areas, with natural essence. All the measures have to be done to obtain the premium. Supposing the participation to TMC of the farmers who participated in the past to the second axis measures of RDP, we can cover roughly the 30% of the contiguous areas surface (elaboration using RICA 2009 dataset).

The type of measures chosen in this preliminary application are very simple for two reasons. First of all, this is a very initial application, which wants to try the general sustainability of the instrument of Contract. Moreover, in order to be effective, the contract has to be modeled on the environmental characteristic of the area. In this case, the main goal is to reduce the pollution caused by agriculture, in particular pollution from nitrogen. All the three measures allow a reduction or a control of water pollution, both for surface and underground.

## **5. CONCLUDING REMARKS**

A more active role of agriculture in protection and management of territory is required, both to justify payments to farmers and to go towards a real *ex-ante* environmental protection. The government of the territory considering, first of all, its safeguard is a prerequisite to obtain a sustainable development. A sort of “alliance” among the different competences and actors, and the different levels of responsibility is fundamental. The involvement of citizens and farmers towards the achievement of this objective is an important step to carry out. Territorial Management Contracts could be a solution to these new requirements.

This paper would like to present TMC as a possible solution. The application we showed is very easy, but it could be a starting point to produce new more complex analysis. In particular, we would like to analyze cases in which the main environmental problem is the hydro geological risk of farmers activities, and the possible solution given by TMC.

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