

Collective agency and collaborative governance in managing the commons: the case of “A Serra do Galiñeiro” in Galicia, Spain

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Abstract

Short title: Common-pool resource management in Galicia, Spain

Whilst in the dominant discourse on the modernization of agriculture and forestry food and timber production is related to the world market, in many places people relate production and consumption in alternative ways. In the city-region of Vigo (Galicia, northwestern Spain) case study research is on how “Comunidades de Montes Veciñais en Man Común” (Associations of the Commons or CMVMCs) reconstruct the value of “Monte”, land traditionally in multifunctional use but that has been subject to a strong process of abandonment, for both rural and city dwellers. In particular, the study analyzes how interrelated projects of the CMVMC Vincios and the umbrella organization “Val Miñor Mancomunidade de Montes” provide four types of ecosystem services: provisioning, supporting, regulating and cultural ecosystem services. The main research questions are: How does the management of Monte relate to coordination mechanisms grounded in collective action and decision-making? To what extent do CMVMCs contribute to the design and the management of the green sites in the city-region of Vigo? In conclusion, we examine how practitioners close the gap between food provision, biodiversity conservation and related ecosystem services, and construct a socio-ecological model based on the multi-functional use of the land that meets environmental sustainability and societal demands.

Keywords: Collective action, endogenous development, landscape preservation, multifunctional land-use, biomass plant

1. Introduction

Over the past five decades, modernization and the industrialization of food and forestry production (Brouwer and Lowe, 1998) has been directing our globalized food system towards a social, economic and ecological crisis (Marsden, 2003; Van der Ploeg, 2003; 2006; Lang and Heasman, 2004; Sonnino and Marsden, 2006; Wisserke, 2009). This has resulted in the fragmentation and decline

of landscapes (Baudry *et al.*, 2003; Marull *et al.*, 2010; Dominguez Garcia and Soto, 2012) and the decrease of soil fertility and soil organic matter more in general (Cunfer, 2004; Cunfer and Krausmann, 2009; García Ruiz *et al.*, 2012; Tello *et al.*, 2012). In the Galician context the fragmentation and decline of landscape have been accelerated by land abandonment and forest fires, which have further diminished the performance of

the natural environment (Barreiro Carracedo, 2008). This degradation of natural resources calls for adjustments in land-use and farm practices as well as adjustments in policy that support a reconnection of nature and society (Altieri, 1989; Simon, 1995; Ahern, 1999; Baudry *et al.*, 2000; Thenail, 2002; Antrop, 2004; van der Ploeg, 2006), and which should result in the increase of physical stocks, the quality of end-products, the generation of employment, and the capacity to maintain and/or improve the quality of the natural environment (Daly, 1990; Naredo, 1996). Since territories are increasingly linked in demographic, economic and environmental terms such sustainability challenges and equal opportunity for public services can be tackled more easily if cooperation exists between urban, peri-urban and rural areas (OECD, 2013).

The mechanisms for fostering such a sustainable connection between farming, nature and society have been documented for the private and public domains (Wiskerke and Roep, 2007; Milone, 2009; Roep and Wiskerke, 2012) and some initiatives have been interpreted in terms of common-pool resource management (Sandström, 2008; Colding and Barthel, 2012). The understanding of management forms that safeguard practices for food security and biodiversity (Soliva *et al.*, 2007; Barthel *et al.*, 2013) can be further improved by empirical research among a wide range of communities and groups in terms of “a politics of resourcefulness”, i.e. the adaptation of an approach in which communities are central as the unit of analysis and can develop social relations in a progressive, anti-capitalist and socially just way (MacKinnon and Derickson, 2013).

In response to the call for such empirical research this paper provides the analysis of the socio-ecological performance of a common-pool resource management regime in the city-region of Vigo, in Galicia in the northwestern part of Spain. The focus is on the preservation of A Serra do Galiñeiro, a mountainous area in the city-region, and in particular on the management of “Monte”, i.e. non-arable land covered by trees, scrub and brushwood. The agronomic characterization of Monte falls half way between two English terms: forest, and brush or scrub, the latter being the major land-use pattern of Galician Monte (Bouhier, 1979; Balboa, 1990; Soto, 2006). In Galicia, Monte is either public or private property; the private Monte is either managed individually or collectively. The case study research identifies and evaluates in particular the land-use management by the “Comunidade de Monte Veciñal en Man Común Vincios” (Association of the commons of Vincios: CMVMC Vincios) and the linkages of the preservation activities to biodiversity conservation in the area (Figure 1).

This first section develops a conceptual framework on the coordination mechanisms grounded on collective action and decision-making, serving as a “heuristic device” (see also Jongerden *et al.*, 2014) for the exploration and interpretation of community development. This is followed by the methods applied and information on the case study. Next, section 3 explains how the case employs dynamics in which traditional landscapes and biodiversity are reconstructed and improve, and how food and forestry activities have developed over the past 15 years. Section 4 analyzes the social interaction process and the shift in land-use practices that have occurred. Finally, section 5 draws conclusions on the support of this approach at wider governance levels.

1.1. Sustainability and community development

Since the 1990s, various authors and institutions have related sustainable development to the management of natural resources. Redclift (1987) speaks of economic growth and the natural resources on which this depends; the Earth Council (1994) emphasizes social and ecological conditions necessary for supporting human life at a certain level of welfare for present and future generations; Marsden (2003) points to the socio-environmental role of agriculture as the major agent for the sustenance of rural economics and cultures; and the United Nation’s Special Rapporteur Olivier De Schutter (United Nations, 2010) reports on the potential of agro-ecology for fostering reconnections between farming, nature, and society.

From a sociological point of view, sustainability is a socially and politically constructed, ongoing and evolving process (Morgan and Sonino, 2008; Sonino, 2010) that relates to community development. Hence, organizational forms make a difference in how social-ecological systems might develop and perform. If it is about the practical application of Daly’s (1990) suggestion that environmental conservation and economic development should become interdependent and mutually re-enforcing goals, and issues of “free riders” are to be avoided, the most logical conclusion is that in combination with supportive governance frames communities govern sustainable development of their natural environment. Therefore a distinction should be made between active engagement in place-related interests and formal levels of organization (Mahon *et al.*, 2012); types of social and political organization that often represent different groups of people and interests but that might (or better: should) be interrelated in order to “co-produce” a wide range of sustainable, i.e. environmentally sound as well as social inclusive and economically durable, land-use activities.

Ostrom (1996) defines co-production as “the process through which inputs, used to produce a good or a service, are contributed by individuals who are not “in” the same organization”. The encouragement of collective agency and collaborative governance among various actors (belonging to knowledge institutions, business enterprises and/or local grassroots organizations and public administration) in a so-called “learning region” (Wellbrock *et al.*, 2013) can increase adaptive capabilities and the creation of opportunities (Holling, 2001). Although “citizens can play an active role in producing public goods and services of consequence to them” (Ostrom, 1996) public officials play a major role, either encouraging or discouraging citizen contribution. Thus, going beyond the regular governmental production of public goods or autonomous but poorly supported citizen production of these goods depends on whether “co-productive units are legally owned by diverse entities and complements, [...] legal options are available to both parties, [...] clear and enforceable contracts between government agencies and citizens enhance [that] credibility, [and] incentives help to encourage inputs from both officials and citizens” (ibid.).

Following Ostrom’s theoretical insights on co-production, public and private agencies in metropolitan areas form a potential productive arrangement under the condition that the level of any organizational form should be at a governance level that allows citizens and producers of goods and services to adapt and optimize the system’s performance. When it is about fitting institutional rules to a specific social-ecological setting “one-size-fits-all” policies are not effective (Ostrom, 2010). Especially, in a context in which “human institutions – ways of organizing activities – affect the resilience of the environment” (Dietz *et al.*, 2003).

1.2. Common-pool resource management

The externally exposed rules and monitoring can (but do not always) counter affect endogenous cooperative behaviour, especially since under such stringent external governance regime internal norms have not or sometimes are not able to develop (Ostrom, 2000). Moreover, according to Ostrom, although this is not universal, “when the users of a common-pool resource organize themselves to devise and enforce some of their own basic rules, they tend to manage local resources more sustainably than when rules are externally imposed upon them” (ibid.). Here, Ostrom defines common-pool resources as “natural or humanly created systems that generate a finite flow of benefits where it is costly to exclude beneficiaries and one person’s consumption subtracts from the amounts of

benefits available to others” (ibid.). Hence, self-organized common-pool resource regimes have the potential to enable private entrepreneurs and/or community members to initiate actions that result in benefits to all the community members, through projects that draw enhance social coherence and synergies (Harvey, 2011; OECD, 2012). Defining common-pool resource management includes that the access to specific resources is regulated in order to produce private (food, timber but also the wood itself) and/or public goods (other, related ecosystem services such as biodiversity, landscape, woodlands as leisure areas) and the reproduction of the specific set of resources is secured, i.e. the “the tragedy of the commons” can be avoided and instead a constant flow of joint benefits is created (van der Schans, 2001; Polman *et al.*, 2010).

Following from this, the improvement of the quality of the natural environment and related ecosystem services requires communities to have ideas about, and gain experience with, organizing the natural resource base, which in turn benefits the wider community. Such communities might but do not necessarily exist prior to the activity; they are constructed at the time at which an activity is developed. For a successful and long-term management strategy Ostrom’s (1990; 2000; 2005; 2010) design principles of long-surviving and self organized resource regimes are mainly based on adaptive control by the group members, who should be taken into a collective action and social learning process that is characterized by “distributed cognition” (actors may well work together and engage in complementary practices while significant difference in perception remains) in combination with “double loop learning” (in which the basic aspirations, assumptions and principles of the improvement of natural resource management change (Van Mierlo *et al.*, 2010).

This implies that for a successful, sustainable management not all group members necessarily need to have those design principles in mind but for successful planned intervention on fostering the reconnection between farming, nature and society institutional arrangements should be grounded in the coordination mechanisms of collective action and decision-making, and social learning. Where supportive frames and trained knowledge brokers exist social learning might turn into successful outcomes. Hence, successful system innovation in A Serra do Galíñeiro depends on dynamic, multi-actor and multi-level processes.

2. Materials and Methods

The city-region consists of 14 municipalities and has in total around 480,000 inhabitants and an area of 749 km² (INE, 2014). Although Vigo (300000 inhabitants) has gone through a rapid industrial

growth since the 1960s (high rise buildings and infrastructure in the city centre) its peri-urban area is characterized by scattered patterns of small houses and vegetable gardens, fields with cattle and small husbandry, and Monte. The case study research (Yin, 2003) in this paper focuses on the adjustments in multi-functional use of this privately owned but collectively managed space; since in the Spanish legislation only private and public ownership rights exist the common land remains formally privately owned (Monte Law, 1989) but has the characteristics of a common-pool resource: rival but non-excludable consumption.

The analysis concerns the activities and projects that are carried out by the CMVMC Vincios and “Val Miñor Mancomunidade de Montes”, the umbrella organization of 12 out of 97 CMVMCs in the city-region. A significant part, 32.5% of the total area, is private Monte under common management. The analysis is based on in-depth interviews made with key-informants in the area, the analysis of grey literature (juridical documents, legislation, project proposals, annual reports), observations of the land-use projects, and the attendance of stakeholders meetings. The research has been carried out in collaboration with the CMVMC Vincios, which provided detailed information on the role CMVMCs can play in the provision of goods and services of environmental, social and economic nature in terms of a constant flow of joint benefits: provisioning, supporting, regulating and cultural ecosystem services (see for in-depth descriptions and interpretations De Groot *et al.*, 2002; Kitchen and Marsden 2009; Jongerden *et al.*, 2014; Kjeldsen and Christensen, 2014). The analysis of the case study materials should be read in the context of the past and present characteristics of Monte management regimes, which are discussed in the remainder of this section.

2.1. Historical land-use patterns and organizational forms of management of Monte

Communal Monte can play a crucial role in supplying inputs that sustained the reproduction of family farm units, especially those with insufficient land to support themselves through cropping and pasture alone. In the past, in an agro-ecosystem mostly characterized by “minifundism” (i.e. land property divided in many small and scattered plots) the domestication of Monte compensated for the small size of the farms (Marey *et al.*, 2003), being an indispensable factor to sustain smallholders by enlarging their area and contributing to their survival (Simón Fernández, 1995; Domínguez García, 2007). For a long period Monte was the keystone of the so-called traditional agro-ecosystem (*ibid.*) providing scrub clearing-up for manure production, pasture for

cattle, wood for diverse uses, stones for rural and urban buildings, water supply and other public ecosystem services. Over the centuries common property rights survived but land-use patterns, property rights and organizational forms have changed several times resulting in different patterns of resource allocation and optimization.

In the middle of the eighteenth century about 75% of the Galician territory consisted of Monte of which half was under a common-pool resource management regime that established property and use for neighbours. In 1812, a Decree on bringing the property rights of commons to municipalities implied the start of a process of expropriation, a process which lasted until 1968. By then the first Law on Neighbourhood Monte was approved (GEPC, 2004) and communities began to recover their property rights and develop again common management of local resources. Meanwhile, under Franco’s dictatorship regime (1939-1975) the “Patrimonio Forestal del Estado” (Forest National Patrimony) in collaboration with “Diputaciones” (the provincial government agencies) had started to replace the traditional management, in which multi-functionality played the main role and forestry represented leafy species, by an intensive afforestation strategy that was characterized by pine tree plantations. From the 1970s onwards afforestation with eucalyptus started, which continued during and after the transition period to democracy.

In general this afforestation of Monte, as promoted by the national government, has been far from multi-functional and is characterized as massive (it applies to all the common land), uniform (only pine and eucalyptus tree plantations, which reduce biodiversity in the woods) and aggressive (expropriation of the rights when external actors want to develop new industries in this space, see Simón and Copena, 2012); and under this governance regime communities have been disconnected from the timber market, and the economic profit of afforestation to a large extent has been taken away from the communities. Monoculture broke the balance of the traditional agro-ecosystem; the new development model based on the exploitation of forest, with an exclusively economic aim, neglected the role of farmers as land cultivators and stockbreeders, and as potential protectors of nature.

2.2. Design and management from the 1990s onwards

After years of disputes between Monte communities and the government, Monte communities’ and different social movements’ pressure resulted in a change in the Law (Montes Law 1989, its Regulations approved in 1992) that without solving the problem of monoculture at least consolidates the recovery of common

property (GEPC, 2006; Pereira and Morgade, 2007a; 2007b; <http://montenoso.net/>).

Nowadays the regional government owns only a small part of Monte in Galicia: about 45000 hectares. The major part of Monte is privately managed, either individually (about 1385690 hectares) or collectively (608728 hectares). The over 600000 hectares of communal lands, which represent 25% of the Galician territory, are managed by about 2800 CMVMCs, of which about 500 are active.

The common ownership is referred to as “Monte Veciñal” (commons or literally translated Monte of the Neighbourhood). As in the past, in this juridical form, “Comuneiros” (neighbours) commonly own and together plan, manage and benefit from the land of the CMVMC. The management conditions of collectively owned and managed Monte can be understood in terms of 4 “I”s (Monte Law, 1989; GEPC, 2004): “(1) Monte is “Inalienable”: *comuneiros* can never sell their share, and neither a government nor any other authority can neglect this ownership; (2) Monte is “Imprescriptible”: owners never lose their right on the land, and only expropriation for public needs (social utility such as the construction of roads and hospitals but also wind parks and mines) can take the rights of the *comuneiros*; (3) Monte is “Inembargable”: in case of debts of *comuneiros* the government or banks cannot confiscate their land”; and (4) “Monte being “Indivisible”: Monte cannot be divided, is and remains a commonly managed unit, and people have to decide together on the objectives and the management of this common property” (Swagemakers *et al.*, 2014). In general, the remarkable feature of this type of property ownership is the limitation of the decision-making process on the use of Monte to residents in the parish: when people leave the parish they lose this right to access, plan, manage and benefit from the commons. Hence, land-use in the commons by definition is temporarily used by “private” users. If managed in such a way that a range of interlinked, positively evaluated ecosystem services is produced, next to the *comuneiros* also other rural and city-dwellers benefit from the common land.

2.3 Case study: CMVMC Vincios and land-use dynamics in A Serra do Galiñeiro

Part of the land-use dynamics in the city-region of Vigo is driven by CMVMC Vincios, which is, regarding multi-functional land-use and the provision of ecosystem services, among the most active CMVMCs in Galicia (see www.vincios.org for an overview of the different activities and projects in the area). The CMVMC Vincios manages a total of 678 hectares of commons. The land belongs to the inhabitants of the parish of Vincios (about 2000 inhabitants of which 162

active members of the CMVMC) and is mainly located at A Serra do Galiñeiro.

This mountainous landscape consists of a 10 kilometre long granite system that extends over the municipalities of Vigo, Gondomar, Porriño, Mos and Tui. With a height of 650 to 711 metres the Serra directly rises up from the Atlantic coast in the southwest corner of Galicia. The metropolitan landscape of Vigo is marked by its highest peak, Monte Galiñeiro (711 m), at five kilometres from the centre of the city. Around the peak, CMVMC Vincios manages 525 hectares of land (77% of the total amount of land around the peak). In the Serra, Val Miñor Mancomunidade de Montes is the umbrella organization of 12 CMVMCs, among which CMVMC Vincios, with a total of 1758 *comuneiros*. This umbrella organization operates in the municipalities of Baiona, Nigrán and Gondomar. The total surface of these municipalities is 14,390 hectares of which about 25% (3553 hectares) is managed by Val Miñor Mancomunidade de Montes.

Since the 1990s the CMVMC Vincios has implemented new land-use projects: farming, hunting, industrial, leisure, and defense of the cultural, natural and historical patrimony (Luz Santos, 2012). Central in the multi-functional land-use of the area around the peak is the design and planning of a biomass plant: a compost installation that stems from collaboration between members of the Val Miñor Mancomunidade de Montes and therewith also with the CMVMC Vincios.

3. The CMVMC Vincios and the creation of values for rural and city dwellers

This section describes and analyzes Vincios’ multi-functionality performance from a dynamic perspective. It gives an overview of and interrelates the projects and interprets these in terms of their contribution to the revival and reconstruction of the functions of the traditional social-ecological system and its contemporary resource optimization in terms of local “utility” (HLPE, 2013): the reproduction of the natural resource base in combination with the creation of employment opportunities. The multi-actor and multi-level land-use projects and activities of CMVMC Vincios aim to foster biodiversity protection and to raise cultural and social awareness among the community members. These aims are supported by the website of the community, which resulted from the project “Cartografías sensibles” (see also <http://vincios.org/en/the-project/>). In this project the local knowledge of Vincios’ inhabitants and others with a strong interest in the protection and sustenance of Monte has been documented by architects who geo-localized (in interactive maps) all the elements that make up the Monte’s multi-

functional use: links to photos, videos, music and interviews have been categorized into nature, leisure, productive activities, material and non-material patrimony.

Whilst the website provides a virtual way to visit the caves, mills, legends, archeological sites, chestnut groves, pastures and many other elements that configure Vincios' identity, a mobile Web application (Web app) will display information on visitors' smart phones. The attention for the project in the media and the use of website by schools in the area contributes to raise awareness on the common-pool resource, and knowledge of its biophysical and social-ecological characteristics more in general.

Although the land-use optimization projects that have been initiated all are experimental in character, their current functions of improvement of the biophysical environment and awareness raising are increasingly combined and complemented with economic optimization and the generation of employment opportunities in the area. The first subsection briefly explains the recently implemented projects and their main features (Table 1). The second subsection focuses on the biomass plant project and the role of this project in the further integration and optimization of the land-use activities. The third subsection focuses on unfolding community development and collaborative governance.

3.1. Putting Monte into value: recently initiated land-use projects

Rather than taking the capitalist perspective on quick returns of industrial investments, the recently initiated projects aim to rebuild the environment that has been degraded under mono afforestation (Montalvo and Casaleiro, 2008). In 2006, Maderas Nobles de la Sierra del Segura (MNSS) proposed the REFORGAL project, which was implemented from 2007 onwards. The enterprise specializes in organic silviculture and promotes alternative models of sustainable production, controlling the establishment, growth, composition, health, and quality of forests to meet diverse needs and values. The enterprise and CMVMC Vincios agreed to convert a plot of 3 hectares of eucalyptus into a leafy deciduous tree plantation, with 21 tree species. Density at the plantation is about 1,300 trees per hectare of which 80% oaks and chestnut. In this project there was collaboration with experts from the University of Vigo (a different team than the authors of this paper), who assessed the productivity and sustainability of the plantation. Some years later, the techniques used in this project were applied to converting an eucalyptus plantation into pasture (6.4 ha). The REFORGAL project has given place to a highly bio-diverse and rich productive tree plantation in Galicia (ibid.), combining

biodiversity with the production of high quality timber with a bigger added value in comparison to, for example, pine. In 2017 the tree plantation will be thinned out, and after 25 years the area will be clear-cut. The future use of this land is uncertain, it may return to brushwood and scrub for repeated harvesting or new activities undertaken for example grassland seeding for livestock production. The expected outcomes and environmental benefits of the new plantation for CMVMC Vincios are the reduction of forest fires, water pollution and soil nutrient losses that stem from eucalyptus plantations.

Since 2007, natural scrub control has been applied in the extensive cattle project. Simultaneously, this project has supported local economic development: three breeders and one association (Farmer Association of Horses of the Galiñeiro) use 125 hectares of commons as pasture for sheep, goats, cows and horses. The project diversifies the use of Monte beyond strictly forestry production under regulations applied by the CMVMC. Furthermore, the CMVMC Vincios aims to reintroduce "Mostrenco" (free grazing but individually owned cattle by inhabitants of the area) that has vanished rapidly due to land-use conflicts and the mandatory registration of ownership: cattle owners must have insurance and have to mark the cattle to be identified in case of accidents when animals get close to villages in winter time. Financing is obtained individually by the stockbreeders with support of subsidies from the "Conselleria do Medio Rural" (Regional Ministry of Rural Environment). The right to use the commons is organized through the "Banco de Tierra" (Land Bank, <http://sitegal.xunta.es>). In environmental terms, the maintenance of free cattle in Monte areas is positive for clearing up the area (horses eat brushes). This prevents forest fire and soil erosion, as well as the afforestation with leafy tree masses, which increase biodiversity.

In 2010, a number of 760, 11-15 year-old pine trees have been inoculated with mycorrhizae of *Lactarius deliciosus* and a number of 500 10-20 year-old oaks with mycorrhizae of *Boletus edulis*. This mushroom (or mycorrhization) project experiments with the combination of productive tree plantations (e.g. 3.72 ha pine and 2.75 ha oak woods), soil recovery and commercialization of the mushroom production. In autumn 2013, neighbours could collect *Lactarius* and *Boletus*. The project has been initiated as a collaborative project between six CMVMCs that belong to Mancomunidade Val Miñor de Montes. The impact in environmental and employment terms has been positive. The project enhances biodiversity and allows two different uses in the same plot that impacts positively on soil recovery, and sustains local employment opportunities.

Also in 2010, the chestnut afforestation project replaced pine and eucalyptus with chestnut trees. This results in increased biodiversity, the production of high quality timber, the improvement of the aesthetic appeal of the landscape, and the lessening of forest fires as well as the reduction of soil erosion. In addition, chestnuts can be collected and sold for a good price. Currently neighbours that come to collect benefit individually. With this project, biodiversity will improve in the long run. Furthermore, wood from chestnut will have a higher profit than the one from pine and eucalyptus. The CMVMC Vincios aims to give this plantation to a member of the community that is interested in selling the fruits (chestnuts and mushrooms). Currently the harvesting and commercialization of the fruits is available for any community member who wants it.

3.2. Further valorizing the natural resource base: The Val Miñor biomass project

Common-pool resource management in A Serra do Galíñeiro is further developed by the start of a biomass plant. This plant converts waste materials derived from the Monte area in combination with urban green waste into compost. The idea of compost production is among the most innovative projects on valorization of Monte in Galicia, and inspired by the activities located at some 30 kilometers distance of the Serra: there the private enterprise “Abonos Lourido” (www.abonoslourido.com) harvests and processes Toxo (*Ulex europaeus*). In the past, Toxo was perceived as a fertile and nitrogen-rich plant, therefore highly valued for the use as animal bed and improvement of the quality of the manure. As the plant was harvested manually its function has been lost within the more mechanized contemporary farming practices. Currently, Toxo grows without control in Monte areas, and contributes to the fast spread of forest fires. Abonos Lourido has adapted machinery to harvest this plant and processes it into compost. These fertilizers find their way to professional vegetable and flower producers, kitchen gardens and to individual customers in the cities (mostly Vigo, Santiago, and A Coruña). With this example in mind, the Val Miñor Mancomunidade de Montes developed a plan in which recycling waste materials and the reduction of forest fires would be combined. In addition, the project would result in the reduction of the pressure of scrub biomass in favour of trees, and the improvement of the aesthetic and recreational function of Monte. The compost production would combine the traditional use of Monte (its function as supporting the productive system) and the fertilization and revitalization of the area; the base for future activities that might bring monetary profit.

In 1999, the Val Miñor Montes Mancommunity contacted the “Asociación para a Economía Social” (Association for Social Economy) to design a study of viability for a biomass composting process. In June of that year working groups were organized, and in August the team was composed of two forestry engineers and an economist. They elaborated a study with the general objectives and the optimization of the agro-forestry system, stressing the determining factors in the decision-making processes, technological challenges, the surface involved and the monetary funds needed for the project. Although research groups at the University of Santiago de Compostela and the University of Vigo (again: not the team writing this paper) modelled this type of optimization at that time there were no similar practical experiences in Galicia.

Therefore, the team organized a survey among the members of the Val Miñor Mancommunity, followed by meetings between technicians and community members to further discuss the possibilities of the project. Simultaneously a process of consulting experts started: researchers, pharmacists, biologists, forestry engineers, rangers, and other professionals and people linked to Monte, agricultural production and the environment. Technical visits were made to inspiring examples (such as Abonos Lourido) through which potential problems and advantages of the future project were identified. A literature review and the interviews with experts brought an understanding of the state of affairs of Monte in the area, the structure of the forestry sector and the horizontal relations that could affect the project. From all this information a project proposal was created and a viability study was carried out. The place to locate the plant was A Serra do Galíñeiro in the commons managed by Vincios due to its proximity to the highway as well as “[because] the monte there [was] an example of sustainable use and with activities directly related to the composting and the future use of the biomass to promote its recovery” (López *et al.*, 2009). The outcomes of the study were highly positive: with a potential area for producing compost of 4615 hectares, an average of 16.91 Tm/Ha/year of green brushwood waste could be produced. The communities involved in the project cleared an area of 165 hectares in one year. Therefore, the production of green waste for the whole Val Miñor Mancommunity could reach 2790.79 Tm/year. This quantity represented 3.6% of the total green waste that the area was able to use for production on annual basis; and even when only eucalyptus and pine trees were considered, the green waste would reach 8.6% of the total production. This matter would be composted and would result in an organic fertilizer free of toxic

substances that could be applied to horticulture and fruit production, and that would be of better quality than waste derived from solid urban residues

Between 2001 and 2006 the Mancommunity promoted the plant among the different communities, collecting data and organizing visits to similar experiences. The project was made public and a report was prepared to get a subsidy (from La Caixa Foundation) that made it possible to write an updated project proposal between 2006 and 2009, now with the participation of 9 Val Miñor CMVMC (Peiteiros, Sta Cristina, Priegue, Chaín, Belesar, chandebrito, Borreiros, Donas and Vincios). Some pilot experiments repeated, and the conclusions of this work were presented to the regional government in 2008 (López *et al.*, 2009). This project presented the composting plant as a solution for the situation created by the increase in forest fires: “the serious situation due to the increase of forest fire in the last year forces to take definitive measures. It is not enough any longer to increase funding to extinguish forest fires, human actions to face them proved to be rather limited so far. There is no funding to recover the big burned area, meanwhile a value treasure as vegetal residues from monte and gardens are not in use” (López *et al.*, 2009)

In 2008, a project proposal for constructing the composting plant was submitted but got rejected due to a mistake in the cadastre (land registry) regarding the plot where the plant was planned.

“It is unacceptable that the public administration stops such an innovative and costly project due to cadastral problems. Despite further all other data on its formal registration were correct this small and stupid mistake stopped the project. For many people involved in the project this has been really a disaster.” [Alberto Covelo, president of CMVMC Vincios]

This mismatch with legal frames led to the situation in which no progress was recorded. In August 2013, after the legal procedure having been on hold by the regional government for three years, thanks to a change in Urban planning law and procedures Val Miñor finally obtained the licence to construct the composting plant. When the project was finally approved, conditions had changed and not all the communities had the same interest to remain involved.

“We started this project with hope. But after 15 years we conclude the public administration fails to comply with its social responsibilities, and we are in a situation with fewer resources as compared to when we started.” [Alberto Covelo, president of CMVMC Vincios]

Apart from the time and money invested in the project, the time gap of 15 years from the

development of the idea to the acceptance and implementation of the project affected the interest of the other CMVMCs involved in the project (initially 15, then 9 and now 12). In January 2014 therefore the issue was discussed in a general assembly and it was decided to start a new pilot project in 2014, to investigate the viability of the enterprise.

Since EU directives (Directive 2008/98/EC) on waste recycling increasingly make waste into a valorized product, waste increasingly becomes an economic asset that is claimed by several stakeholders and/or enterprises (see also Curry *et al.*, 2014). Although the biomass plant could serve as a motor for further unfolding community practice in A Serra do Galíñeiro it can be very well the result of this new phase that others overrule the initiators (CMVMC Vincios and other partners of the Val Miñor Mancomunidade de Montes) and get away with the idea, and in the nearby future also the economic benefits of waste recycling.

3.3. Interpretations in terms of unfolding community practice

The case study clarifies how complex social-natural relations and producer-consumer linkages can represent a development pathway in which the natural environment, local rural dwellers and wider society (citizens of the metropolitan area as well as visitors from outside) benefit. The progressive management of the commons by CMVMC Vincios has not been reached in isolation. New activities evolve from old ones, and together these form new combinations.

An important characteristic of CMVMC Vincios as unfolding community practice is the transfer of cash flow stemming from renting out soils to Vincios’ business park into new land-use activities. Anchored in the Montes General Law (Law 7/2012 28th June, Xunta 2012), at least 40% of the annual turnover has to support investments in the commons. In 2012, Vincios reached 65%. Although the multi-functionality performance of land-use activities in the Vincios case study has been guided by the preservation of the natural, and aesthetic assets, and attractiveness of the case study area these social-ecological functions have been derived from economic ones: renting out soils in the valley to industries and wood production at the slopes, which enable the balance among the three functions since benefits from renting and wood sale are invested in improving the social-ecological performance of the resource base.

Next to the implemented land-use projects (for which sometimes extra, external subsidy was found) Vincios supports activities that improve the quality of life in the community, voluntarily

reinvesting around 32% of their turnover, into sporting and cultural activities as well as into the scholar canteen. In the Vincios case study Monte as a local resource goes beyond its physical boundaries and reaches and improves the quality of life in the local community. Forests protect soils from erosion, and if afforestation-types are adequately chosen, they promote biodiversity, regulate carbon emissions, water cycles, and soil fertility. Biodiversity can be further improved by combining forest with livestock and beekeeping activities. In this way, the investment in economic activities alternative to mono-forestation with pine and eucalyptus tree plantations strengthens Monte's multi-functionality performance in terms of ecosystem services. Further, new economic functions so as alternative afforestation (timber wood and chestnut production), a livestock as well as the reintroduction of "Mostrenco" (free grazing but individually owned cattle) and a mushroom-mycorrhization of pines and oaks project should gradually optimize the combination and mutual strengthening of economic and social-ecological land-use by means of the provision of goods and services so as employment opportunities, the enhancement of biodiversity and other physical returns, social cohesion and cultural activities.

The situation in Vincios is an exceptional one; other CMVMCs are less powerful in terms of monetary funds and, hence, limited in their "purchasing" power. The several projects that promote multi-functional use of Monte however underline the significance of "the construction of new networks, revalorization and recombination of existing resources, co-ordination and (re)-moulding of the social and the material and (renewed) use of social, cultural and ecological capital" (van der Ploeg *et al.* 2000:400) to foster the multi-functionality performance of food and forestry activities in A Serra do Galiñeiro. The case study illustrates the potentials of common (and local) resource management to fulfill new societal and political demands, which, moreover, might encourage sustainability.

Among all the projects, the biomass composting plant demands special attention for at least two reasons: for being innovative and for all the problems that it has confronted over the past decade to be (not yet) implemented.

The provision of materials to the compost plant as well as the industrial processing of these materials at the plant would result in seasonal employment that could be combined with land-use activities in the other periods of the year (mushroom picking, chestnut collection, cattle herding etcetera). The biomass production would result in cash flow by selling compost and fertilize productive common land. Simultaneously, the reduction of biomass reduces the risk of fire and fire damage, and

makes it easier, in case of fire, to reduce the expansion and its detrimental impact on natural and aesthetic values of the area, and related to that, the provision of ecosystem services to Vincios' *comuneiros*, *comuneiros* of other parishes in A Serra do Galiñeiro and citizens of the city-region of Vigo more generally.

3.4. Collaborative governance

Despite the legal frame in which activities and projects are organized, social and political powers of other, more "distanced" (i.e. not belonging to the local community) interest groups diminish the unfolding of autonomous practices: the area is subject of the planning of a wind park (DOGA, 2012) that will be owned by outsiders and more recently has been indicated as mining area. Local protests are organized against these externally initiated and designed projects (<http://serragalinheiro.wordpress.com>).

The case study research confirms MacKinnon and Derickson's (2013) observation that the effects of "horizontal" forms of collaboration between public, private and non-profit actors so as in the case of CMVMCs and their institutional umbrella organizations remain limited if such local, horizontally collaboration is not supported by "vertical" policies emanating from the state and federal scales of government. The case study further illustrates that also at local and regional governance levels counter productive powers can considerably limit the effects of collective action and collaborative governance in an area.

Hence, the research confirms Mahon *et al.*'s (2012) more general observation that the optimization of benefits of collective action demand local communities to strategically link ambitions and needs to the more formal, administrative levels to which the community belongs. Thereby umbrella types of organization can help to negotiate the local interests and relate these to the wider political and societal governance structure. In this position they can also negotiate the applicability and adaptation of more general governance frames, for which a connective storyline as developed by the local community in A Serra do Galiñeiro can inspire future policy frames that encourage collective action and direct collaborative governance.

4 Conclusions

According to Antrop (2005) a traditional landscape "contains the complex history of a place or region, which still can be read from its composition and structure". In this context, the concept of the traditional landscape brings departure points for the development and sustenance of green sites in city-regions. The case study on common-pool resource management in A Serra do Galiñeiro in the metropolitan area of

Vigo reflects the autonomous development of a social-ecological practice that fits to the political and institutional governance structure for Monte in Galicia. In this context it has made a start with the interpretation and evaluation of collective action in terms of ecosystem services and the analysis of collaborative governance patterns that enhance or constrain community interests as in line with OECD explorations (OECD, 2012).

This case study research confirms Ostrom's theoretical optimization of a common-pool resource: the projects and activities carried out by the CMVMC Vincios as partner in the umbrella organization Val Miñor Mancomunidade de Montes are characterized by rival but non-excludable consumption, and the optimization of the natural resource base is organized and optimized in time. This strengthens the notion written down in policy objectives for the period 2014-2020 that activities that result from collective action optimize the local development potentials and combine the broad range of biophysical factors such as water, soil, plant and animal species with social benefits at the community level. In addition such a productive system delivers ecosystem services to the wider social public environment: the metropolitan area of Vigo and its inhabitants. Central in the case study is the biomass project design study, which aims at the improvement of soil fertility and the reduction of forest fires. This project represents habitat improvement and hence can be characterized as supportive ecosystem service. In addition it represents provisioning and cultural ecosystem services: the plant provides employment opportunity, and should result in new activities of the unfolding community practice. In essence, the design of the biomass project embodies and indicates the pathway for the integrated food and forestry management under common-pool resource regimes. The project's focus on closing waste cycles goes beyond classic forestry management: instead of relying on the input of chemical fertilizers this innovative agro-forestry system enriches the natural resources base both in communal and private land.

The case study more in general clarifies how local knowledge and experience can be turned into new development trajectories, which include the continuous adaptation of production cycles, the transformation of raw materials into new products based on accessible technology that optimize the self-regulatory mechanism of management of the commons. This may and, hence, contribute to sustainability and sustainable development and to the prevention of climate change. Local economic utility includes the direct monetary benefits as well as the satisfaction with the natural environment and the access to services and

facilities derived from multi-functional land-use activities.

An important lesson learnt from this case study is the need for supportive programs that—next to having an orientation on innovative “comuneiros” as in the case study—take others into a social learning process. In such a process, various actors (local stakeholders, scientists, politicians) may work together and engage in complementary practices while significant difference in perception remain. In such a process on the longer run the basic aspirations, assumptions and principles of the improvement of natural resource management become subject of learning, and might change.

For the further development of land-use patterns as identified in this paper, and building upon the OECD's integrated approach to economic development by Rural-Urban Partnerships, European funds on the creation of European Innovation Partnerships (EIPs) might play a strategic role in the period 2014-2020 (OECD, 2013). How these governance structures and regional umbrella type of organizations link and how such an orientation would enhance the production of economic utility at the community level should therefore be topics of future research. This should include further clarification of the characteristics of the “commons” and their management in Galicia, and how Ostrom's model, which is a theoretical optimization of common-pool resource management, is adopted and practiced in other communities.

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References

Ahern, J. 1999. Spatial concepts, planning strategies and future scenarios: A framework method for integrating landscape ecology and landscape planning. Chapter 10 in *Landscape Ecological Analysis: Issues and Applications*,

- Jeffrey Klopatek and Robert Gardner, Editors, Springer-Verlag Inc. New York.
- Altieri, M. A. 1989. Agroecology: A new research and development paradigm for world agriculture. *Agriculture, Ecosystems and Environment* 27: 37-46.
- Antrop, M. 2005. Why landscapes of the past are important for the future. *Landscape and Urban Planning* 70 (1-2): 21-34.
- Balboa, X. 1990. O monte en Galicia. Vigo: Edicións Xerais de Galicia.
- Barreiro Carracedo, F. X. 2008. A recuperación do equilibrio tradicional: experiencia Monte Cabalar [The recovery of the traditional balance: The case of Monte Cabalar]. In X. Simón Fernández & D. Copena Rodríguez (Eds.), *Construíndo un rural agroecolóxico* [Constructing an agro-ecological countryside]. Vigo: Grupo de Investigación en Economía Ecolóxica e Agroecoloxía (GIEEA), Universidade de Vigo [in Galician].
- Barthel, S., Crumley, C., Svedin, U. 2013. Bio-cultural refugia-safeguarding diversity of practices for food security and biodiversity. *Global Environmental Change* 23 (5): 1142-1152.
- Baudry, J., Burel, F., Thenail, C., Le Coeur, D. 2000. A holistic landscape ecological study of the interactions between farming activities and ecological patterns in Brittany, France. *Landscape and Urban Planning* 50: 119-128.
- Baudry, J., Burel, F., Aviron, S., Martin, M., Ouin, A., Pain, G., Thenail, C. 2003. Temporal variability of connectivity in agricultural landscapes: Do farming activities help? *Landscape Ecology* 18: 303-314.
- Bouhier, A. 1979. La Galice. *Essay géographique d'analyse et d'interprétation d'un vieux complex agraire*. Imprimerie Yonnaise, La Roche-sur-Yon.
- Brouwer, F.M., Lowe, P. 1998. CAP and the rural environment in transition: A panorama of national perspectives. Wageningen, Wageningen Pers.
- Colding, J., Barthel, S. 2012. The potential of "Urban Green Commons" in the resilience building of cities. *Ecological Economics* 86: 156-166.
- Cunfer, G. 2004. Manure matters on the Great Plain Frontier. *Journal of Interdisciplinary History* 34 (4): 539-567.
- Cunfer, G., Krausmann, F. 2009. Sustaining soil fertility: Agricultural practice in the old and new worlds. *Global Environment* 4: 8-47.
- Curry, N., Reed, M., Keech, D., Maye, D., Kirwan, J. 2014. Urban agriculture and the policies of the European Union: the need for renewal. *Spanish Journal of Rural Development* V (Sp. 1): 81-96.
- Daly, H. E. 1990. Toward some operational principles of sustainable development. *Ecological Economics* 2 (1): 1-6.
- de Groot, R., Wilson, M., Boumans, R. 2002. A typology for the classification, description and valuation of ecosystem functions, goods and services. *Ecological Economics* 41 (3): 393-408.
- Dietz, T., Ostrom, E., Stern, P.C. 2003. The Struggle to Govern the Commons. *Science* 302 (5652): 1907-1912.
- DOGA 2012. Diario Oficial de Galicia de 25 de octubre de 2012: RESOLUCIÓN do 27 de setembro de 2012.
- Domínguez García, M. D. 2007. The way you do, it matters: A case study: Farming economically in Galician dairy agroecosystems in the context of a co-operative (Doctoral dissertation). Wageningen University, Wageningen, the Netherlands.
- Domínguez García, D., Soto, D. 2012. From an "integrated" to a "dismantled" landscape. In *The Economic Value of Landscapes*. Van der Heide, M. and Heijman, W. (Eds). London: Routledge.
- Earth Council. 1994. The Earth Summit-Eco 92: Different visions. San Jose (Costa Rica), Earth Council and the Inter-American Institute for Cooperation on Agriculture.
- GEPC (Grupo de Estudios de la Propiedad Comunal) 2004. La devolución de la propiedad vecinal en Galicia (1960-1985). Modos de uso y conflicto de propiedad. *Historia Agraria* nº 33, Agosto 2004: 105-1340
- GEPC (Grupo de Estudios de la Propiedad Comunal) 2006. Os montes veciñais en man común: o patrimonio silente. *Naturaleza, economía, identidade e democracia na Galicia rural*. Vigo: Xerais, 2006.
- García Ruiz, R., González de Molina, M., Guzmán Casado, G., Soto Fernández, D., Infante Amate, J. 2012. Guidelines for constructing nitrogen phosphorous and potassium balance in historical agricultural systems. *Journal of Sustainable Agriculture* 36: 1-33.
- Harvey, D. 2011. The Future of the Commons. *Radical History Review* 109: 101-107.
- HLPE 2013. Investing in smallholder agriculture for food security. A report by the High Level Panel of Experts on Food Security and Nutrition.
- Holling, C.S. 2001. Understanding the complexity of economic, ecological, and social systems. *Ecosystems* 4: 390-405.

- INE 2014. Cifras oficiales de población resultantes de la revisión del Padrón Municipal a 1 de enero de 2010 [on line]. Available at: <http://www.ine.es/jaxi/tabla.do?path=/t20/e260/a2010/10/&file=mun36.px&type=pcaxis&L=0> (3 March 2014)
- Jongerden, J., Swagemakers, P., Barthel, S. 2014. Connective storylines: a relational approach to green infrastructures. *Spanish Journal of Rural Development V (Sp. 1):* 7-18.
- Kitchen, L., Marsden, T. 2009. Creating sustainable rural development through stimulating the eco-economy: beyond the eco-economic paradox? *Sociología Ruralis* 49: 273-294.
- Kjeldsen, C., Christensen, B.A. 2014. Steps towards an integrated eco-economy: the case of Randers, Denmark. *Spanish Journal of Rural Development V (Sp. 1):* 19-34.
- Lang, T., Heasman, M. 2004. *Food wars: The global battle for mouths, minds and markets*. London, Earth Scan.
- López, A., Santos, L., Pérez, D. 2009. Informe final MMVMC Val Miñor–Fundación La Caixa 2006-2009. Compostaje: Prevención y Restauración)
- MacKinnon, D., Derickson, K.D. 2013. From resilience to resourcefulness: A critique of resilience policy and activism. *Progress in Human Geography* 37: 253-217
- Mahon, M., Fahy, F., Cinneide, M.O. 2012. The significance of quality of life and sustainability at the urban–rural fringe in the making of place-based community. *Geo Journal* 77: 265–278.
- Marey Pérez, M.F., Crecente Maseda, R., Rodríguez Vicente, V. 2003. Claves para comprender los usos del monte en Galicia (España) en el siglo XX. En: *Actas del II Simposio Iberoamericano de Gestión y Economía Forestal*. Barcelona, Centre Tecnologie Forestal de Catalunya (CTFC). Available at http://www.orgacmm.org/xTEIMAS/TEIM-13_FORESTAL/TEIM-134_UNIVERSI DADE/ALMACEN/teimX-134c.pdf
- Marsden, T.K. 2003. *The Condition of Rural Sustainability*. Assen, Van Gorcum.
- Marull, J., Pino, J., Tello, E., Cordobilla, M.J. 2010. Social metabolism, landscape change and land-use planning. A case study in the Barcelona Metropolitan Region, *Land Use Policy* 27 (2): 497-510.
- Milone, P. 2009. *Agriculture in transition: A neo-institutional analysis*. Assen, Van Gorcum.
- Montalvo J., Casaleiro B. 2008. Casos de sostibilidade nos montes galegos. *O monte veciñal de Vincios, Gondomar. Revista galega de ecoloxía e medio ambiente* 55: 33-35.
- Morgan, K. J., Sonnino, R. 2008. *The school food revolution: Public food and the challenge of sustainable Development*. London, Earthscan.
- Naredo, J. M. 1996. Sobre el origen, el uso y contenido del término ‘sostenible’. *Documentación Social* 102: 129-147.
- OECD 2012. *Providing agri-environmental public goods through collective action*. Joint Working Party on Agriculture and the Environment.
- OECD 2013. *Rural-Urban Partnerships: An integrated approach to economic development*.
- Ostrom, E. 1990. *Governing the commons: The evolution of institutions for collective action*. Cambridge (UK), Cambridge University Press.
- Ostrom, E. 1996. *Crossing the great divide: Coproduction, synergy and development*. *World Development* 24 (6): 1073-1087.
- Ostrom, E. 2000. *Collective action and the evolution of social norms*. *Journal of Economic Perspectives* 14 (3): 137-158.
- Ostrom, E. 2005. *Understanding institutional diversity*. Princeton (NJ), Princeton University Press.
- Ostrom, E. 2010. *Beyond markets and states: Polycentric governance of complex economic systems*. *American Economic Review* 100: 1-33.
- Pereira Martínez, X.A., Morgade Martínez, X.C. 2007a. *O monte veciñal: O seu réxime xurídico*. Organización Galega de Comunidades de Montes.
- Pereira Martínez, X.A., Morgade Martínez, X.C. 2007b. *O monte veciñal: A xestión*. Organización Galega de Comunidades de Montes.
- Polman, N., Poppe, K.J., van der Schans, J.W., van der Ploeg, J.D. 2010. *Nested markets with common pool resources in multifunctional agriculture*. In proceedings of the 14th annual conference of the International Society for New institutional Economics, University of Stirling. Available at <http://papers.isnie.org/paper/450.html>
- Redclift, R. 1987. *Sustainable development: Exploring the contradictions*. London, Routledge.
- Roep, D., Wiskerke, J.S.C. 2006. *Nourishing networks: Fourteen lessons about creating sustainable food supply chains*. Reed Business Information, Doetinchem.
- Roep, D., Wiskerke, J.S.C. 2012. *On governance, embedding and marketing: Reflections on the construction of alternative sustainable food networks*. *Journal of agriculture and environmental ethics* 25: 205-221.

- Sandström, E. 2008. Reinventing the Commons. Analysis of the Emergence of Natural Resource Management Arrangements. Doctoral Thesis. SLU, Uppsala.
- Simón Fernández, X. 1995. Economía ecológica, agroecología y desarrollo rural sostenible. *Agricultura y Sociedad* 77: 199-236.
- Simón, X., Copena, D. 2012. Eolic energy and rural development: An analysis for Galicia. *Spanish Journal of Rural Development* 1: 13-28.
- Soliva, R., Ronningen, K., Cooper, C., Potter, C. 2007. Envisioning future landscapes: Stakeholder responses to scenarios for Europe's mountain landscapes. *Journal of Rural Studies* 24: 56-71.
- Sonnino, R., Marsden, T. 2006. Beyond the divide: Rethinking relationships between alternative and conventional food networks in Europe. *Journal of Economic Geography* 6 (2): 181-199.
- Sonnino, R. 2010. Escaping the local trap: Insights on re-localization from school food reform. *Journal of Environmental Policy & Planning* 12 (1): 23-40.
- Soto, D. 2006. Historia dunha Agricultura Sustentábel. Transformacións productivas na agricultura galega contemporánea. Xunta de Galicia, Consellería de Medio Rural. Colección EIDOS, n. 4.
- Swagemakers, P., Copena Rodríguez, D., Domínguez García, M.D., Simón Fernández, X. 2014. Fighting for a future: an actor-oriented planning approach to landscape preservation in Galicia. *Danish Journal of Geography* 114 (2): 109-118.
- Tello, E., Garrabou, R., Cussó, X., Olarieta, J.R., Galán, E. 2012. Fertilizing methods and nutrient balance at the end of traditional organic agriculture in the Mediterranean bioregion: Catalonia (Spain) in the 1860s. *Human Ecology* 40 (3): 369-383.
- Thenail, C. 2002. Relationships between farm characteristics and the variation of the density of hedgerows at the level of the micro-region of bocage landscape. Study case in Brittany, France. *Agricultural Systems* 71: 207-230.
- van Mierlo, B., Leeuwis, C., Smits, R., Klein Woolthuis, R. 2010. Learning towards system innovation: evaluating a systemic instrument. *Technological forecasting and social change* 77: 318-334.
- van der Ploeg, J.D. 2003. The virtual farmer. Past present and future of the Dutch peasantry. Assen, Van Gorcum.
- van der Ploeg, J.D. 2006. Agricultural production in crisis. in *Handbook of rural studies*. P. Cloke, T. Marsden & P.H. Mooney. London, Sage.
- van der Ploeg, J.D., Laurent, C., Blondeau, F., Bonnafous, P. 2009. Farm diversity, classification schemes and multifunctionality. *Journal of Environmental Management* (90): S124-S131. Eds, Living countryside: Rural development processes in Europe: the state of the art. Doetinchem, Elseviers bedrijfsinformatie bv.: 8-17.
- van der Schans, J.W. 2001. Governance of marine resources: conceptual clarifications and two case studies. Delft, Eburon.
- United Nations 2010, December 20. Report submitted by the Special Rapporteur on the right to food, Olivier De Schutter (Report A/HRC/16/49). New York: Author.
- Wellbrock, W., Roep, D., Mahon, M., Kairyte, E., Nienaber, B., Domínguez García, M.D., Kriszan, M., Farrell, M. 2013. Arranging public support to unfold collaborative modes of governance in rural areas. *Journal of Rural Studies* 32: 420-429.
- Wiskerke, J.S.C. 2009. On places lost and places regained: Reflections on the alternative food geography and sustainable regional development. *International Planning Studies* 14 (4): 369-387.
- Wiskerke, J.S.C., Roep, D. 2007. Constructing a sustainable pork supply chain: A case of techno-institutional innovation. *Journal of Environmental Policy & Planning* 9(1): 53-74.
- Xunta de Galicia 2012. LEY 7/2012, de 28 de junio, de montes de Galicia [on line]. Available at: [Http://www.xunta.es/dog/Publicados/2012/20120723/AnuncioC3B0-050712-0001_es.html](http://www.xunta.es/dog/Publicados/2012/20120723/AnuncioC3B0-050712-0001_es.html) (31 March 2014)

Table 1. Unfolding community practice of CMVMC Vincios

Project	Goal	Main function	Financing
Extensive Cattle (2007- ongoing)	To support local economy development and to control scrub in a natural way	Environmental	Cattle breeders: Regional Ministry of Rural Environment via cattle breeders Vincios: Wood sale (from eucalyptus) and canon from land transfer to the Bank of Land
REFORGAL Sustainable afforestation with leafy deciduous species (2007-Ongoing)	To promote alternative models of sustainable production	Environmental	Wood sale and land renting
Mushroom cropping by mycorrhization of pines and oaks (2010-Ongoing)	Soil recovery and opening new ways to sustainability	Environmental	LEADER-EAFRD, Conselleria Medio Rural (regional rural environment ministry) Internal: wood sale and land renting
Chestnut afforestation (2010- Ongoing)	To increase biodiversity, produce high quality wood, improve landscape and diminish fire spreading.	Environmental	Fondo Galego de Garantía Agraria (Galician Fund for Agrarian Guarantee-Regional rural environment ministry)/European funding Internal: wood sale and land renting
Sensitive cartographies 2013	Providing the values of the Vincios monte and its management model through a website	Cultural	Internal: wood sale and land renting
Biomass Plant (1999- yet to be implemented)	To produce compost from Green waste in the monte	Environmental Socio-Economic	Internal: wood sale and land renting Other Val Miñor communities Regional subsidy to by machinery LaCaixa Foundation

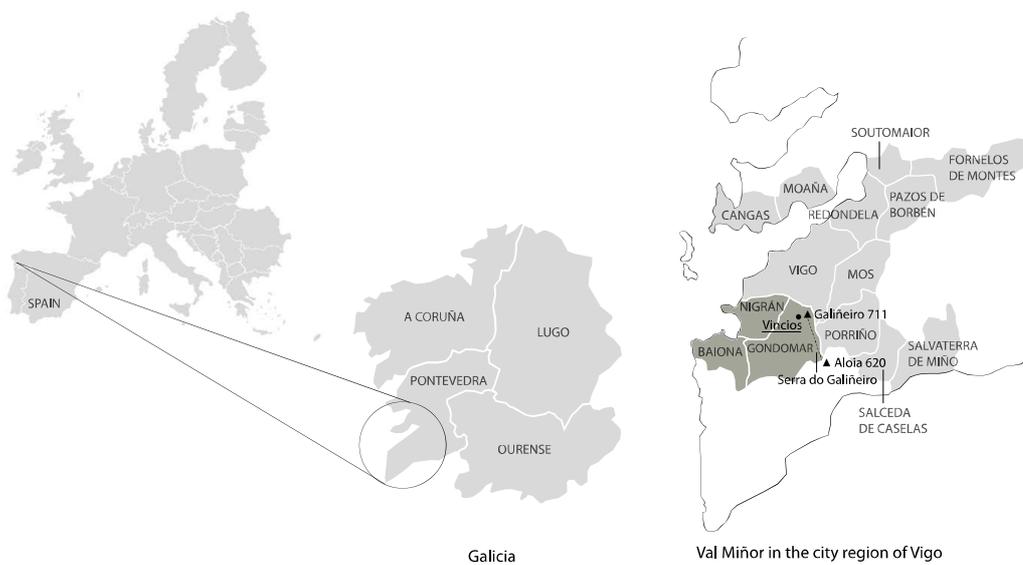


Figure 1. A Serra do Galiñeiro in the city-region of Vigo, Galicia (north western Spain)

