

# Strategic territorial plan for the Calderona Mountain Range

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## Abstract

Calderona's outstanding environmental and visual resources have made it one of the preferred destinations for the 1.5 million inhabitants of the Valencia Metropolitan Area, imposing at the same time a strong pressure for urbanization and public use. In this context, the creation in the year 2002 of a Natural Park, has positively released the pressure over this territory but, at the same time, has emphasised some of the most typical rural conflicts: the role and continuity of agriculture, the low sustainability levels of some urban typologies, the lack of a diversified economy, the preservation of local identities and the need of a balanced governance.

All these issues are analyzed and developed in the Strategic Territorial Plan for the central area of the Calderona Mountain Range. A plan promoted by 5 municipalities and prepared by a multidisciplinary team. The document includes a multilayer analysis of the territory, the definition of a set of strategies and, finally, 10 thematic plans (Landscape and Territory, Forestry and Natural Heritage, Agriculture and Stockbreeding, Hunting, Urban Planning, Infrastructures and Transport, Cultural Heritage, Tourism and Public Use, Socioeconomic Development and Sustainability, and Governance), which were accompanied by 18 pilot studies that exemplified some of their key aspects.

The whole plan shows the benefits of regional and transversal planning and was developed in collaboration with regional and local authorities and in parallel with a public participation process.

*Keywords: sustainable planning, regional planning, landscape planning, green infrastructure, urbanism, rural development, agriculture, natural and cultural heritage, sustainable development, governance.*



## 1 Introduction and objectives

The Polytechnic University of Valencia, as academic and research institution, in collaboration with the municipalities of Serra, Naquera, Olocau, Marines and Gatova, was commissioned in the year 2013, the preparation of a Strategic Territorial Plan for the southern-central area of the Calderona Mountain Range [1]. This plan was based in environmental, cultural, economic, infrastructural, landscape, urbanistic and social principles and defined, by means of a transversal and balanced planning system, the conditions for the sustainable development of the before mentioned area.

The plan assumed the synergies and benefits that can be obtained of supra-municipal planning, providing practical and clear determinations to support local planning and local decision making and showing at the same time the enormous potential that the Calderona Mountain Range has for economic investment within a sustainable development framework.

Obviously, the main question to answer was how could planning effectively support and promote sustainable development, assuming this last concept as the path by which communities can progress and acquire a higher level of welfare without compromising the quality and future of their natural, social and cultural environment and without exporting their unsustainability to other territories.

The plan so developed should be useful, adjusted and integral, and according with these three variables could it be assessed. It will be useful if it gives clear answers to the problems and opportunities of the 5 municipalities, it will be adjusted if it considers the particularities of the Calderona Mountain Range and if it creates the necessary bridge between the broad principles of the Territorial Strategy for the Valencian Autonomous Region [2] and the more specific determinations of local plans. Finally it will be integral if it establishes a fruitful and effective dialogue between all the territorial layers and interests.

The present paper explains the tools developed to try to fulfil these objectives and summarizes their contents.

## 2 The site

The central part of the Calderona Mountain Range covers a mountainous area of approximately 200 square kilometres located at the northern limit of the Metropolitan Area of Valencia. It comprises 5 municipalities, Serra, Naquera, Olocau, Marines and Gatova, whose abrupt territory is partially included in the Calderona Natural Park (50%) and in its buffer area (30%). This Natural Park, created in the year 2002, has a Use and Management Governing Plan [3] and a Natural Resources Management Plan [4] which strongly affects local planning and that has managed to stop the fast urbanization of the previous decades. Although its determinations are very positive, most of them have not been implemented and not even started, generating an increasing rejection between local communities, which perceive the Natural Park as a source of restrictions but not of solutions.

This local perception of the Natural Park is reinforced by the intense use that many of the 1.5 million inhabitants of the Metropolitan Area of Valencia make of



it, creating a contradictory feeling, on one hand the visitors, both in their daily visits, and mainly in their temporary residences, contribute substantially to the local economies, but on the other hand, many of them “come, leave their rubbish and go”. This situation, typical of many natural places located at the outskirts of highly populated areas, is aggravated in this particular context due to the lack of support and of initiative between locals, who have mainly relied in the construction sector and in the provision of basic services for visitors to make their living.

In this scenario, agriculture has entered into a serious regression, especially in the most abrupt and poor soiled areas, endangering the future of the traditional Mediterranean agro-natural mosaic, whose importance in fire protection and in the preservation of the stone walls landscapes becomes now more evident than ever. Additionally, the industrial activity is practically inexistent even in the forestry and renewable energies sectors, whilst the construction activity, which severely damaged the territory decades ago with the incorporation of low density urban patterns and poor quality housing, is stopped due mainly to the present economic crisis and the planning restrictions, fig. 1.

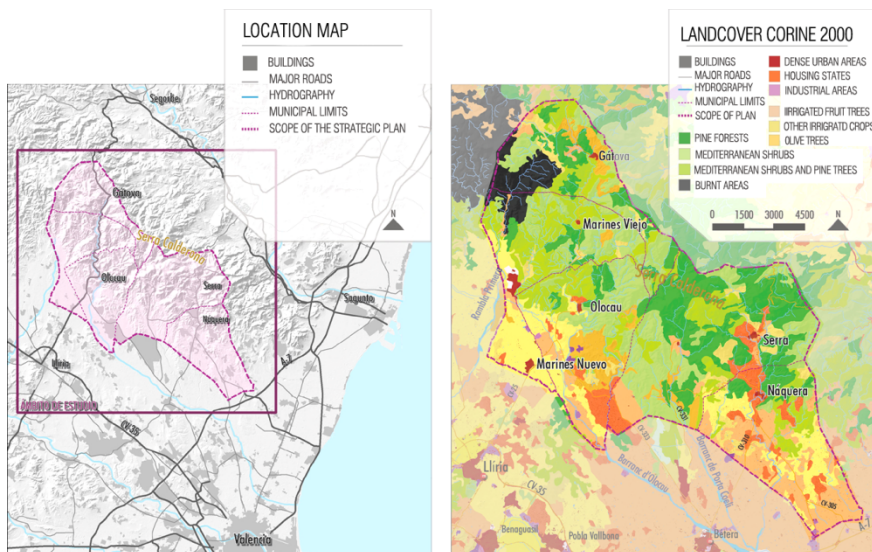


Figure 1: Location and land uses in the Calderona Mountain Range.

Finally, an overall view of the socio demographic context shows a high contrast between the 13,000 permanent residents, living mainly in the 6 traditional compact villages and the 36,000 temporary dwellers, who spend their holidays or weekends in a disperse constellation of low density housing states. However, this dual situation is progressively changing due to the fact that some temporary houses are becoming permanent residences, but since that change occurs mainly in low density housing states, they actually become urban suburbs with a high

dependence on the car for all the daily activities and with a severe increase in the local ecological footprint.

The situation before described can be quite characteristic of many rural areas, but in this case, the location of the Calderona Mountain Range at the fringe of a densely populated metropolitan area, has created a sort of anaesthetic effect on their inhabitants. By becoming a touristic and service area, they have not been forced to reinvent their rural activities but, at the same time, by having a strong protection over their land, they are severely restricted to search new ways for their future development. It is precisely at this point where the Strategic Plan must explore and define how to use and manage the land and how to promote the positive dynamics and discourage or prevent the negative ones.

### **3 Structure of the plan and public participation**

The Strategic Plan for the Calderona Mountain Range was structured in three parts, each of them supported by a specific phase of the Public Participation Process. The first one “Which Territory?”, included an analysis and diagnosis of ten regional topics (Natural Environment and Forestry, Agriculture and Stockbreeding, Urban Planning and Welfare, Infrastructures and Mobility, Cultural Heritage, Tourism and Public Use, Landscape and Territorial models, Sustainability, Sociodemography and Economics). After knowing the area, the second part “Which Objectives and Strategies?”, defined the territorial targets in the before mentioned topics and in governance. Finally, the third part, “Which actions?”, included 10 thematic plans and 18 pilot studies or projects illustrating their direct application. The documents produced at the end of each part were uploaded in the Calderona Plan website [5], which was also used to perform part of the Public Participation Process.

## **4 Contents of the plan**

### **4.1 Analysis and diagnosis**

The cartography available at the Territorial Information System of the Valencian Autonomous Region [6], provided very valuable information, especially about existing land uses, urban planning, protected areas and natural risks. This information was extended with personal observations in the 10 topics which structured the analysis and diagnosis and that, by including transversal issues, like landscape, economy, public use or regional modelling, avoided a rigid subdivision of the work. The conclusions on the before mentioned 10 topics were the following:

#### **4.1.1 Natural environment and forestry**

The analysis of the Forestry Strategic Action Plan for the Valencian Autonomous Region (PATFOR) [7] and the self-produced information showed the absence of economical uses in the Calderona’s forested areas. These uses could be harmonized with the preservation and improvement of the environment but would

require a Forest Management Plan. In relation to fire protection, the use of public tracks as fire barriers is both effective and efficient but would need to be developed in many areas; the same applies to forestry management works, which should be urgently implemented in the most vulnerable areas (perimeter of housing states, tracks and agricultural allotments).

#### **4.1.2 Agriculture and stockbreeding**

The fast regression of the agricultural activity on mountainous areas can be explained by its low profitability. This situation is leading to the disappearance of the agro-natural mosaic which characterized the mountain range landscape and which used to include shepherding as an economic activity and as a way for the cleaning and management of the forests. On the flatlands, the introduction of irrigation and the high fertility of soils permit the maintenance of the agricultural activity. However, the small size of the allotments, the dominance of amateur farming, the excessive dependence on citrus crops and their present low prices, make necessary a clear transformation both, on the systems of production and on their processing and commercialization.

#### **4.1.3 Urban planning and welfare**

The urban system presents a strong dichotomy between compacted villages and new housing states. The fast growth of the latest and its mono-functional and low density pattern has negatively affected the levels of sustainability and the quality of the land use management. Additionally the high number of empty houses and vacant urban plots [1], exemplify the excesses in building activity and in land transformation of the past decades. In relation to welfare and public services (health, education, culture, etc.), the quality is relatively high although it gets worse at the housing states due to its temporary use and their low density, which makes unfeasible the provision of permanent services.

#### **4.1.4 Infrastructures and mobility**

The Calderona area is well connected to the Metropolitan Area of Valencia but mobility is highly dependent on private car due to the low quality of public transport, both in price and in travel length (using public transport is 30% cheaper but triples the time required for a particular trip). This problem is being aggravated by the increasing expansion of the low density urban pattern.

#### **4.1.5 Cultural heritage**

The exceptional existing cultural heritage (archaeological, architectural, rural, hydraulic and ethnographic) remains unknown for most of the visitors and even locals. Deterioration, disuse and disconnection of tourist routes are also detected.

#### **4.1.6 Tourism and public use**

According to the developed estimations [1], the strong flow of temporary or occasional visitors could contribute much more to the local economies, especially in the second group. It was also detected the shortage of specialized services for tourists.



#### 4.1.7 Landscape and territorial models

Landscape quality in natural and agricultural lands is general high especially when the natural forest communities are fully developed or when the agriculture is adjusted to the existing landform and is properly maintained. However, and according with the general conclusions of the Visual Plan for the Valencian Region [8], the perception of landscape by visitors is severely damaged in the flatlands as a result of the poor visual treatment of the roads and urban fringes and of the presence of intrusive constructions in natural or agricultural lands. The quality of urban landscape and urban borders change significantly from one urban unit to another, in general, landscape in old city centres and in old housing states is much better than the one found in recent developments. The elaboration of territorial models show conceptually the regression of agricultural lands, the expansion of forested lands, the risk of low density urban coalescence along the mayor roads, and the increasing depopulation of villages, fig. 2.

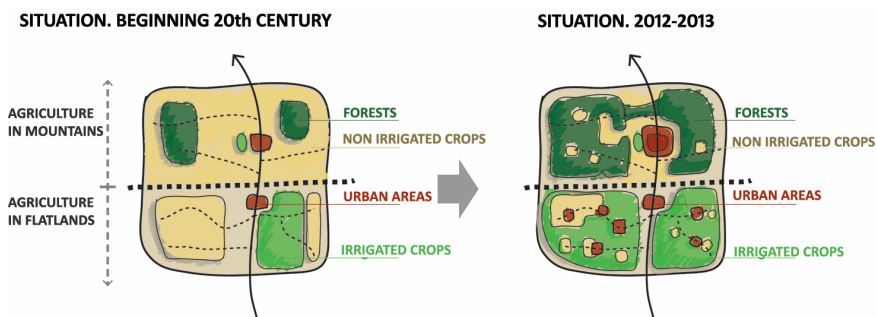


Figure 2: Land use evolution during the last century (conceptual drawing).

#### 4.1.8 Sustainability

The increasing importance of low density housing affects negatively the levels of sustainability and raises the average ecological footprint [1]. Additionally, the internal metabolisms are very weak since the use of labour, resources and residues within the area is very low, both between permanent and temporary residents.

#### 4.1.9 Sociodemography

Except in Gátova, where aging has become a serious problem, the municipalities of the Calderón present the same demographic profile and the same levels of unemployment and education as the whole Valencian Region.

#### 4.1.10 Economy

Local economies have become more vulnerable due to their increasing dependence on the service and construction sectors. In this context, diversification, promotion of entrepreneurship and specialization are the key concepts for economic development, especially in the agricultural, forestry and service fields. Unluckily, the public sector is passing through a difficult moment and their capacity of operation has been severely diminished in the last years. In this point it will be

essential to ensure that European, national and regional funds for Rural Development arrive to the local administrations and that they are recognized the additional works and services that they have been assuming (cleaning of forests, social assistance, etc.).

## 4.2 Objectives and strategies

The definition of objectives and strategies permitted to pass from the analysis and diagnosis phase to the development of proposals (thematic plans and pilot projects). Somehow, at this stage, it was necessary to figure out the best possible scenario for the future, assuming the principles of the Strategy for the Valencian Autonomous Region [2], and generating new, realistic and specific objectives for the Calderona range.

Finally, 52 objectives and strategies were defined. They were organised in the same 10 topics as the analysis plus an additional one dedicated to governance. In order to make them more understandable, they were explained with short texts and conceptual images, fig. 3.

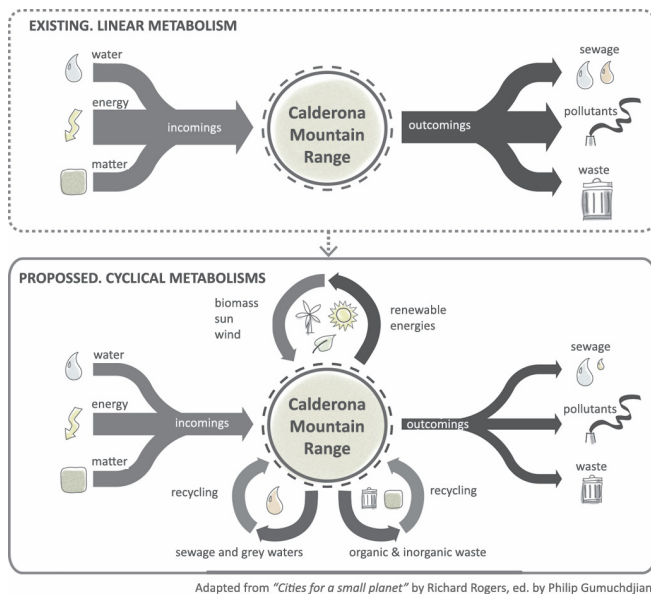


Figure 3: Objectives 36, 37, 38: towards internal and cyclical metabolisms.

## 4.3 Thematic plans and pilot projects

The last part of the plan is organized in 10 thematic or partial plans, each of them dealing with a different topic and including some pilot studies or projects. Each thematic plan defines the areas, conditions and programs that should regulate its corresponding activity and all of them are prone to be further developed by the regional and local authorities.

### 4.3.1 Landscape and territorial plan

Following the methodology proposed by the strategic landscape plans methodology and regulations for the Valencian Autonomous Region [9], and considering some useful precedents like the strategic landscape plan for the Torrevieja and La Mata Lagoons Natural Park by Galan [10]; the Calderona area was divided in a series of landscape units and the main environmental, cultural and visual landscape resources were identified. The so produced information was essential to define a regional system of open spaces (or green infrastructure) which was developed more in detail in their urban sectors. This green infrastructure became a primary element in land use planning, a regulator of urban growths and established an interconnected network between natural, agricultural and urban areas, fig. 4. The Landscape and Territorial Plan included the following pilot studies and projects: (1) Network of nature routes and trails; (2) River park in the village of Naquera; (3) Agricultural park in the village of Olocau; (4) Visual improvement of the CV333 road.

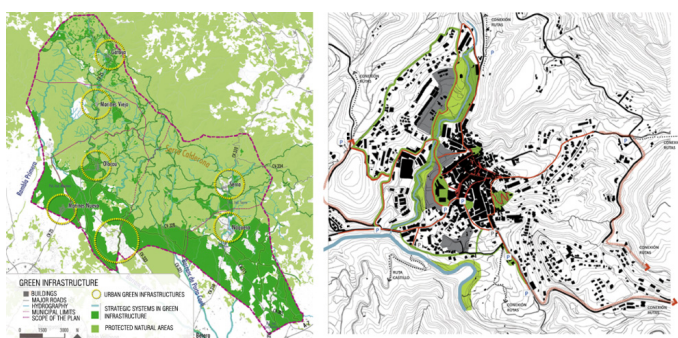


Figure 4: Regional and local green infrastructures.

### 4.3.2 Natural heritage and forestry plan

The plan defines the conditions to make compatible nature preservation, public use and forest management. It also estimates the labour and monetary impact of the allowed economic activities (biomass, wood extraction, honey production, etc.) and of the maintenance works. This impact is not very remarkable in terms of money and jobs but it is socially essential to recover the relationship between local communities and their natural areas. Finally the plan explores the different actors (administrations, collectives, associations, etc.) which could participate in the management of forests. The Natural Heritage and Forestry Plan included the following pilot studies and projects: (1) Management programs for sensitive or vulnerable natural areas; (2) Study for biomass and timber extraction; (3) Study for a forestry tree nursery.

### 4.3.3 Hunting plan

Keeping in mind the need of defining specific conditions for each specific hunting area, the hunting plan establishes a set of directives to demarcate the hunting areas, the fauna sanctuaries and the areas for the release of imported animals. It also



defines the maintenance works and the role that hunters, together with other collectives, can play in the management of natural areas.

#### 4.3.4 Agriculture plan

The permanence of agricultural activity at the mountains would require the recovery of some abandoned lands, the integration of the crop's production in a regional network for processing and commercialization and, finally, the assumption of the environmental role that those areas play in fire protection. At flatlands, diversification towards more profitable crops and professionalization of agricultural activities seem to be the key issues to be addressed. All these aspects are analyzed in the agriculture plan which, after delimiting the most valuable or sensitive agricultural lands and after studying the possible alternative crops, include a pilot study for creating a bank of agricultural land.

#### 4.3.5 Stockbreeding plan

Following the identification of the adequate areas for shepherding and stockbreeding and after establishing in them the types of cattle (sheep or goats) and the maximum number of heads which would be acceptable, the stockbreeding plan outlines the management systems for this activity and explores the additional incomes that can come by processing the products and by collaborating in the fire prevention works. The stockbreeding plan included a pilot project developed in direct collaboration with a local farmer for a livestock farm in Olocau.

#### 4.3.6 Urban plan

After delimiting a set of coherent urban management units, the urban plan defines the guidelines and regulations to improve the quality and sustainability of compact traditional villages, dispersed housing states and industrial states. These guidelines are based in the following principles: promotion of multi-functionality, optimization of urban land, increase of density in order to make feasible public transport and public services, improvement of public space and introduction of sustainable building types. The urban plan included the following pilot studies and projects: (1) Sustainable and morphological improvement of the Torre de Portacoeli housing state (Serra); (2) Bank of urban spaces, including empty houses and shops, urban and industrial vacant allotments and abandoned public spaces, fig. 5.

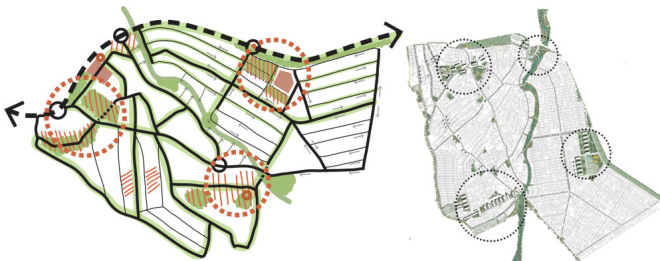


Figure 5: Diagrammatic and detailed proposal for the improvement of the sustainability levels at the Torre de Portacoeli housing state (Serra).

#### **4.3.7 Cultural heritage plan**

The plan starts with a detailed inventory of the existing cultural heritage [1] and continues with the definition of three main cultural areas associated with the three main physiographical corridors which have historically housed the human presence in the Calderona Mountain Range: The Gatova-Olocau gorge, the Portacoeli gorge and the Serra-Naquera Gorge. Each of these areas will include an identifiable network of cultural elements. Since some of these elements are in serious danger, the plan proposes a set of objective and measurable criteria for prioritizing their rehabilitation. The cultural heritage plan is accompanied of the following pilot projects: (1) Rehabilitation and reactivation of the Olla Moorish hamlet, this project was developed in collaboration with the landowners and a collective of new farmers, (2) Rehabilitation and readjustment of the Prunera Youth Hostel, this project was developed in collaboration with the institution that has managed the hostel since its creation in the year 1914.

#### **4.3.8 Tourism and public use plan**

The plan assumes and develops the methodology defined in the plan for the touristic areas of the Valencian Autonomous Region [11] for the promotion of tourism in rural areas. According to this methodology, a set of objectives are fixed for the offer of services, for the use of existing services and for the promotion of tourism. In a second stage, the plan defines a series of actions and programs aimed at the implementation of the before mentioned objectives. The tourism and public use plan is deeply related with other thematic plans since visitors are supposed to use or enjoy the elements defined in many of them. It also assumes the essential role that traditional villages should play in the offering of services and that should not be generally hindered by the creation of services out of them except when this permits the rehabilitation of endangered heritage. This plan included a pilot study developed in collaboration with a local person consisting on the creation of a company specialized in outdoor activities for families.

#### **4.3.9 Socioeconomic development and sustainability plan**

This plan incorporates the information and determinations of all the thematic plans which had clear and direct economic implications (forestry, agriculture, stockbreeding, hunting, urban transformation, tourism, etc.). In a later stage, it defines a set of objectives, programs and management structures for its implementation. The same process is followed in relation to sustainability, where a system of monitoring is also proposed. This very transversal plan included the following pilot studies or programs: (1) Identification of key economic activities; (2) Program for professional and entrepreneurship education; (3) Program for a sustainable mobility; (4) Program for the improvement of territorial metabolisms, fig. 6.

#### **4.3.10 Governance plan**

After considering the different options, the plan proposes the creation of an inter-municipal office for the management of the Strategic Territorial Plan. This office would be co participated by the 5 municipalities and, in order to avoid extra costs,

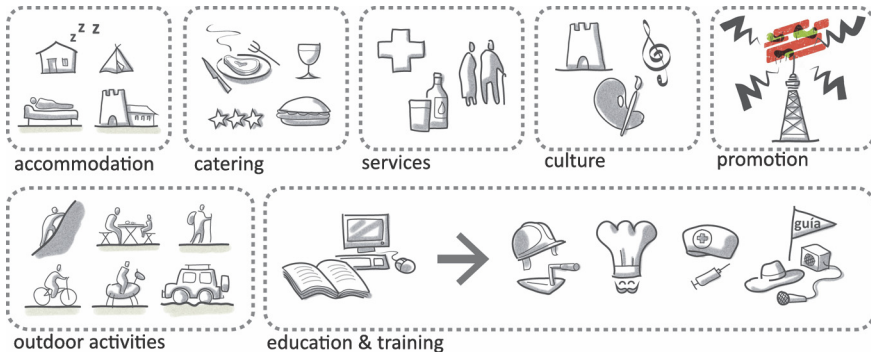


Figure 6: Key economic activities and educational programmes for the reactivation of the Calderona's Mountain Range.

it would use their existing human and material resources. The office would therefore share the existing means and would include a directing structure formed by the 5 majors, and a technical department which would be in charge of implementing the plan. The office would be open to the incorporation of some neighbouring municipalities and would also collaborate with the regional and the Natural Park authorities in order to coordinate their actions. Since the Strategic Territorial Plan for the Calderona Mountain Range is an informative document, its enforcement should take place through the incorporation of its determinations in local and regional plans (Planes Generales de Ordenación Urbana and Planes de Accion Territorial) and in the Calderona Natural Park Plans.

#### 4.3.11 Public participation plan

As explained before, the preparation of the Strategic Territorial Plan for the Sierra Calderona Mountain Range was developed in parallel with a three stage participation process. This process included surveys between representative samples of residents and visitors, seminars, and round tables. All the results are available to the public, and apart from supporting the development of the plan, they provided very useful information about the different perception of groups or collectives on key issues (main problems and opportunities, most important actions and plans, etc.).

## 5 Conclusions

The before described Strategic Plan has been very positively received by regional and municipal administrations and by local communities, which perceive it as a long run road map. The analysis and diagnosis of the whole area permitted to group and extent layers of information which were incomplete or dispersed, whilst the thematic plans explored and proposed new models, scenarios and determinations that could be further developed in enforceable partial plans. Additionally, the introduction of pilot projects was particularly welcomed since they permitted to visualise or prepare the way for the materialisation of some of the most important

proposals. Now, and as explained in the governance plan, it is the moment to create the structures which could support the plan implementation and show the benefits of transversal, equalised and interdisciplinary planning.

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