

Andes Mountain Strategic Plan

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Abstract. The AMSP takes into account the Metropolitan Regulatory Plan of Santiago, which includes both urban and rural areas, where most of the mountainous territory of Lo Barnechea municipality is located. It will also be a fundamental input to the forthcoming Regional Territorial Ordinance Planning. Additionally, it was drawn on the general guidelines of the National Plan for Environmental Protection. The Objects of Value are elements and components of the Andes mountain range environment that have some type of value to the community that resides in that territory. The diagnostic generated during the AMSP focuses particularly on Objects of Value that can be spatialized, in the territory studied. The AMSP is a territorial planning and management tool for the municipality, whose development involves a participatory and binding process. It seeks a vision for a sustainable development of this territory, balancing economic, social and environmental aspects. The AMSP is composed of master plans from each Andean Mountain Strategic Planning Zone (ZPEC). Development objectives and scenarios are considered, according to the identified Objects of Value and Zoned Environmental Goals, using the national, regional, communal and local development strategies as a guide. Four Environmental goals has been defined for the AMSP. Protection: Conservation of biodiversity, natural resources, ecosystems functions, protection against natural risks, and others; Restoration: Rehabilitation of damaged sites or zones; Sustainable Development: Mountain tourism, ecotourism, beekeeping, among others; and Sustainable Productive Development: The extraction of resources in the territory.

1. Introduction

According to the explanation in the document “*Un Mejor Estado para Chile*” (A Better State for Chile), elaborated by the *Consortio para la Reforma del Estado* (2009), the environment is one of the most relevant preoccupations of the modern era, which is why the management of this subject cannot be separated from councils. In this way, the Andes Mountain Strategic Plan (AMSP), developed for the Lo Barnechea Council, is understood as a tool of governance of non-urban ground, with ecological, recreative and productive dimensions, in order to conceive and build the mountain territory with an integral vision.



Although it is true that in the environmental subjects there is a considerable deficit of systematic production of official information, it is also necessary to consider that due to the increase of environmental conscience of citizens, the demand for information has become an obligation that facilitates the processes of social participation and validation. In this way, the Andes Mountain Strategic Plan has generated an inventory of information and a territorial management tool that works as the base of the system of following, both for the council and for the general public.

The proposal for the development of the AMSP has as an essential part, the use of strategies of landscape architecture design that provide continuous feedback to the fundamental parts of the study, especially in the instances of participation and following. In particular, these also had an important role in the maintenance of a constant dialogue in all the stages of the project, which has been of utmost relevance for the inclusion of aspirations and roles of each local actor in the planting of the AMSP.

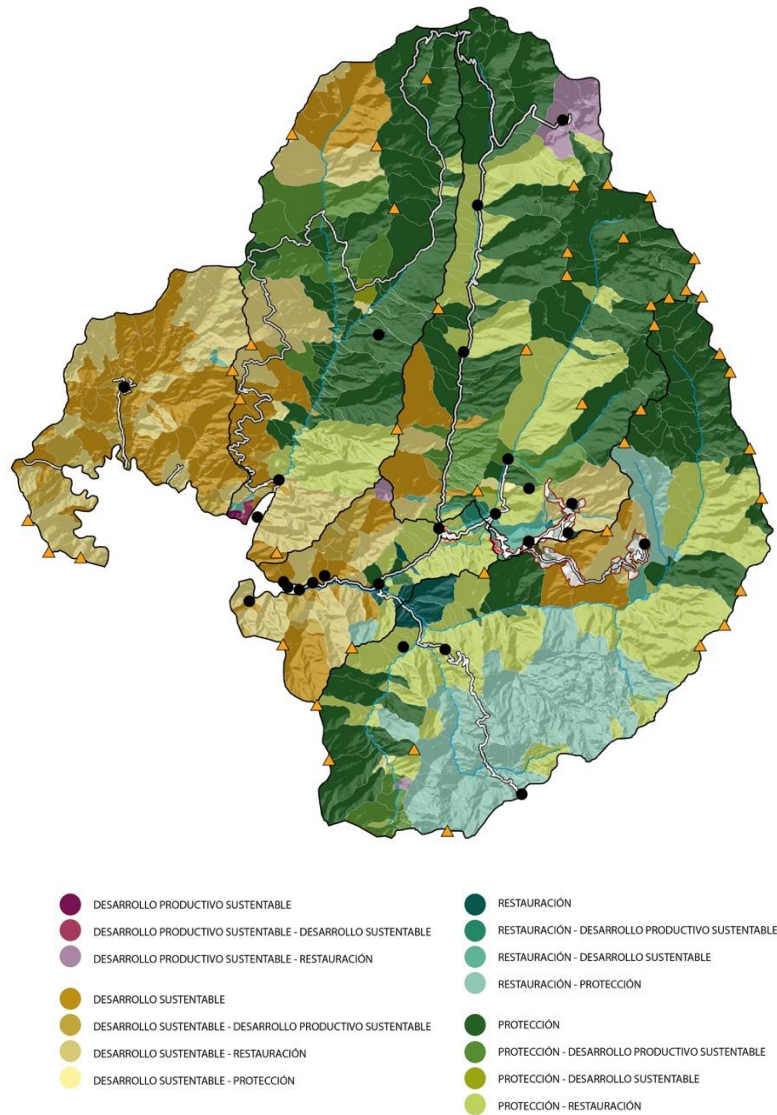
As explained by Anita Berrizbeitía, Chair of the Landscape Architecture Department of Harvard University, and invited as an international expert to the project, there is a debt in terms of planning in mountain territories, that have constantly been made invisible. Berrizbeitía highlights that now is the time to be dedicated to the care and planning of mountains ranges in Latin America. One form of understanding planning of the mountain in Santiago is understanding the importance of access to this. Today its landscape is mostly perceived from the highway, therefore the tools represent a way of bringing a vision to the mountain landscape to the people, allowing for citizens to know, live, care for and require protection of this ecosystem.

Based on this, Berrizbeitía emphasises that the importance of building a better project lies on creating instances of dialogue, maintaining concordance of interests and harmony in communities. “I think that what you have done now is very important, because we have to create a base plan, in which everybody has a geographic and environmental understanding of the mountain sector that has been shared. Once we understand what type of territory we’re talking about, what can be done with it, only then can a base be created that can be used to discuss all of this” [1]

2. Objective / Methodology or Instrument

From this, the AMSP takes as its initial methodology, that of ecological planning, in order to create this base in which environmental conditions of the territory are presented to advance towards a strategic plan, considering a participatory process in all its stages, through the implementation of different instruments that allow for the generation of an informed discussion on the use of the mountain territory in the commune, looking to build a unified vision.

Figure 1. Integrated Zonified Environmental Objectives -IZEO- are focused on the protection, restoration and sustainable development of the natural heritage and the landscape, looking to prioritize the environmental values of the area that can sustain the different developments, existing and proposed by the community. The IZEO are the result of two variables crossed: Intensity of Use and the Valuation Objects. With this crossing, it was possible to build a matrix of analysis and define the most appropriate environmental objective, always seeking the sustainable use of the territory. Source: CIT 2018



Among the instruments used, the prospective production of landscape design is articulated in order to face different challenges and diverse visions that are presented by territorial actors. In this way, these designs constitute an advantageous instrument for an anticipated and efficient comprehension of territorial dynamics, and their potential tendencies of development in contexts marked by social changes, decisions and collective debates with conflict, and little governance capacity.

It has also been a powerful tool to situate local and key actors in the common sense of a strategy, leaving behind voluntarist agendas, in order to base on a possible and desirable convergence to propose actions that tend towards an order that coincides with the goals of strategic environmental planning of the mountain [2].

3. Scenarios

The use of scenarios is due to the possibility of facing a diversity of lines of development in a realm of territory of high competition and conflict, in such a way that the requirements of civil society, key actors, local communities, institutions, entities and the state in its different levels of governance are able to look to the future of a vast territory in a different way. In this way, decisions can be taken on an economic plane, that can also be acceptable and coincide with the social and environmental perspective.



Figure 2. Schematic representation of Scenarios of Conservation, Diversity and Intervention. Rather than looking for the selection of options or proposals, the discussion about scenarios allows identifying trends in citizen's opinion on the vocation and the way to develop the materialization of the ZEOs, based on their conservation, diversification and intervention guidelines for the territory. Source: CEPU 2018

The strategy of the construction of scenarios was used to understand the changes and future potentials of the contexts of a territory, so that they would guide or mark the discussion. The idea was to be able to come to an expression of the most important challenges and establish paths of action in order to reach the goals through interventions in the territory.

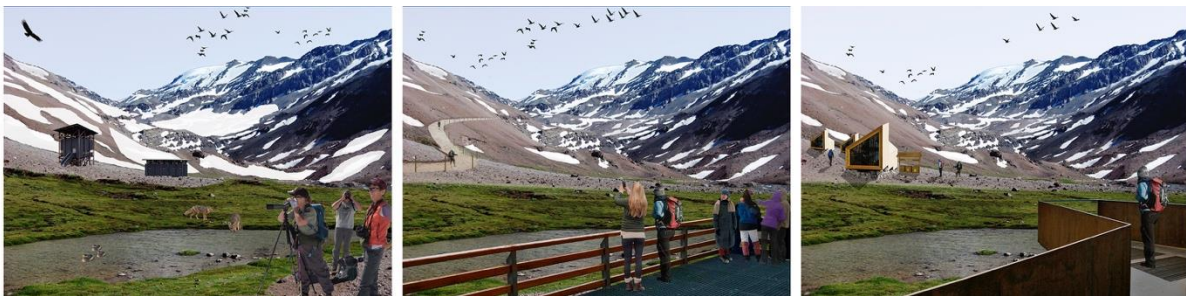


Figure 3. Objective Image for three scenarios in the Strategic Planning Zone 5. From left to right: conservation, diversification and intervention. The three scenarios polarize the degree of priority given to the development of the Zoned Environmental Objectives (OAZ), which in turn characterizes them as priority-secondary, or low or high intensity based on the presence of their physical variables. Source: CEPU 2018

3.1 Territorial Planning

Within the main challenges at the time of elaborating a strategic plan, particularly in an urban-rural area with high intensity and a diversity of ecosystems, uses and actors as is the mountain territory of the commune of Lo Barnechea, is coming to a definition and consensus of a common image or vision between the actors involved, that are oriented towards and prioritise the actions that are necessary in order to reach the desired development for the territory, in the medium and long-term. In this way the

creation of scenarios of development, in the strategic urban and territorial plan, is an exercise or supporting tool that facilitates and systemizes collective reflection about the territory and the construction of images on a desired future [3].

“In the simplest terms, visioning is a planning process through which a community creates a shared vision for its future and begins to make it a reality. Such a vision provides an overlay for other community plans, policies, and decisions, as well as a guide to actions in the wider community.” [4].

According to Godet & Durance [2], the participative focus in the methodology of scenarios of development responds to a new mode of “governance” that associates public institutions, social actors and private organizations in the elaboration, implementation and following of collective decisions, capable of generating an active adhesion of citizens. In the case of the AMSP, the debate on different scenarios of development that would allow for a consensus of a common vision, counted with the participation of neighbours, social organizations, businessmen and public institutions (among other actors), whose involvement allowed for the generation of consensus and discrepancies on modes of conservation, diversification and /or the intensification of the territory. In this way, the selection of one scenario over another was less important than the collective process of reflection around these, whose conclusions finally allowed for the guidance of the process of elaboration of a strategy to integrate diverse modes according to the particularities of the territory and the vision of the actors.

The development of a “vision can place new demands on planning. It stretches the traditional role of planners, calling upon new skills and competencies. It demands increased levels of dialogue and trust with the public. Ultimately, to the degree that the vision extends beyond the traditional domain of planning, it requires more effective cross-sector communication and collaboration.” [4].

3.2 Scenarios and Participation AP

The scenarios have been used as a possible and flexible future. It is a possible future as it responds to a known dimension of factors: current regulations, environmental values, objects of valorisation, among others. On the other hand, it is flexible from the condition of social, technical, economic, environmental and political factors that can change and therefore invalidate the scenario for a defined moment that it attempts to respond to. The scenarios in the context of the AMSP have been close to a systematic vision of thought, or the so-called System Thinking.

“A system isn't just any old collection of things. A system is an interconnected set of elements that is coherently organized in a way that achieves something. If you look at that definition closely for a minute, you can see that a system consists of three kinds of things: elements, interconnections, and a function or purpose.” [5].

Through this, developed territorial planning, through the construction of the scenario as a linking tool, has managed to propose a structure that allows for the incorporation of multiple factors, looking for complex crosses that open the discussion on unexpected futures. The incorporation of the future in an improbable scenario, is related to the form or structure in which the scenarios articulate with participation. This does not respond to an instance of validation or consensus, but on the contrary, it is a platform through which the unexpected factor emerges. Its multiple instances of dialogue and co-construction, makes the scenario and participation become a loop, continuously feeding each other, which not only modifies the scenario, but often also transforms the vision of the actors themselves, where what seemed improbable or without value, in a second interaction could be possible and desirable.

To look for the interaction between the proposed scenarios and the modification of these by the actors present in the participation, three polarized scenarios were proposed. These resulted from the consideration that the zoned environmental objectives, surged from the relieving of the environmental values and the existing environmental conditions, could be interpreted in a determined social, political or economic context, with a grade of higher priority or with a territorial charge of more intensity, without necessarily modifying its determined condition as OAZ. For this, three scenarios have been proposed: Conservation, Diversification, and Intervention.

In the first scenario of conservation, protection and restoration are considered priority while sustainable development and sustainable productive development are defined with low intensity. In the

second case, diversification, protection and restoration are priority or secondary, depending on the spatial relationships defined by the territorial condition, while sustainable development and productive sustainable development are equally dependent on the distances towards the sensitive elements of the territory, allowing both high and low intensity. Finally, in the scenario of intervention, protection and restoration are of secondary character, while sustainable development and productive sustainable development allow for a covering of high intensity.

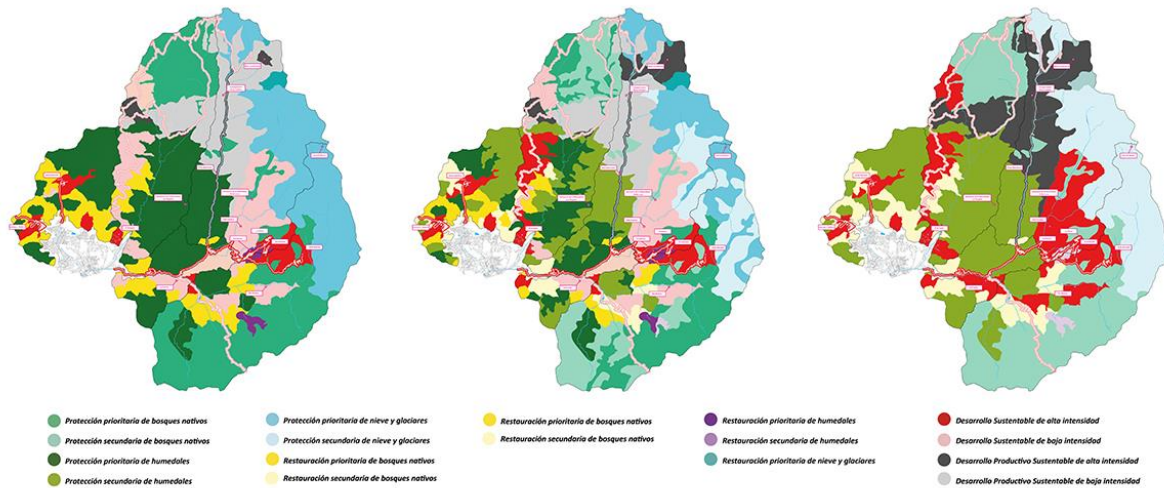


Figure 4. Cartographic Scenarios. From left to right: Conservation, Diversification and Intervention. Source: CIT / CEPU 2018

Taking these polarities to a participatory process is an operation that, while not defining a particular development which has to be decided, allows us to go further. The friction and tangentiality of the different forms of occupation deployed establishes relationships between parts that conform the scenarios introducing the discussion, not of what can be done in a determined area of the territory in relation to another, but how a use or specific development affects another area that has a relationship of tangentiality or closeness. For the different actors operating in the territory, this states the necessity of considering any scenario through an ecological vision in which the relationship between its parts defines a higher relevance than the parts themselves.

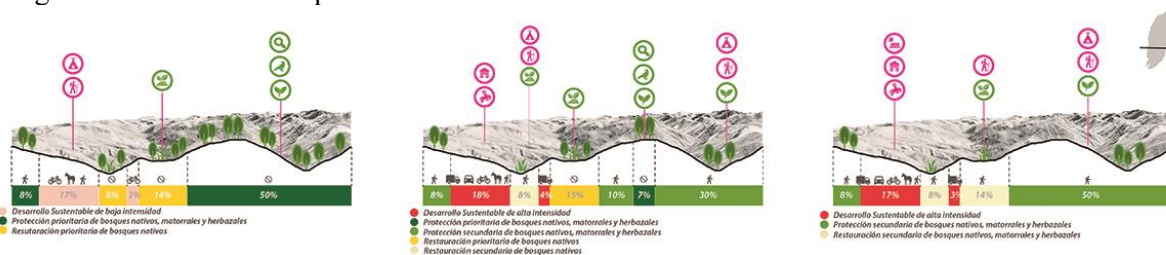


Figure 5. Scenario Section through the Strategic Planning Zone 2. Source: CEPU 2018

4. Prototypes

4.1. Prototypes in the Form of Design

With the objective of advancing from an environmental planning towards a strategic planning, the AMSP approaches landscape architecture as a tactic planning strategy, that allows us to link the

environmental objectives proposed (OAZ) with the human charge on the territory. In this way, through the conceptualization and elaboration of prototype projects called Pilots, the plan develops strategies of landscapes that, as methodological structure, allows for the visualization of profiles of intervention, in the short and long-term, on the territory.

According to Frederick Steiner, in his article *Is Landscape Planning?*, landscape or landscape architecture is a form of planning, or more precisely, “landscape gives us the medium for planning and landscapes are the result of planning”. In this way landscape architecture allows us to anticipate future scenarios and elaborate guides to direct the future of a territory, with a particular focus towards its ability for charging and adapting in the face of economic, social and climatic pressures, among others.

The definition of Pilots, more than providing a project in particular or a determined form with defined programs and dimensions, look to establish possible strategies, for which it is fundamental to understand the complexity of a site through a new imaginary and also a new vocabulary. This is what allows the “feeding” of these pilots for them to be resilient when facing changes, and being adaptable in time, for the long-term. Examples of these are the projects, “SOAK” and “Petrochemical America”, undertaken by the landscape architects Anuradha Mathur and Dilip Da Cunha and the photographer Richard Misrach and the landscape architect Kate Orff, respectively.

“SOAK” is a research project whose case study deals with the constant floods that devastate the city of Mumbai (that is located on marshland), which have to this day been approached through resistance and not adaptability towards a living and changing phenomenon. For this, the architects propose the creation of a new vocabulary and imaginary -from flooding to soaking- that allows for guidance in the elaboration of anticipatory and resilient projects: “These interventions do not work toward end scenarios. They are rather seeds that have the potential to unfold and extend possibilities in more than one way, surviving opportunistically with agility and tenacity like the landscapes of Mumbai.” [7]. A similar strategy is used by the authors of “Petrochemical America” to face the high and historical negative impacts of the petrochemical industry on the ecosystem of the Mississippi River and its surrounding territories, for which a glossary is elaborated -“Glossary of Terms and Solutions for a Post-Petrochemical Culture”- whose objective is to visualize and educate about the patterns of consumption, waste, landscape and urbanization that originate and intensify forms of development of the petrochemical industry: “The scenarios depicted in the glossary operate at varying scales. (...) Beyond any delimited physical intervention in Cancer Alley, discussion of change immediately scales up to address larger patterns of consumption, waste, landscape, and urbanism in America. At the same time, and in the absence of governmental efficacy, one is forced to scale down, advancing ingenuity of local citizens who inhabit the landscapes that are behind. Therefore, the Glossary looks beyond traditional legal and political pathways toward the cumulative effects of individual behaviors and embraces public-private partnerships as the primary drivers of transformation.” [8].

The pilots are therefore strategies that are adaptable and designed in an open way, with the purpose of acting under the multiple scales and temporality of the territory, recognizing the multiplicity of actors, disciplines and initiatives that can contribute to planning. In this way, the strength of the plan lies in its ability to guide (and not to restrain) the forms in which man relates to landscape and its environmental values.

4.2. *Intensities, Initiatives y Prototypes*

The proposal of scenarios and their validation allows for the community to visualise the modification tendencies that the territory can present through these polarities. In order to advance towards planning the territory, it is necessary not only to recognize through the landscape whether something will have high intensity of development or low environmental protection, but also to establish how the landscape is a tool not only for expressing the future but also defining the present. For that, the condition of human charge in the territory has been included, or what we can understand as the intensity that the territory can sustain through the incorporation of infrastructure of connectivity, activities, equipment or programs. The landscape is in this way understood as a medium through which we can build

contemporary urbanization, due to its capacity to implement combining strategies of multiple flexible and strategic layers. [9].



Figure 6. Proposed Plan for the Pilot through the Strategic Planning Zone 2. The different zones defined in the PEC matrix, are directly related to existing ecological patches, their definition and transition zones, presenting them as compatible uses with new infrastructure developments and the mitigation their required to get built. The strategic activation of certain footprints allows an operation of the energy infrastructure, but also a greater connectivity of the territory for its social use. Source: CEPU 2018

In order to be able to visualize and represent the desired territorial charge, four intensities of initiatives have been proposed, that go from: 1) Null or Low; 2) Low to Medium; 3) Medium to High; and 4) High to Very High. These are then crossed by four types of initiatives, that respond to a proposal of categories that allow for the inclusion of the highest quantity of types of interventions possible. The first is Connectivity and it responds to projects that allow for the necessary connections in order to communicate two points through a path. Here, pathways, cycle routes, rural roads or paved streets would be included for each intensity respectively. Second, the Activities are programs that can be proposed without the need to build a structure for their development and therefore have a strong component of outdoor use and whose impact mainly depends not on the type of activity but rather the intensity of the activity and the people that develop it. Here we can find light activities such as trekking, cycling, massive competitive sport activities, to uses such as animal breeding. In equipment, infrastructure or buildings necessary for the undertaking of activities, are considered. If a trekking route involves a series of stops, these can be look-out points or stations that support this activity, but whose impact in the territory is more than the activity itself. In this way equipment such as look-out points, refuges, tension towers or hotels respond to each of the intensities. Finally, there is the category of Programs, that have lines of development with specific objectives and that require the incorporation of the three in the long-term.

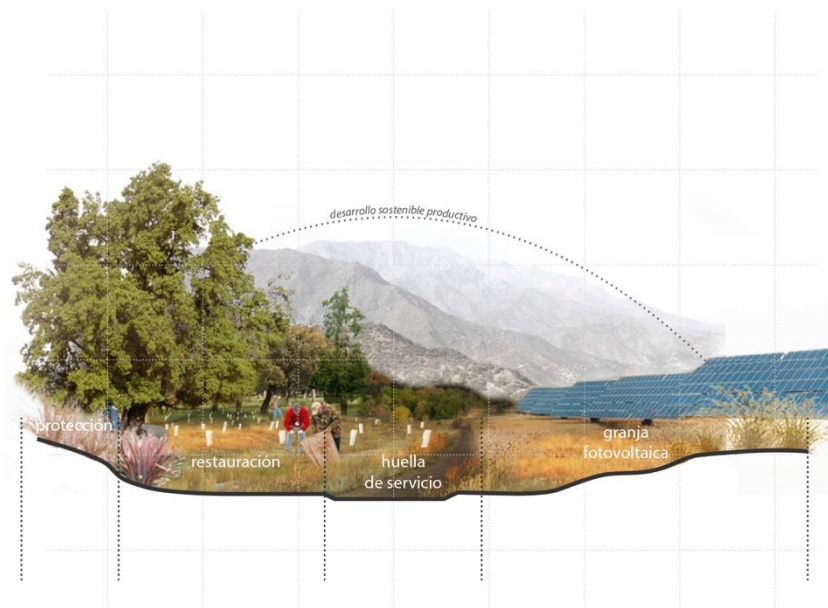


Figure 7. Scenario Section through the Strategic Planning Zone 2. Development strategies are closely implemented in relation to their adjacencies. In this way, a positive process is initiated, where the development of energy infrastructures go hand in hand with processes of landscape environmental improvement. Source: CEPU 2018

The definition of these categories and intensities and initiatives, is a methodological response in order to organize the passing from a participative instance in which the initiatives or programs have been revealed from the community, to a structure of proposal that allows them to be organised and understood through the affection that each of them can have towards the natural territory.

5. Conclusion

The way in which landscape operates as a tool, is not through the construction of these categorizations, rather they are an intermediate instance with which to demonstrate in an abstract way, uses or activities that in reality are never executed in a literal or rigid way with the proposed structure. In this way the real capacity of the landscape with respect to the communication of the load capacity, is the building of territorial hybrids that could occur in the combination of the initiatives with their different intensities. This has been developed through the Landscape Pilots, which are not projects, but strategies that are intended to visualize profiles of intervention that come from an extensive collaboration with the community. This is the centre of the pilots as far as they are proposed as a tool for shedding light on the concepts of development, intervention, conservation or others that could be included in a discussion such as this, but that are difficult to express to a wider audience. What do we understand by sustainable development, or what is the difference between restoration and protection? These questions usually have technical answers that are finally not operative for supporting multisectoral work. In this way, the landscape is consolidated as a tool for dialogue and for the validation of the work of AMSP.

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