

# LANDSCAPE AND INFRASTRUCTURES **FOR SOCIETY**

# PAYSAGE ET INFRASTRUCTURES **POUR LA SOCIÉTÉ**



COUNCIL OF EUROPE



CONSEIL DE L'EUROPE



# **Landscape and infrastructures for society**

**Ninth meeting of the Workshops  
of the Council of Europe for the implementation  
of the European Landscape Convention  
and**

**Third International Congress  
on Landscape and infrastructures**

Cordoba, Spain, 15-16 April 2010



# **Paysage et infrastructures pour la société**

**Neuvième réunion des Ateliers  
du Conseil de l'Europe pour la mise en œuvre  
de la Convention européenne du paysage  
et**

**Troisième Congrès international  
sur le paysage et les infrastructures**

Cordoue, Espagne, 15-16 avril 2010

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## Proceedings

European spatial planning and landscape, No. 95

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Statements in their original language as presented at the meeting of the Workshops. The opinions expressed in this work are the responsibility of the authors and do not necessarily reflect the official policy of the Council of Europe.

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## Actes

European spatial planning and landscape, No. 95

La réunion a été organisée par le Conseil de l'Europe – Division du patrimoine culturel, du paysage et de l'aménagement du territoire, et Direction de la culture et du patrimoine culturel et naturel – en coopération avec le Gouvernement espagnol – Ministère des Travaux publics, Ministère de la Culture, Ministère de l'Environnement et du milieu rural et marin –, la *Junta* de l'Andalousie, Département des Travaux publics et du Logement, et le Centre d'étude du paysage et du territoire d'Andalousie, Séville, Espagne.

Interventions dans leur langue originale telles que présentées lors de la réunion des Ateliers. Les vues exprimées dans cet ouvrage sont de la responsabilité des auteurs et ne reflètent pas nécessairement la ligne officielle du Conseil de l'Europe.

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*This book is dedicated to Ignacio Español Echániz  
who, with great intelligence and passion,  
played a major role in the organisation of this meeting*

*Ce livre est dédié à la mémoire de Ignacio Español Echániz,  
qui avec grande intelligence et passion,  
a apporté une contribution majeure à la tenue de cette rencontre*



# OPENING SESSION / SESSION D'OUVERTURE

## Welcome speeches / Allocutions de bienvenue

*Mr Eduardo PALLARDÓ COMAS, Deputy Director of Planning of Transport and Infrastructures, General Directorate of Planning of the Ministry of Public Works, Spain*

*Mrs Maguelonne DEJEANT-PONS, Head of Cultural Heritage, Landscape and Spatial Planning Division of the Council of Europe*

*Mr Andreas STALDER, Vice-President of the Steering Committee for Cultural Heritage and Landscape (CDPATEP), Representative of Switzerland for the European Landscape Convention*

*Mr Jean-François SEGUIN, President of the Council of Europe Conference on the European Landscape Convention*

*Mr Andres OCANA RABADAN, Mayor of the Local Council of Córdoba*

*Mrs Rosa AGUILAR RIVERO, Regional Ministry of Public Works and Housing, Junta de Andalucía*

**Mrs Maguelonne DEJEANT-PONS**

*Head of the Council of Europe Landscape, Cultural Heritage and Spatial Planning Division*

Ladies and Gentlemen, I would particularly like to welcome the representatives of the Spanish Government – the Deputy Director of the Ministry of Public Works, the representative of the Ministry of Culture and the representative of the Ministry of the Environment, Rural and Marine Affairs – the member of the Parliamentary Assembly of the Council of Europe, the Vice-Chair of the Council of Europe Steering Committee for Cultural Heritage and Landscape, the Chair of the Council of Europe Conference of the Contracting and Signatory States to the European Landscape Convention, the Advisor on Public Works and Housing, and all of you, Ladies and Gentlemen, who are interested in preserving the landscape.

It is a great honour and pleasure for me, as representative of the Council of Europe, to have organised the ninth Council of Europe meeting of the workshops for the implementation of the European Landscape Convention together with the Spanish Government and the Andalusian authorities in this beautiful city of Córdoba.

I would like to underline the importance of the official support which the Council of Europe has received from the three Spanish ministries – the Ministry of Public Works, the Ministry of Culture and the Ministry the Environment, Rural and Marine Affairs – in preparing this important event. I would also like to especially thank the Andalusian authorities for their exceptional work and major contribution to this meeting. The Andalusian authorities have shown an active interest in this subject for many years, and we therefore decided to hold the Council of Europe Workshop at the same time as the Third International Congress on Landscape and Infrastructures. It has also been a great pleasure to co-operate with the Centre for Landscape and Territorial Studies of Andalusia, and I would like to mention the important role played by this centre in making landscape a key focus of attention today in Andalusia.

I would like to take this opportunity to thank all those who have played a major role and put considerable effort into ensuring that landscape is a recognised item on the political agenda, for example Mrs Margarita Ortega, the Spanish Representative on the Committee of Senior Officials of the



Council of Europe Conference of Ministers responsible for Spatial/Regional Planning (CEMAT), who has done so much in recent years to support the Council of Europe's work with great sensitivity. I would also like to thank Mrs Maria Linarejos Cruz Péres from the Ministry of Culture, the Spanish Representative on the Council of Europe's Steering Committee for Cultural Heritage and Landscape, who is also a landscape specialist. Special thanks also to Mr Ignacio Pozuelo Meño for his wide-ranging vision of landscape and the environment, a vision which respects their values and human dimension. I would like to thank Florencio Zoido Naranjo, who works as an expert for the Council of Europe for his groundbreaking ideas, which help us to make progress in spatial planning policies. Special thanks also to Ignacio Español Echániz, Council of Europe expert, whose ideas and high-level work help to improve in practical, concrete terms the manner in which the landscape dimension of infrastructure is addressed. Ignacio Español Echániz once asked: "What do we want: huge infrastructure or great infrastructure?"

The Council of Europe Landscape Convention addresses issues that are really important both for the environment and for man, who, as pointed out in the 1972 Stockholm Declaration, is both creature and moulder of the environment. It is a new-generation Convention with a groundbreaking political vision of the relationship of human beings and society with their living environment, from the standpoint of both nature and culture. It would perhaps not have been necessary to deal with this subject 50 years ago but it has become vital to do so in today's developed societies, which often neglect human beings' sensorial, emotional and health relationship to their environment.

The European Landscape Convention is not only an environmental and cultural convention but also a social and economic convention. It not only addresses the issue of people's quality of life, but also concerns economic development, given the importance of foreign visitors, tourism and employment for the population. It concerns itself not only with the landscape aspect but also with the need to preserve the environment for future generations. All four pillars of sustainable development – natural, cultural, social and economic – come together and have their roots in the territory. The aim is not to hinder development in any way whatsoever, but to the contrary, as Joan Reguant from ICOMOS said, to pursue a better form of development.

At the beginning of 2008 the Committee of Ministers of the Council of Europe adopted two important documents, which should help us in the work that needs to be done: a Recommendation on the guidelines for the implementation of the Convention and a Resolution on the European Landscape Award. These two documents will contribute to implementation of the Convention at the national and European levels and will also be of use in identifying good practices throughout Europe.

The work on the crucial theme of the impact of infrastructure on landscape, and on how infrastructure can become a significant and positive part of the landscape, will begin with reports by experts. We are very pleased to have this opportunity to acquaint ourselves with the good practices currently being implemented in various countries and thus learn how best to take account of the landscape dimension in infrastructure policies.

Thank you very much for your warm welcome to Cordoba. I hope that this event will mark the beginning of a key stage in the process of fostering the close relationship between landscape, infrastructure and society.

**M. Andréas STALDER**

*Vice-président du Comité directeur du patrimoine culturel et du paysage (CDPATEP), représentant pour la Suisse de la Convention européenne du paysage*

Monsieur le Représentant du Gouvernement espagnol,

Madame la Représentante du Conseil de l'Europe,

Monsieur le Représentant de l'Assemblée parlementaire du Conseil de l'Europe,

Monsieur le Président de la Conférence du Conseil de l'Europe sur la Convention européenne du paysage,

Madame la Représentante de la Région de l'Andalousie,

Monsieur le Maire,

Monsieur le Directeur,

Mesdames et Messieurs les délégués, observateurs et experts du paysage,

En ma qualité de Vice-président du Comité directeur du Conseil de l'Europe pour le patrimoine et le paysage, je souhaiterais vous souhaiter la bienvenue à cette 9<sup>e</sup> Réunion des Ateliers de la Convention européenne du paysage consacré au « Paysage, infrastructures et société ».

Je saisisrai cette occasion pour vous indiquer que les travaux de ce Comité favorisent une coopération intergouvernementale unique au niveau paneuropéen : il permet de développer un dialogue entre les spécialistes du patrimoine et du paysage, les professionnels et les décideurs sur des thèmes concrets et importants pour le développement durable de nos sociétés.

Les travaux menés apparaissent importants pour la formulation des politiques et législations nationales ainsi que pour favoriser un débat public sur des thèmes d'actualité. Les Conventions du Conseil de l'Europe concernant le patrimoine tant naturel (Convention Berne) que culturel – patrimoine archéologique (Convention de La Valette), patrimoine architectural (Convention de Grenade) et la valeur du patrimoine culturel pour la société (Convention de Faro) – sont largement retranscrites dans les législations. Il en est de même désormais de la Convention européenne du paysage (Florence) à présent ratifiée par 30 Etats membres du Conseil de l'Europe et signée par sept autres, d'ores et déjà utilisée dans de nombreux Etats comme texte de

référence. Les législations relatives au patrimoine et au paysage sont ainsi fondées dans la plupart des Etats membres du Conseil de l'Europe sur ces cinq conventions et elles en reprennent très souvent à la lettre les définitions formulées. Les parlements nationaux font référence à ces textes dans leurs débats et rapports, et les tribunaux nationaux s'y réfèrent dans leurs décisions.

Il y a lieu également de souligner que les Conventions de Florence et de Faro sont particulièrement novatrices de par les principes qu'elles énoncent.

Le Réseau européen du patrimoine ainsi que le Système d'observation du paysage en cours d'établissement pour la Convention européenne du paysage, les Réunions des Ateliers pour la mise en œuvre de la Convention européenne du paysage, les Journées européennes du patrimoine, les recommandations et lignes directrices adoptées ainsi que les publications éditées favorisent ainsi la formulation de politiques nationales durables soucieuses du respect et de la valorisation des ressources des territoires.

Les travaux menés sont importants en ce qu'ils permettent, tout en respectant les spécificités géographiques, culturelles et sociales des Etats membre du Conseil de l'Europe, de mettre en concordance les politiques menées dans les différents Etats membres.

Je souhaite plein succès à nos travaux.

# **KEYNOTE PRESENTATION OF THE MEETING / EXPOSÉ INTRODUCTIF**

*Mr Florencio ZOIDO NARANJO, Director of the Centre for Landscape and  
Territory Studies, Sevilla, Spain*

## **Infrastructure policies from the European Landscape Convention viewpoint**

**Mr Florencio ZOIDO NARANJO**

*Director, Centre for Landscape and Territory Studies, Seville, Spain*

### **Introduction**

The European Landscape Convention (Florence, 2000), which by 5 April 2010 had been ratified by 30 European States, including Spain, implies a firm renewal and concerted agreement concerning the notion of landscape. Considered before to be a “polysemous”, “ambiguous” or even “useless” idea, as a concept it is now laden with semantic depth and constitutes a valuable resource for the governance of complex territories. As Adrian Phillips (2007) has sagely commented, it is now the moment to abandon sterile, paralysing debates and start acting on the basis of the European Landscape Convention. In fact, the renewal of this concept and the hopes pinned upon it has produced great intellectual, political and social activity throughout Europe during the last few years.

The semantic breadth of the concept (objective/subjective; natural/cultural; historic/present etc.), its intellectual prestige (spiritual and artistic origin; relationship with nature and scientific trajectory) and present potential as a social meeting point (between scientific knowledge, technical interventions and public participation) render the relationship between the planning, design, execution and management of landscape and infrastructure especially interesting due to the fact that infrastructures are the elements that give shape to territories to allow them to be used and enjoyed.

Nevertheless, both the success of this concept and the very breadth of its meaning, and above all, the great power lying behind its use, recommend caution and intelligence in the implementation of the European Landscape Convention. The application of its principles and decisions to sectoral and cross-sectoral policies, territorial governance and infrastructure policies requires considerable intellectual development together with complete adherence to its laws and procedures. If landscape is conceded to have such profound and wide meaning it is essential to prepare for a task that will demand

time and dedication. A rushed or simplified application of the European Landscape Convention could result in a superficial, merely cosmetic or even perverse treatment of the landscape.

### **Past, present and future of the European Landscape Convention**

The ideas of the European Landscape Convention have not emerged out of the blue. They come from a long artistic, philosophical, scientific, sectoral and cross-sectoral history. For all of these approaches, the Convention (its principles, definitions and actions) represents both a meeting point and point of departure towards a goal that offers benefits for everyone, because this international agreement brings together aesthetic and moral traditions, humanistic and experimental viewpoints, and extends to the whole territory and society solutions that were previously only linked to places of outstanding importance and to the social elite.

It is not the moment to recount, nor even summarise, the long history of the idea of landscape, which has been admirably handled by various authors from different points of view (G. and S. Jellicoe, 1995; F. González Bernáldez, 1981; Y. Luginbühl, 1989; A. Berque, 1994; A. Roger, 1997; J. Maderuelo, 2005, among others), but a brief synthesis of its political connections is necessary in order to reflect upon its current use and make suitable projections for its future.

A, Hildenbrand (1995), M. Prieur (1995) and L. Scazzosi (1999 and 2001) among others, have studied meticulously the presence of the term “landscape” in different European national laws and their implementation in public planning and management. Since the beginning of the XIX until the end of the XX centuries landscape appears in many sectoral regulations across different European countries (forests, roads, industrial and energetic areas etc.), mainly demanding protection for the beauty and outstanding natural features of places of unusual interest. During the 20<sup>th</sup> century it was also linked to national constitutions and other fundamental regulations as a mark of identity.

The International Union for the Conservation of Nature (IUCN) has used the concept “natural landscape” since the 1960s and UNESCO has used the idea of “cultural landscape” since the 1970s with interesting applications that have managed to conserve various extremely important sites throughout the

world. At the end of 1979 the French scientific institution *Casa de Velázquez*, located in Spain, put forward to the Spanish Ministry of Public Works and Urbanism the idea of undertaking a long term research project known as “*The evolution of landscapes and spatial planning in western Andalusia*” (F. Fourneau, Y. Luginbühl and B. Roux, coords.), at the end of a Seminar on the landscape. Conceptual debate and alternatives to its planning and management” was held in Madrid in July 1987, organised by the Centre of Territorial and Urban Studies of the Regional Government of Andalusia. During this meeting, L. Chabason (at that time a high-ranking member of the French Ministry of the Environment and later one of the promoters of the *Loi de Paysage* (1993) concluded his speech by saying that Spain, Italy and France should work together to defend “Europe’s representative landscapes”. A few months later, the regional governments of Andalusia, Languedoc-Roussillon and Veneto created a working group, who produced the Mediterranean Landscape Charter, which was presented in Seville during the 1992 Universal Exhibition. This document, recognised as the Seville Charter, was adopted thanks to the promotion of the two former regions (together with Tuscany) and to the work of the Council of Europe officials F. Albanese, R. Locatelli, F. Bauer and A. Sixto, among others, by the III Conference of Mediterranean Regions, held in Taormina in April 1993, and in Resolution 256/1994 by the Congress (at that time “Permanent Conference”) of Local and Regional Authorities of the Council of Europe, which recommended “the drawing up of an international framework agreement focused on the management and protection of the natural and cultural landscapes of the whole of Europe”.

R. Priore has recently related (2009) how, besides the decisive influence of the Seville Charter, other European entities that had begun to be concerned about the protection of rural landscapes (Countryside Commission, Landscape Research Group, Europarc and Ecovast) were also able to influence and persuade the European Environment Agency to include a chapter devoted to European landscapes in its well known *Dobris Report* (1991). This same author describes meticulously the way that the European Landscape Convention was devised, describing all the intermediate documents, entities consulted, and institutions and people participating.

From the whole preparative process, signing, ratifications and further developments (conferences and workshops for the application of the Convention, creation of the Heritage and Landscape Committee) one main



conclusion can be drawn: the European Landscape Convention, a regional and Congress of Local and Regional Authorities of Europe initiative, has become an operative instrument in many European states thanks to the efforts of many institutions and people, such as the Council of Europe (its officials and the elected local and regional representatives), the states represented at the Committee of Ministers and the Committee of Senior Officials of the CEMAT, the Bern Convention (1979) and the European conventions aimed at the protection of cultural heritage (Granada, 1985; La Valetta, 1992), many European regions, EU and international institutions, experts, scientists and non-governmental organisations participating in many, many meetings held since September 1994, that is to say over the last sixteen years.

Since the resolutions of the European Landscape Convention came into force on 1 March 2004 the response has been quite significant with regard to regulations, improvement of knowledge and administrative management and planning, but it is also important to recognise that there are still decisive links missing for its correct application, especially those needed to reach that key point at which European landscapes stop degrading. A few months away from the tenth anniversary of its approval (Florence+10) the future of the Convention is still more important than its present.

With this future in mind, the continuing impulse and strengthening of the ideas approved by the Council of Europe during the last fifteen years is still indispensable both in general terms and particularly in relation to the European Union and the countries that have still not ratified and applied the new concept of landscape. The conferences for their implementation, workshops and the dedication of the Heritage and Landscape Committee must keep on promoting the concept of clearly distinct approaches to deal with the opportunities and problems of individual European landscapes. To achieve this task at the present moment, a greater opening up of the international bodies mentioned above towards local and regional authorities, non-governmental organisations and the interdisciplinary participation of intellectuals, scientists and young artists is essential.

The task of individual states in the development of the Convention is still fundamental, mainly at the legislative level, because the concept of landscape in most national laws is far from that established by the Convention. Just as essential is their support of administrative activities and their own actions,

which ought to give a positive example with regard to landscape adaptation. It is necessary to welcome important proposals such as the strategies “*Swiss landscape concept*” (1998) and “*Paysage 2020*” (2003) of the Federal Office of Environment, Forests and Landscape of Switzerland, the adjustment of French sectoral laws and the “*Rapport Paysager*” of the Italian Government (2005), the Dutch national programmes *Belvedere* (1999), *Nature for the People-People for Nature* (2000) and *Territory* (2004) and the systematic inclusion of landscape in Irish (2005) and Norwegian (2009) spatial planning, to name only some outstanding examples, without in any way underestimating many other interesting initiatives in different countries.

If the implementation of landscape criteria is to become a general reality applied to all kinds of interventions, it is essential that the principles and proposals of the Convention reach public activities at the most basic political levels (regions and municipalities). It should not be forgotten that the European Landscape Convention complies with the “spirit of legal texts existing at international level in relation to local self-government” (preamble) and demands “respect for the principle of subsidiarity” (Art. 4). Regional and local authorities, provided with more or less autonomy and more or less technical capacity [federal states, regions and cantons (autonomous or not), cities of all sizes, rural councils and so on] as well as organisations and associations such as RECEP-ENELC (European Network of Local and Regional Authorities for the Implementation of the European Landscape Convention), CIVILSCAPE (European Network of Non-Governmental Organisations) and UNISCAPE (University Network) and other similar ones, even if they are less specific than the former (IFLA, ECOVAST, ICOMOS etc.) must all be incorporated fully and systematically into the efforts of the Council of Europe and the states to implement the Convention. Without their contributions and developments, actions at a higher political level are at great risk of being reduced to mere political rhetoric.

### **Sectoral and cross-sectoral policies**

The European Landscape Convention establishes in Chapter II “National Measures” the general measure to “integrate the landscape” in “all the policies with a possible direct or indirect impact on landscape”. It does not mention specifically policies related to infrastructures, although after its coming into force the Committee of Ministers of the Council of Europe approved a

new document called “*Guidelines for the implementation of the European Landscape Convention*” (Recommendation 2008/3), which includes the “*tools for planning and management*” “*the integration of landscapes in sectoral policies and instruments*” (Section II.3.3.), and in its Annex 1, aimed at establishing “*some instruments... for implementation*” it indicates that “*the landscape dimension should refer to energy management programmes and project and plan infrastructure schemes of all kinds*”.

In view of the few references available at present it is essential to recognise the need to develop them, especially in relation to sectoral policies with a particular emphasis upon landscapes and specifically to each and every individual infrastructure, as these constitute a substantial part of the organisation and planning of territories whilst at the same time allowing the social enjoyment of most of these landscapes.

This IX Workshop for the Implementation of the European Landscape Convention is the first to focus specifically on sectoral policies, earlier ones being aimed at general proposals and cross-sectoral policies such as landscape quality objectives, urban landscapes, rural heritage, forces for change, well-being, education, public participation, spatial planning and international co-operation.

When looking at the national and regional actions being developed according to the European Landscape Convention we can find many valuable examples of its application within sectoral policies: the Swiss requirements to include landscape within 17 federal policies, in line with the new international agreement, the French adaptation of agricultural (1999) and forestry (2001) planning, the new Italian proposals concerning heritage landscapes, the consideration of landscape when designing roads in the regional law of Andalusia (2001) and so on. But we need to recognise that, taken all together, these experiences are still dispersed and fragmentary. Some of the projects carried out by the Centre for Landscape and Territory Studies of Andalusia (Español, 2009; Cuello Gijón et al., 2009), plus the ideas and comments that might arise during this meeting, or those that already have done in previous meetings (2008 and 2010) or will arise in the future, will be invaluable in that they will bring together and formulate general criteria, bring together and contrast ideas, and extend and share necessary understanding for all of us involved in the development of the complex relationship that exists between landscape and infrastructure.

The inclusion of landscape in sectoral policies has always in the past been linked to the concept of landscape integration, a seminal idea that should be broadly developed and strictly adapted to the principles of sustainability and the protection of cultural heritage, recognised and mentioned repeatedly in the European Landscape Convention and the Guidelines for its implementation. All sectoral interventions focusing upon landscape, especially the establishment, rehabilitation or maintenance of any infrastructure, can and should incorporate the principles of landscape integration (Zoido, 2007). The Convention demands that nowadays we must go even further than this already classic, though never sufficiently debated, requirement.

### **Landscape and infrastructure**

At the moment the situation of infrastructures throughout Europe is very complex and dynamic. The complexity is due to European territorial diversity and the existing differences in resources and equipments; the dynamism derives from fast technological changes in transport and communications, environmental consequences, the dependence of the whole continent on energy and the growing demand for all kind of resources, especially water.

Apart from poorly equipped territories with a clear need for basic infrastructures, there are others which constantly increase their demand for energy and renew their equipments, thus creating enormous functional complexity. The decrease in fossil-energy resources has promoted the growth of renewable energies, but without any sound criteria as to their location or their impact on the landscape. Water resources are used in a completely uncontrolled and disorganised way (wastage, different prices for different users and so on). If, as has been correctly pointed out in *Paysage 2020*, “water is the sap of all our landscapes”, we cannot keep on using it in such an arbitrary fashion.

If we want to maintain or improve the quality of European landscapes it is essential to pay more specific attention to the infrastructures within them, as these explain their functionality, existing conflicts and future opportunities. Territorial transformations in Europe are linked nowadays to the evolving dynamics of infrastructure.

The word “infrastructure” includes a group of concepts that possess very different formal characteristics, evolving dynamics and impact on the

landscape. In order to understand territories as a system of relationships or to understand landscapes as a living framework and coherent ecological, functional and cultural matrix, the broad concept of infrastructure should be looked at in its entirety; but to carry out the protection, management and planning of the different elements present in the territory or the landscape, many of which are infrastructures, it is also necessary to establish their peculiarities and different repercussions. In conclusion, the relationship between landscape and infrastructure needs further attention and dedicated thought.

The Regional Government of Andalusia has expressed this point of view on two previous occasions: at the Internal Congress on Landscape and Infrastructures I and II, in Seville 2006 and in Granada 2008, during which, as now, it maintained the need for a reflective view of infrastructures as a whole and a specific stance on certain others, especially roads. As a consequence, different regulations, research, planning, management and concrete actions have been undertaken, which have developed into a firm, unified political will, a general attitude which has been expressed recently by the Andalusian regional President, Don José Antonio Griñán:

*When intervening in territories there are an especially relevant factor, the landscape. The Regional Government of Andalusia is developing a group of measures with the aim of defining the landscape as a central element that has to be taken into account in all the phases of public works, both in the planning of their infrastructure and project design and in their construction and management. Landscape therefore should be included as a cross-sectoral element in infrastructure policies. Infrastructures imply an alteration to the landscape and therefore better options and technologies must be used not only to reduce their impact but also to create positive effects on the environment through the conservation of landscape values and the recuperation of degraded landscapes. (Cauce N° 150-6, 2010).*

Fixing the landscape as a central element of public infrastructure intervention represents an important qualitative advance in the concept of integration mentioned before. It is not only necessary to adapt infrastructures to ecological, formal and functional characteristics of the environments in which they are situated, but also to integrate them as planned and healthy living areas. Previous generations already did this to a great extent by managing water wisely; this is how good engineering and architectural projects always

understood it in their construction of bridges, defensive city walls, sluice gates and a multitude of other such building works and constructions, nowadays remaining both useful and full of symbolism.

Modern infrastructures do not necessarily need to be gigantic, nor spaces of ugliness and stress that we have to put up with in our everyday life; they can and should be designed in harmony with nature, which human beings also form part of, so that every society may enjoy the territory it lives in.



# WORKSHOP 1 / ATELIER 1

## European networks and landscape

## Paysage et réseaux européens

### Chairs / Présidents

*Mrs Anita BERGENSTRÅHLE-LIND, Member of the Steering Committee for Cultural Heritage and Landscape (CDPATEP) of the Council of Europe and Deputy Head of Department for Sustainable Management, Swedish National Heritage Board*

*Mrs Margarita ORTEGA, Ministry of Environment, Agriculture and Rural and Marine Affairs, Representative of Spain for the Committee of Senior Officials of the Council of Europe Conference of Ministries responsible for Spatial/Regional Planning – CEMAT*

## **Infrastructure networks in the landscape**

**Mr Ignacio ESPAÑOL ECHANIZ**

*Professor in Landscape and Civil Engineering, Polytechnic University, Madrid, Spain*

### **Infrastructures as suppliers of society's demands**

Energy and transport infrastructures are the nervous system of the landscape. Although they lack strength of their own, these infrastructures support social and economic activities streaming their development in a specific direction. In doing so, they consume important collective resources. They also affect economic sectors differently and they do it following specific spatial and social patterns. They also have an important physical and aesthetic impact in the landscape.

Infrastructures are not neutral since they are actually devised to serve certain types of activities rather than others. Moreover, some environmental and community resources are consumed in their construction as well as in their maintenance. Following society's demands, planners and designers choose which type of infrastructures will better suit this or that development pattern and select which resources will be dedicated to their construction and maintenance. Therefore, infrastructures are not only strategic economic resources but also relevant cultural products since they are closely related to social attitudes and expectations. Infrastructures are the result of community demands and related collective resources and services.

Effectively, infrastructures are linked to a given socio-economic structure which, in turn, entrusts them with a certain specific role. A society can be described by the features of its infrastructures and the way they relate to social benefits and environmental resources. From an environmental point of view, infrastructures are just mechanisms which interfere on environmental processes and are specialised to provide certain specific services. Roads mould the ground to favour movement of cars along a certain linear axis making it hard to move across or along any other direction. Dams retain river flows to make water available at the cost of greatly diminishing its quality and its ecological functions. Ports curtail a stretch of coast, the harbour and keep the sea calm so that vessels can take refuge, partially altering seaside dynamics along the shoreline of the port.



Services provided are also specialised since each type of infrastructure favours some types of users. Motorways favour car owners who live along a corridor while railways benefit all citizens living around a railway station. Fishing ports and marinas each serve different economic and social groups

Main economic sectors demand specific collective services which are to be provided by specific transport and energy infrastructures. The role of community management and planning is to affect leading social demands by trying to provide services which satisfy all community demands and interests, not only those demanded by strategic economic sectors. A wide and long term view is thus expected from planning.

### **Infrastructures as landscape character features**

Yet infrastructures and socio-economics do not always belong to formal explicit models which planners had thoughtfully conceived in a classic fashion. More often public works, economic forces and social demands appear intermingled in a sort of spontaneous reality. They all take part in a complex network of interactive relationships which result from the inertia of socio-economic dynamics themselves. Besides, there is a strong association between the public works we find in a landscape and the social and economic trends behind (their development?). Thus it can be said that public infrastructures are main features of the landscape character; their shape, dimensions and complexity are the material signs of the social and economic dynamics they serve and support. To transform an old fishing port into a tourist marina is an action which shows the view a community has concerning its resources. The resulting landscape, a picturesque harbour lodging yachts and sport boats, reveals quite well the social and economic processes involved in a certain management policy for coastal natural resources.

History research illustrates this close relationship between public works and culture which reveals itself in the landscape. Cordoba still preserves two good examples of this in the landscape of the Guadalquivir river. The Roman bridge belongs to an extensive and sophisticated transport system of a global empire which needed to secure long distance communications across rivers. Roman public works were not only efficient but also symbolic; they portrayed the idea of a Roman way of life and played a main role in cultural propaganda. The view of this wide river landscape being crossed naturally and elegantly

by the strong stone structure built by the all-powerful empire evidenced the benefits of the *pax romana*.

An old water mill at Cordoba and its impressive water wheels from its Muslim period, create another expressive landscape. Industrious and keen Eastern management of water energy is here displayed at its best. The sophisticated water techniques which came together with Muslim culture into Spain created this river landscape. River and urban culture brought about by Muslims replaced the previous cattle grazing culture of Christians, providing a new economic diversity and technical progress.

Yet the influence of infrastructures on cultural attitudes goes further than the service they provide. Transport infrastructures do not only serve mobility and give access to places but, by using transport systems, build a sense of space and time in the users attitude. Modern society, by relying on efficient communication networks, has created the false idea that space is not a burden anymore. This idea is a double illusion, firstly, because to move along a distance is always a problem which has to be solved in some way or another (by, at least, energy consumption and human effort) and secondly, because “space”, far from being a burden, is a place which bears our basic cultural and natural resources, those which show up in the landscape and are needed to sustain life and society.

Energy infrastructures are not as visible as transport ones but they also condition the view a society has on itself. As energy consumption has increased during the last century, its production and transport infrastructures have become more and more hidden from everyday view. Nevertheless, they find their way to produce and take life-giving energy to all places where needed. Most urban infrastructures such as water pipes, energy lines, waste disposal and sewage hide from citizen sight and become invisible. They work discreetly in silence, under the paved ground, in the backyards of urban landscapes. However, nothing could work in towns without them. Current urban society is blind to the great amount and diversity of resources which are consumed for its maintenance, these shows in its urban landscapes. These are kept clean and lit, waste being regularly removed and energy resources being consumed far away from citizens’ view. The scenery where Western culture takes place is kept aseptic and static in appearance. Environmental awareness has to be promoted in terms of an abstract debate which refers to

distant natural pristine landscapes, far from everyday responsibilities which are involved in everyday life attitudes and behaviours.

The landscape management scheme of Santa María de Benquerencia in Toledo has included a walking tour where panels explain how urban infrastructure and services do their work. It is not an explanation on nature processes but a look at how natural resources such as water and energy are used by humans.

### **Types of roads and types of landscapes**

This view on the cultural role of infrastructures in landscape character can be taken on more recent realisations. In fact it can help us to review the features of current society by focussing on those infrastructures which belong to present landscapes and serve our demands.

Take, for instance, the motorway from Seville to Cadiz in Western Andalusia, planned and built at the beginning of the seventies during the last century, was one of the first high capacity roads in Spain. The outlay and design of the Seville Cadiz motorway portrays quite well the cultural features of that period. Lanes are wide and straight, ready to bear high traffic flows; the pavement is made of concrete and very few junctions connect to only main regional roads. The landscape is flat and extensive along most of the route, so it did not have many problems in assuming its relaxed linear outlay. Most of the time its platform is framed by two dense tree screens, standing up on each side, hiding landscapes behind them. This motorway belongs to that model of progress which favoured high economics and relied on unlimited resources. A society which travelled quick and detached from the landscape, transport run almost by air, alien to local places and communities and their demands. As in the Roman times, the Seville-Cadiz motorway was presented as a sign of progress. Much of that approach to progress (based originally on unlimited available resources) still remains in present social attitudes.

Since then high capacity roads have been built in Spain following different models and types but always aiming to serve high traffic flows as its main goal. Long distance dual carriageways, toll motorways, urban motorways and others have crossed the different landscapes in Spain imposing on its features.

Later, the high capacity model evolved towards a milder design of transport infrastructures which still largely following the original high capacity idea. The A-381 built at the end of the century by the Andalusian public agency

for infrastructures (GIASA) is a good example of the last generation of motorways. The aim of this motorway was to connect the industrial area of Algeciras in the South, next to Gibraltar, to the main urban areas of Cadiz, Xerez and Seville. Its outlay is not as designed in itself and detached from the landscape as those first motorways. Although this main road goes across an exclusive Cork Tree Nature Park, borders two main water reservoirs and involved massive earthworks in some sectors, its design has been developed carefully to adjust to the natural relief. It also includes extensive and sophisticated environmental integration works of different types. They include environmental treatment of slopes and embankments, *ecobridges* for animals' safe crossing, cattle path restoration, green paths and nature exhibition centres. After some years, the effects of environmental recovery work are apparent. The resulting landscape is very expressive in this case as well. Dual demands of current society, high speed and environmental preservation, both show clearly in the shape of this motorway: contradictions appear also mixed up in the features of this interesting landscape.

Motorways catch the attention of the media because they enjoy the size and much of the aesthetics of a monument. However, other roads, modest and inconspicuous play a positive role in the landscape. Local roads provide an important community service, especially those which serve inhabitants of newly extended urban areas. The urban sprawl phenomena have changed everyday landscapes of Western Europe, transport has become an essential element of everyday life and thus local roads have become the streets of these new urban territories. These long distance streets (or short roads) share the features both of urban avenues and conventional roads. They take part in the new urban landscapes of today. Some road authorities, mostly local authority boards (such as *Deputation de Barcelona*) have taken special interest in developing criteria for this special type of multifunctional infrastructure.

These local roads are to provide a special service to local mobility. This mobility is community based and mainly aimed at reaching large transport infrastructures for long distance movements which are necessary for a metropolitan extended system. The design and planning of these roads must assure good quality of life standards for dwellers at road margins. Traffic calming is to play a main role here together with diversifying modes of

transport. Collective and other soft transport means such as bicycle and pedestrian lanes are to be included in the design of this new type of roads. The features of this new road infrastructure bring a renewed shape to current landscapes showing again the signs of our way of life.

Another good example of a diversifying road design is the bicycle lanes programmed for Gipuzkoa (Basque Country). This plan is being implemented by a Basque local authority board (*Deputation Foral de Gipuzkoa*) which aims at providing safe and exclusive lanes for cycling as an alternative to conventional traffic. It goes further than just cycling for leisure or tourism. Lanes have been built from town to town to promote medium distance journeys on bicycles. Roads sections are adapted to include these lanes which run along conventional interurban roads. These new ways of transit bring about a new relationship with the landscape. In fact, one of the main goals of this programme is to renew derelict industrial landscapes by encouraging people to access them, these places being previously ignored by conventional traffic routes.

Yet transport infrastructure types are as diverse as the possible different relationships society might have with landscape. The Island Council of Tenerife (*Cabildo de Tenerife*) manages a road scheme by which road design is always sensitive to context and road works incorporate materials, features and elements borrowed from nearby landscapes. Its programme of viewpoints is both sensitive and functional. Scattered all around the island landscapes, one can find viewpoints in strategic locations where, once one parks the car; one can contemplate impressive sights and learn from the information displayed on panels at each location.

One final example of multifunctional road design is the road to the lighthouse of Cullera, managed by Valencia's local board (*Deputation de Valencia*). This road which runs along a popular seaside stretch has included a pedestrian network and some viewpoint areas while preserving endemic flora by preventing access to the areas where it flourishes. Traffic service is provided in a low profile encouraging low speed and greater attention of car drivers. The road is designed for low speed traffic without jeopardising safety and driving comfort. The eventual design, which is essentially multifunctional, is the result of applying common sense to situations and solutions rather than following any complex theoretical approach.

### **Infrastructure policies and landscape quality**

Transport infrastructures do play a main role in sustaining a certain type of landscape. High capacity roads tend to favour landscapes, they serve extended urban areas and long distance movements and they involve a great amount of resources and population. On the other hand, multifunctional roads such as local roads and others serve several goals and tend to impose social and environmental needs on traffic capacity and speed. Landscape assessment policies must therefore assume transport and energy goals and their infrastructures accordingly.

## **Logiques naturelles, artificielles, sensibles : autoroutes, voies ferrées, aéroports, canaux Des « Hypothèses de Regard »**

**Mr Bernard LASSUS**

*Architecte paysagiste, France<sup>1</sup>*

Je ne peux m'empêcher d'aborder un des thèmes de recherche qui m'anime depuis des années : celui de l'importance de l'apparence et du choix de celle-ci.

Ne perdons pas nos identités comme deux phasmes qui ont choisi non pas d'être eux-mêmes mais d'être arbre ou feuille.

Quels choix faisons-nous ?

Enfant, j'habitais Clermont-Ferrand au pied de la Chaîne des Puys mais ceux-ci, quel n'était pas mon chagrin, étaient éteints depuis très longtemps, demain mes petits enfants seront fiers de l'Etna, lui, un volcan en activité.

Avec des infrastructures qui se multiplient en réseaux, se déploient de nouveaux paysages.

Nous ne soupçonnons pas encore avec clarté que ces nouveaux réseaux vont modifier profondément notre culture paysagère et nous donner des images complètement inédites de l'Europe.

L'autoroute, le train à grande vitesse ont plus à voir avec un belvédère, c'est-à-dire le lieu d'un voir élargi, mais un belvédère mobile par les vitesses qu'ils permettent. Ils obligent à une perception spécifique où les objets perçus développent un ballet de mouvements contradictoires. C'est de ces belvédères du long regard que se développe une nouvelle échelle de nos territoires.

D'où l'importance de ce que l'on peut voir des vitres des véhicules qui nous transportent en des lieux prévus. Ainsi du 1 % paysage du Ministère pour aider les collectivités locales à montrer dans le champ visuel des voyageurs, ce qu'ils veulent mettre en évidence de leur terroir.

Donc une politique de « l'arrêt » confirmée par un aménagement des aires de repos et de services, celles-ci ne sont plus privilégiées au service des

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1. *A partir d'une double activité : de Paysagiste Conseil auprès de la Direction des Routes du Ministère chargé des infrastructures et de paysagiste libéral aménageant les paysages des réalisations menées par des sociétés privées concernant autoroutes et lignes de T.G.V.*

véhicules mais deviennent alors des « lieux intermédiaires », des jardins des pays à découvrir.

Les objectifs d'aménagement paysager sont contradictoires puisqu'il s'agit d'une ouverture aux pays, du traitement de la voie et de son emprise, et de la protection des riverains.

Car il importe de transformer la « blessure » qu'apporte l'arrivée de l'autoroute afin qu'elle ne « traverse » pas le pays – c'est douloureux – mais y « passe ». Pour cela, les terrassements sont très importants et il convient que « l'artificiel » qu'implique le processus technique redevienne le plus possible « naturel ».

Les liaisons au contexte des remblais et déblais sont à traiter à partir d'emprises suffisamment importantes pour permettre d'établir des continuités visuelles avec le relief local, en reprenant les courbes de niveaux. L'adoucissement des mouvements de sol concerne évidemment l'ensemble des ouvrages d'art, les ponts, les bassins...

Si la végétation permet de répondre aux demandes justifiées des riverains pour lesquels il faut constituer un nouveau paysage, les plantations servent aussi à la sécurité routière, que ce soit pour limiter l'endormissement des conducteurs ou faciliter la lisibilité du parcours.

Il nous faut réinventer et inventer nos nouveaux paysages.



## **Landscape planning as an information basis for environmental impact assessment for pipelines in the Baikal Region**

**Mr Adrian HOPPENSTEAD**

*Professor TU Berlin, Member of the European Federation of Landscape Architects (EFLA)*

### **Landscape planning in the Baikal Region**

In 1992 the Federal Republic of Germany and the Russian Federation entered into intergovernmental co-operation agreement in the field of environmental conservation and planning. In that context, it was suggested that the German environmental tool Landscape Planning be adapted to the conditions in the Russian Federation.

Landscape planning is a cross-disciplinary tool, via the involvement and conciliation process, agencies, policy makers and the public at different levels. Landscape planning identifies deficiencies in nature and landscape management and guides the way to further improvements. It can be used to advantage as a reliable tool for deciding between competing policies and as a regulatory vehicle for land use conflicts. As a communication tool, landscape planning can promote the process of democratisation and, hence, of social, ecological and economic stabilisation, with the involvement of local residents in the planning process being a high priority issue.

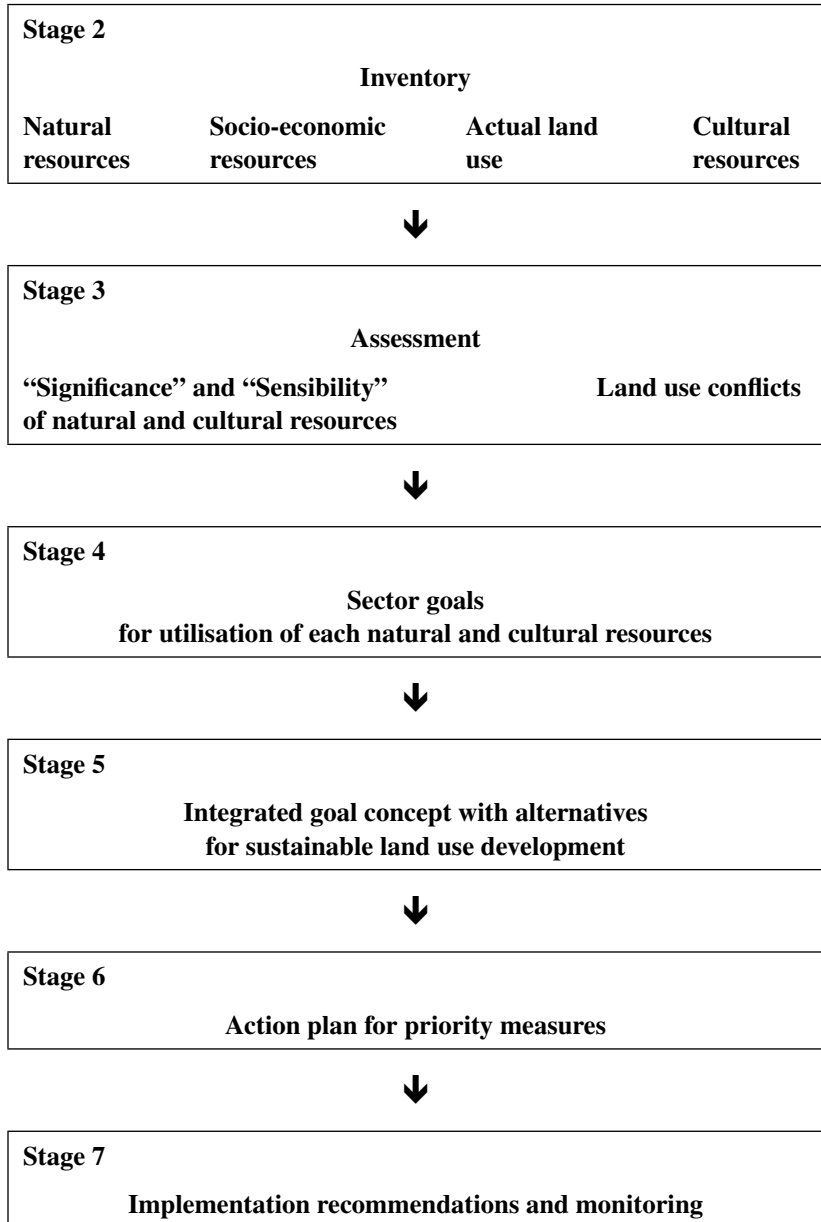
### **The stages of the landscape planning process are:**

<p><b>Stage 1</b></p>
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<p><b>Scoping</b></p>
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<p>Inquiry of all concerns of the participants of their interests and contributions to the planning process</p>
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The methodical approach was tested in various areas in the Baikal Region. For the first time in Russia, the framework for ecological zoning of the Baikal Region was developed at a scale of 1: 1 000 000, covering an area of over 350 000 sq.km. It was the first-ever implementation of the Law in the Russian Federation “On the protection of Lake Baikal”. Landscape master plans were generated for a number of municipal districts (scale 1:25 000) and large scale plans (1: 10 000) were developed for several settlements.

The Landscape planning process as a multifunctional tool offers information for:

- implementation of the aims and principles according to the Federal Nature Conservation Act and the Federal Environmental Law;
- sectoral planning of nature conservation to preserve and develop protected areas;
- technical contribution concerning environment and nature to different levels of the overall land planning (territorial planning, town planning, master plan);
- (ecological/technical) contribution for the sectoral planning (forest, agricultural, transport planning);
- implementation of exigencies/requirements arising from European regulations and federal laws as for example:
  - environmental assessment for projects, programmes and plans (EIA/SEA);
  - water framework directive;
  - fauna, flora habitat directive;
  - act of public participation;
  - and last but not least: the European Landscape Convention.

In the Russian Federation landscape planning information systems have been used as a fundamental information basis for the “ecological expertise” and “ovos” for example for infrastructure projects as pipelines in the Baikal Region in Siberia.

## **Aspects paysagers de la production d'énergie éolienne**

### **M. Andreas STALDER**

*Vice-président du Comité directeur du patrimoine culturel et du paysage (CDPATEP), représentant pour la Suisse de la Convention européenne du paysage*

#### **Le contexte**

La thématique du changement climatique a déclenché une large discussion sur l'importance de la production d'énergie renouvelable. Mais ce débat sans aucun doute très important risque de rejeter en arrière-plan les conflits potentiels avec d'autres intérêts publics et d'autres objectifs environnementaux. Pour ce qui est de l'énergie éolienne, il s'agit notamment du domaine du paysage. Tous les pays ne sont pas touchés de même manière par cette thématique. La présente contribution essaie donc de l'exposer du point de vue d'un petit pays densément peuplé, avec donc de nombreux conflits pour l'espace, et qui compte en même temps beaucoup de valeurs naturelles, culturelles et paysagères à défendre.

Il y a d'abord à considérer les divers objectifs politiques, parfois contradictoires, que ce soit sur le niveau du droit international, ou sur celui de la législation nationale. Dans le domaine du paysage et de la biodiversité, le premier niveau peut être illustré (sans être exhaustif) par la Convention sur la diversité biologique (Convention de Rio), les Conventions de Berne et de Ramsar, la Convention de Florence ou les sites patrimoine mondial de l'UNESCO. Les législations nationales les mettent en œuvre et les concrétisent par des instruments spécifiques, selon les conditions cadres juridiques de chaque Etat. Le même constat prévaut pour la politique du climat et peut être illustré par l'approche suisse : en Suisse, la législation a concrétisé les engagements découlant de la Convention des Nations Unies sur les changements climatiques et du Protocole de Kyoto en formulant l'objectif d'augmenter de 20 % la production d'énergie renouvelable, dont 10 % provenant d'énergie éolienne. Dans ce but, elle a en outre institué un instrument incitatif et novateur : la Rétribution à prix coûtant du courant injecté (RPC).

#### **Le défi**

Le nouvel instrument Rétribution à prix coûtant du courant injecté RPC a causé une petite révolution, notamment dans le domaine de l'énergie éolienne.

La Suisse n'avait jusqu'ici jamais été considérée comme un pays éolien de premier rang, en particulier pour des raisons économiques (relation coût production potentielle) ; elle compte moins d'une douzaine d'installations en fonction. Mais l'introduction de l'instrument RPC a causé une croissance énorme des projets : le nombre de projets actuellement au bénéfice d'une décision formelle positive RPC dépasse 400, et 160 autres projets sont encore « en salle d'attente », le crédit RPC approuvé par le parlement étant déjà épuisé.

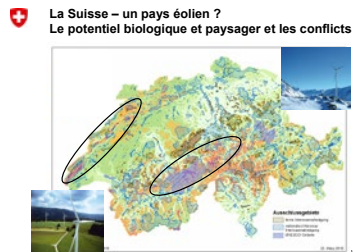
Ce fait cause bien des maux de tête aux responsables du paysage et de la biodiversité :

La carte n° 1 montre le potentiel éolien à 100 m au dessus du sol. Le seuil pour bénéficier de l'instrument incitatif RPC a été fixé à une vitesse de vent de 5,5 m/sec, figurée ici en jaune foncé. Il s'agit notamment de la zone des crêtes du Jura et des régions alpines situées en grande altitude. Mais il s'agit en même temps des zones où le paysage constitue le capital de base indispensable au tourisme suisse.

La carte n° 2 montre les diverses catégories de périmètres protégés ou de zones prioritaires pour le maintien de la diversité biologique ou paysagère. La comparaison ou superposition des deux cartes permet d'identifier et d'illustrer les zones où le potentiel de conflit est le plus grand.



Carte n° 1



Carte n° 2

Pour bien comprendre le défi que représente la recherche de solutions à ces conflits, il faut prendre en compte la situation géographique et socio-culturelle

particulière à la Suisse. La structure politique et administrative fédéraliste de petite échelle se traduit par une grande diversité juridique et institutionnelle.

La Constitution de la Confédération suisse organise les compétences entre la Confédération et les 26 cantons autonomes par une palette législative extraordinairement différenciée :

- la protection de la nature et du paysage est du ressort des cantons avec quelques exceptions expressément mentionnées en faveur de la Confédération (art. 78 Cst.) ;
- des principes similaires régissent l'aménagement du territoire, où la compétence de la Confédération se limite à une législation cadre (art. 76 Cst.) ;
- la politique de l'énergie est de la compétence de la Confédération ; par contre, l'octroi des concessions et des autorisations de construction des installations pour la production d'énergie est du ressort des Cantons.

### **Première approche à la solution des conflits : « les Recommandations pour la planification des installations éoliennes »**

Dans cette situation compliquée et qui ne laisse que très peu de compétences contraignantes à la Confédération, les offices fédéraux de l'énergie, de l'environnement et du développement territorial ont élaboré et mis à disposition des cantons et des acteurs des « Recommandations pour la planification des installations éoliennes » (téléchargeable en allemand et en français) :



[http://www.bfe.admin.ch/themen/00490/00500/index.html?lang=fr&dossier\\_id=04426](http://www.bfe.admin.ch/themen/00490/00500/index.html?lang=fr&dossier_id=04426)

Les objectifs de ce document sont :

- la coordination de la mise en œuvre cantonale des instruments de l'aménagement du territoire relatifs à la planification des installations éoliennes ;
- le développement de critères largement acceptés pour l'évaluation des sites éoliens ;
- l'évaluation de la marge de manœuvre pour la pesée des intérêts en cas de conflits ;
- le respect des droits juridiques de la population intéressée ou directement touchée par un projet lors des procédures d'aménagement du territoire et d'octroi de l'autorisation de construire, y compris la procédure d'étude d'impact sur l'environnement (EIE) ;
- d'assurer aux investisseurs l'égalité de traitement, la sécurité du droit et la sécurité des plans à travers les différents cantons ;
- d'augmenter l'acceptation publique des installations et des procédures y relatives.

Cet outil peut être résumé en cinq « recommandations principales » :

1. identifier les sites les moins conflictuels (éviter des sites de grande valeur) ;
2. identifier les sites les plus efficaces (potentiel, production) ;
3. concentrer les installations éoliennes ;
4. donner la priorité des sites déjà desservis (accès routier, électricité) ;
5. donner la priorité aux sites présentant le meilleur potentiel d'optimisation en cas de conflits avec d'autres intérêts publics.

### **Deuxième approche à la solution des conflits : l'étude paysagère**

Nos paysages sont en évolution et en transformation permanentes. Les éoliennes, expression visible du besoin d'énergie renouvelable, constituent un élément nouveau dans notre catalogue des composantes paysagères. Tous les paysages ne peuvent toutefois pas être transformés, certains le supporteront

mieux que d'autres. Il faut donc fixer des priorités et opérer des choix. Les paysages prioritaires et les espaces aux qualités paysagères particulières reconnues doivent être préservés.

A cette fin, il est nécessaire de développer des principes et des critères qui soient transparents, compréhensibles et largement acceptés pour le travail de terrain. Les conflits avec la biodiversité, qu'ils soient directs – notamment avec l'avifaune et les chauves-souris ou indirects avec d'autres espèces comme celles sensible à des dérangements humains – doivent être pris en compte. Ils ne sont cependant pas discutés dans le présent contexte.

*Les paysages emblématiques, uniques, typiques ou protégés*

L'identification et l'évaluation de tels paysages constituent d'une part un travail d'expert ; d'autre part ce travail met en jeu les émotions des populations locales, leur besoin d'identification et doit tenir compte des aspects économiques, par exemple ceux du tourisme, ou d'autres « prestations du paysage ». Ces paysages sont à préserver intégralement et l'implantation d'éolienne y est à exclure.



*Des paysages emblématiques, typiques ou protégés*

*Des sites potentiels pour l'implantation d'installations éoliennes*

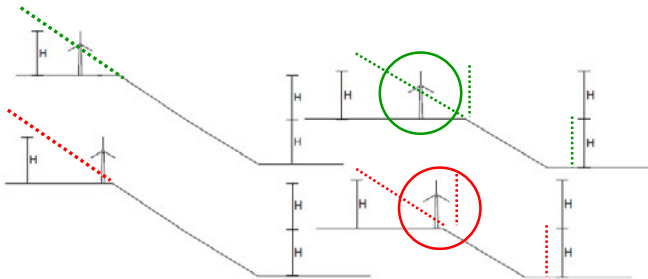
Chaque paysage nécessite une lecture et une interprétation paysagère dans son contexte spatial large. Des éléments comme la topographie, les dimensions ou le rythme du paysage permettent de localiser plus précisément l'emplacement des installations et de définir leur dimensionnement.





*Le rythme et les dimensions du paysage*

Le schéma ci-dessous illustre de manière non exhaustive de bons exemples (en vert) et de mauvais exemples (en rouge) d'emplacement et de dimensionnement. Ces aspects consistent toujours à mettre en relation les éléments techniques et les éléments paysagers.



*Les échelles et les proportions paysagères*

### *L'étude paysagère et éolienne*

L'étude paysagère et éolienne est l'instrument de la lecture et de l'interprétation. Ses facteurs clefs – les bases de la perception paysagère – sont :

- l'échelle paysagère, les proportions et la taille des unités paysagères ;
- le rythme du paysage (la complexité des phrases paysagères) ;

- l'uniformité ou l'hétérogénéité des unités paysagères ;
- les interactions entre les zones de protection ou les espaces emblématiques et leurs alentours ;
- le fonctionnement d'un paysage, son histoire naturelle ainsi que culturelle visible ;
- l'intégration des visions de la population et l'analyse du paysage à hauteur d'homme.

L'étude paysagère lie les bases et les résultats de la perception paysagère avec les aspects techniques, notamment les éléments techniques et la visibilité de l'installation. Théoriquement, la visibilité peut être décrite par une formule ; mais l'application d'une formule ne constitue qu'une approche schématique. Il faut rester pragmatique et considérer l'ensemble des paramètres, comme le relief, la végétation, les conditions météorologiques moyennes, etc. : par exemple il faut savoir que les effets d'optique liés au relief diminuent nettement à partir de 5 km de distance, et aussi que le mouvement des pales des éoliennes accentuent leur visibilité.

### *Conclusion*

Avec les « Recommandations pour la planification des installations éoliennes » et l'étude paysagère, qui sont des instruments :

- volontaires ;
- respectant les compétences des divers niveaux étatiques et des autorités responsables ;
- de mise en œuvre pratique ;
- établis par concertation entre tous les partenaires impliqués, et donc largement acceptés.

on espère arriver à des projets qui soient :

- respectueux de l'environnement, y compris du paysage, ainsi que d'autres intérêts publics ;
- moins conflictuels ;
- réalistes et réalisables.

J'aimerais terminer avec un appel:

**Contribuons à ce que les énergies renouvelables ne perdent pas  
leur innocence écologique et paysagère !**



## **Networks and landscape in planning**

**Mr Ignacio POZUELO MEÑO**

*Department of Public Works and Housing, Junta of Andalusia*

Thanks to all the assistants and especially to the representatives of European organisations and entities which give us their backing and to the representatives of the Spanish Government, the Cordoba Local Council and County council.

I would also particularly like to thank the Council of Europe for accepting that our Third International Congress on Landscape and Infrastructure should coincide with the European Landscape Convention Workshops. And my personal thanks to Mrs Maguelonne Déjeant-Pons for the intensive work she has carried out together with the Junta de Andalusia so that we can be here today.

The theme of the Congress and the Workshop – landscape and infrastructure – is extremely important because it deals with two subjects which do not always sit comfortably with one another:

*Landscape:* after a long period of debate and conceptual clarification, landscape must now become part of concrete policies and actions, in this particular case transport infrastructure policies.

*Infrastructure:* after a period in which account has finally been taken of the need for a responsible approach to the environment, we now expect something more from infrastructure, i.e. that it should fit into the landscape in a more sensitive way.

In this connection I would like to highlight certain aspects of the contribution that we have just made in Andalusia to achieving closer harmony between landscape and infrastructure.

As I already said, this is the third international congress (Seville 2006, Granada 2008 and Cordoba 2010) we are holding on this subject and we already have a framework for reflection and debate which has been providing us with ideas that are increasingly applicable to our policies.

Over the years, the Andalusian Government has adopted important laws and regulations on landscape and infrastructure: the Andalusian plan for spatial development, the Infrastructure plan for transport sustainability in Andalusia,

the roads law, and also the establishment of the Centre for Landscape and Territorial Studies, etc.

I would also like to point out that we are currently preparing the Andalusian landscape strategy, a horizontal instrument in which the different sectoral departments will incorporate the landscape perspective into their policies. There will be a special presentation of this strategy.

This work has led to two initiatives, instigated by the Junta de Andalusia and carried out by the Centre for Landscape and Territorial Studies, which I believe are particularly worth mentioning:

- the preparation of a handbook entitled “La carretera en el paisaje, criterios para su planificación, trasado y proyecto” (roads in the landscape, criteria for planning, layout and design). This publication caught the Council of Europe’s attention and we have therefore co-edited an English version so that the Andalusian experience can be disseminated in other countries;
- the preparation of the “Carreteras Paisajísticas de Andalucía” (catalogue of scenic routes in Andalusia), a detailed analysis of what can be done to bring our roads into closer harmony with the landscape, which serves as a basis for the implementation of a “Plan de Carreteras Paisajísticas” (scenic routes plan).

In concluding, I would like to underline the idea that I commented on earlier and which I consider to be of enormous importance: landscape policies must be put into practice through a sectoral policy which has a particularly significant impact, for example infrastructure policy.

The European Landscape Convention is therefore extremely useful to us in establishing the fundamental concepts on which the relationship between landscape and infrastructure is based.

And I would also like to underline some points arising from the Convention, which we have incorporated into our infrastructure policy:

- *firstly*, the need to understand that all territories are landscapes and that consequently we must take action with regard to not only roads in areas of great natural beauty or scenic interest but all roads in all areas, and also give special attention to the need to regenerate damaged landscapes, for example on the outskirts of towns and city centres, and to take a

different approach in each territory depending on its specific features: areas of flat, open country, mountainous areas and coastal areas;

- *secondly*, the need to conduct a landscape planning policy using spatial planning and town planning instruments. Indeed it is necessary to adopt a specific approach to landscape planning through infrastructure: identification of scenic routes, view sheds visible from the infrastructure, criteria for infrastructure design and its integration into the landscape, identification of landscape regeneration areas, etc.

We have therefore developed a series of landscape measures directly linked to the planning, construction and management stages of infrastructure:

- the incorporation of landscape variables in the study stage and in the selection of alternative lay-outs;
- the promotion of measures for integrating infrastructure into the landscape should not merely conceal the infrastructure in question but ensure that it is an added value in terms of landscape;
- the development of methods for implementing projects to restore infrastructure so that it blends in with the landscape;
- the protection and enhancement of (not only historical but also contemporary) infrastructure that has a heritage value and is a significant aspect of the landscape. The Roman Bridge over the Guadalquivir in Cordoba is one of the best examples of historical infrastructure.

And, *thirdly*, not only landscape policies, public works policies, which are closely linked to transport infrastructure, are the main ways of offering citizens access to the landscape.

This work includes measures such as the establishment of viewpoints, awareness-raising activities and the establishment of good practices and training (we are currently supporting the introduction of two masters degrees in landscape in Andalusia at the Universities of Granada and Seville). We likewise support the Centre for Landscape and Territorial Studies as a fundamental instrument for public works policies.

However, in addition to all these questions, I would also like to refer to a number of considerations which will guide our future action in the sphere of landscape and infrastructure.

By way of example, I would like to mention one of the most important road infrastructures currently being constructed by the Government of Andalusia: the Olivar motorway.

This is a long stretch of motorway forming part of the roads linking Andalusia with other parts of Spain, but which was essentially designed as a project to improve the geographical and economic integration of the interior of Andalusia, i.e. between the provinces of Seville, Cordoba and Jaen.

I like to describe this infrastructure not as a road but as a project to enhance the equilibrium and development of the region, the productive activities and the community in this part of Andalusia, which is characterised by an abundance of medium-sized towns with an enormous potential for endogenous development.

We therefore intend to establish an approach which, together with the previously mentioned aspects, takes specific account of the landscape surrounding the Olivar motorway.

It should be a groundbreaking landscape project. In addition to the analysis of each of the projects into which the construction of this sort of infrastructure can be divided, it is necessary to take a comprehensive and integrated approach based on the interpretation of the different landscapes through which the road runs. To give but a few examples, this includes the poetical landscapes of Antonio Machado in the Guadalquivir and Spanish cultural sites which are the subject of a special archaeological excavation and study and which will eventually be integrated as amenities for public use and enjoyment, and also protected areas of natural beauty or of major ecological value, etc.

I would also like to mention other points which indicate new avenues of work.

The innovative design of infrastructure in the 21st century throws up numerous possibilities which will modernise our infrastructure by making it more “intelligent” and by incorporating new building and management technologies. An important role will be played by communication technologies which will be used to facilitate interaction between roads and vehicles, thereby improving safety.

I believe that here too we should, begin to think about how to incorporate landscape into new communication technology developments so that infrastructure and transport integrate the landscape as a source of information

and enjoyment for travellers. You will appreciate that in a region like Andalusia, with a tourist industry of prime importance, entailing thousands of journeys, the landscape can be an important factor in determining the information that is to be provided by new communication technologies software: satellite navigation, aids for organising itineraries, road signposting, landscape interpretation material...



## **Through a new landscape strategy in Andalusia in the context of co-operation on landscape of European local and regional authorities**

**Mr Andreas HILDENBRANDT SCHEID**

*Regional Department of Public Works and Housing of the Junta  
of Andalusia*

**Mr Riccardo PRIORE**

*Director of the European Network of Local and Regional Authorities  
RECEP-ENELC*

### **Introduction**

Andalusia is a European region with a high commitment to landscape and the European Landscape Convention. Since the constitution in 1982 of the *Comunidad Autónoma* of Andalusia, the creation of the political autonomous region of Andalusia (self-government and also an own Parliament with law making capacity), the Andalusian Government has integrated landscape in its public policies related to environmental protection, agriculture and rural development, infrastructures, heritage protection and, especially, spatial planning, which has a crucial role.

Highlights of this continuous effort are, for example: 1) the consideration of landscape in the Management Plans for Andalusian Natural Parks, 2) the publication in 2005 of the Andalusian Map of Landscapes which offers a periodical monitoring and evaluation of landscape indicators for different categories and types of landscapes, 3) several agro-environmental programmes (for instance, the areas of *dehesas* of Sierra Morena, a unique, regional specific cultural landscape of Europe acknowledged by the European Union Environmental Agency in its Report "Dobris Assessment" and since 2002 Reserve of Biosphere (Programme MAB, UNESCO), 4) the approval in 2001 of the Andalusian Road Law, which is in Europe the road law with most specific references to landscape, 5) the creation in 2005 of the Laboratory for Cultural Landscape (2005) by the Andalusian Agency for Historic Heritage (IAPH), 6) the creation in 2005 of the Centre for Landscape and Territorial Studies (2005), which carries out research and training related to landscape and also gives for public policies of Andalusian Government technical and scientific advice regarding landscape, and 7) the Andalusian plan for spatial

development (*Plan de Ordenación del Territorio en Andalucía / POTA*) approved in 2006, which pays high attention to landscape with specific landscape related guidelines for urban planning and spatial development plans at the subregional level and also for sectorial policies in the field of agriculture, rural development and infrastructures.

Andalusia's commitment with the landscape was and is high at the European level, concretely; by undertaking many initiatives related to cooperation on landscape of European local and regional authorities.

In this context it should be recalled, that Andalusia is one of the “founding fathers” of the European Landscape Convention, having played an active role in the formulation process of the Convention and therefore our region has a special interest and commitment to contribute also to the effective implementation of the Convention. The Charter on Mediterranean Landscape signed in 1992 in Seville by the presidents of Andalusia, Tuscany and Languedoc Roussillon was one of the starting points of the idea to elaborate the Convention. This Charter was an important impulse and reference for the Congress of Local and Regional Authorities of the Council of Europe (Resolution 1994/256) to begin the formulation process of the Convention. In this process during the decade of the 90's Andalusia was involved through its Department for spatial planning, participating in several meetings of the working group of the Congress for the Convention, having been approved in the meeting carried out in Seville in 1996 the political (non juridical version) of the text of the Convention. On the other hand, Andalusia has been and is a leading partner of cooperation projects among European regions and local authorities centred on landscape issues in the framework of territorial cooperation programmes financed by the EU, for example the projects Pays.doc and Paysmed.urban, (for more information see point five of this text). Finally, it should be highlighted, that Andalusia is since 2006, the founding member of RECEP-ENELC (*European Network of Local and Regional Authorities for the Implementation of the European Landscape Convention*). Our region plays an increasingly more active role in this network, for example, since 2009 Andalusia is the hosting region of the Technical Co-ordination Board (TCB), one of the organs of RECEP-ENELC, located in Seville.

But the clearest example of Andalusia's high commitment with the landscape issue and the Convention is the decision to start the formulation of the landscape

strategy for Andalusia. This strategy is foreseen in the coordinated landscape programme of the Andalusian plan for spatial development with the aim to implement in Andalusia the Convention, an international treaty which entered into force in Spain on 1 March 2008, by bringing together all departments for a joint and coordinated action inspired by a shared and integrated approach (the European Landscape Convention-paradigm) with competences for policies related to landscape protection, management and planning.

### **Reasons and objectives of the landscape strategy for Andalusia**

Other Spanish regions (Catalonia, Galicia and Valencia) have approved regional landscape laws, giving landscape matters the highest juridical acknowledgement, but with the risk that legal regulations perhaps at the end, will not be accomplished in reality. The landscape strategy for Andalusia undertakes a new and different course in Spain: the course of governance. We consider, that at first it is necessary to generate a broad agreement, among the departments of the Andalusian Government and also among the Andalusian Government and other public administrations and stakeholders, for the approval of an informal (non juridical) instrument of governance (a strategy, with a similar character to the European Spatial Development Strategy which represents a political, self-binding commitment): Only if this strategy works well in the practice, and if it is necessary, the Andalusian Government will consider the possibility of a future regional landscape law.

Besides the requirements of the Andalusian plan for spatial development for the strategy, the first reason to start the strategy is the consciousness that the richness and diversity of Andalusian landscapes is an important territorial capital for the sustainable development and the competitiveness of Andalusia. In this sense the strategy also means a contribution to sustainable development, because the landscape is not only a valuable natural/cultural heritage and an important factor of identity and quality of life, but it can also contribute to job creation. It is therefore a resource for economic development. In fact, the quality of the landscape is a key resource to the development of tourism and the location of businesses (enterprises, firms) in a given area, thus improving the sustainability and competitiveness of different areas and cities.

The second reason for creating the strategy is the fact that since 1982 the landscape policies of the Andalusian Government have achieved a good landscape quality in areas protected for their natural or cultural values, but

out of these areas everyday landscapes (urban fringes, urban access roads, countryside, etc.) are under pressure and suffer a continuous degradation. Therefore the landscape strategy will put into focus less discussed aspects such as the management of urban borders, visual pollution along roads or degradation of rural landscapes.

The third reason for the strategy is the fact that we have to better tackle the challenges for landscape planning and management related to:

1. Reduction of impacts on landscape of renewable energy infrastructures (in Spain, Andalusia is the leader in solar energy);
2. Integration into the landscape of areas for new emerging economic activities (areas for logistics, research and development, innovation, enterprise zones, business parks, etc.);
3. The improvement of landscape quality in new housing areas in urban peripheries;
4. The impacts of climate change on landscape.

The fourth reason for the strategy is the lack of a shared vision on landscape (also a different understanding of this concept) in the landscape policies of the departments of the Andalusian Government, as in this moment there exists a very fragmented sectorial approach with isolated actions and, in most of the cases, without the necessary level of coordination and even in some cases a lack of continuity of the actions.

The first main objective of the strategy is to achieve “action by all”, involving into the strategy not only classic policies which are usually in the “first frontline” in the attention to landscape (environment, urban and spatial planning, cultural heritage), but also all the sectorial policies whose actions have relevant direct impacts on landscape: agriculture, transport, energy and telecommunication infrastructures, areas for the industrial development, innovation, research and development and also public policies which use landscape as an resource for its activities (tourism, rural development, public health). Also the strategy will consider the crucial role of education at all levels in order to achieve awareness rising and facilitation for landscape matters. The second main objective of the strategy consists on directing landscape actions of the Andalusian Regional Government to a shared paradigm: the European Landscape

Convention-paradigm. That means, action for all landscapes (urban, periurban, rural, ordinary, despoiled and exceptional), to act along three main lines of action (protection, management and planning of landscapes) and the definition of landscape quality objectives by an active participation and involvement of the public.

With the orientation of the landscape action of the Andalusian Government towards these two main objectives it is expected that the strategy will provide an integrated and shared action for landscape of all the departments and agencies of the Andalusian Government which will produce important advantages: more coordination, more coherence, more complementarities and the generation of synergies with the consequence of a more effective global action for landscape of the Andalusian Government.

### **Action fields of the strategy**

There will be two action fields of the strategy: the integration of landscape in public policies and transversal actions.

The integration of landscape in public policies means the consideration of the following policies:

- urbanism, spatial planning, urbanism, housing and architecture;
- environment and water;
- infrastructures and public works for mobility;
- cultural heritage;
- agriculture and rural development;
- tourism, trade and sports;
- production activities (industry, mining, etc.) research, technology and innovation;
- energy infrastructures;
- telecommunication infrastructures;
- education;
- health.

The transversal areas include the following activities:

*(a) Fostering of landscape (by financial aids or other instruments)*

- research/prospective;
- facilitation and training (the Strategy considers that the Andalusian Institute for Public Administration could play an important role);
- awareness-raising and education (for instance, the awareness-raising activities of Seville’s Alamillo Park could be extended to other open spaces of Andalusian metropolitan areas);
- incentives for good practices (for example; the creation of an Andalusian landscape award);
- dissemination of the values of Andalusian landscapes;
- capitalisation of results and knowledge of projects co-financed by the European Union.

*(b) Interdepartmental programmes (common actions started by different departments)*

Programmes of this type are foreseen in the coordinated landscape programme of the Andalusian plan for spatial development, and the strategy will keep attention on its effective implementation:

- coordinated programme for the protection and enhancement of rural landscapes;
- coordinated programme for the restoration and enhancement of the Guadalquivir Valley (this programme has already started);
- creation of the Andalusian Network of Landscape Observation Points.

In the framework of the strategy other new coordinated programmes will be started. The working group for the strategy (see point four of this text) has started a debate about a coordinated programme (with the character of a pilot action) for the open space system of the metropolitan area of Huelva, where good possibilities exist for an integrated approach and action of four Andalusian departments (public works and housing, environment, culture and tourism). The results of this programme could be transferred to other Andalusian metropolitan areas in order to carry out similar actions. The

possibility of a coordinated programme is also considered in the frontier area between Andalusia and its Portuguese neighbours (the regions of Algarve and Alentejo) along the Lower Guadiana River with the objective to start a cross-border landscape strategy for the riverscape of Lower Guadiana. The formulation of this strategy, which at this moment is embedded in the European Union co-financed project Andalbagua (Operational Programme for Cross-border Cooperation Spain-Portugal, 2007-2013), will have a pioneer character in relation to the European Landscape Convention, because it will apply article 9 of the Convention (programmes for cross-border landscapes).

### **Some characteristics of the processes of formulation and implementation of the strategy**

The formulation process of the strategy has three phases: the formulation process inside the Andalusian administration, the participation process, and the procedure of approval by Andalusian Government (it is expected to approve the strategy in spring of 2011).

The objective of the formulation inside the Andalusian administration is to achieve a consensus between the different departments and agencies of the Andalusian Regional Government about the objectives, action lines and measures of the strategy. The instrument created for the interdepartmental discussion is the working group for the strategy; composed by representatives of eight of the thirteen departments of Andalusian Government (public works and housing; environment; culture; economy, innovation and science; tourism, trade and sports; agriculture and fishery; education; health). Four agencies also participate in the working group (AAE/energy, AAA/water, EPSA/land management, GIASA/transport infrastructures) and the Andalusian Institute for Historic Heritage (IAPH). The working group has celebrated four meetings since January 2010 and has based its debate on the preliminary document of the strategy (*Documento Base de la Estrategia de Paisaje de Andalucía*). Several external experts also had been consulted about this document (for example, Joan Nogue, Director of the Landscape Observatory of Catalonia, Rafael Mata, Professor of the Autonomous University of Madrid) and proposals for this document have been received too from the Andalusian Centre for Landscape and Territory Studies (CEPT), directed by Florencio Zoido, and from RECEP-ENELC. Consultation of the preliminary document of the strategy is possible on the website of the Andalusian

Department of Public Works and Housing ([www.juntadeandalucia.es/viviendayordenaciondelterritoriordenacion\\_territorio/estrategia\\_andalusa\\_paisaje.html](http://www.juntadeandalucia.es/viviendayordenaciondelterritoriordenacion_territorio/estrategia_andalusa_paisaje.html)), the website of RECEP-ENEL ([www.recep-enelc.net](http://www.recep-enelc.net)) and on the website of the Landscape Observatory of Catalonia ([www.catpaisatge.net](http://www.catpaisatge.net)).

In a synthetic manner, the first results obtained by the working group are:

- the generation of a stronger attention to landscape in the Department of Economy (responsible for industrial production, mining, energy, technology, innovation and research) in the Department of Education and in the Department of Health;
- the advice to dedicate more time to the participation process;
- the integration of other principles (for example, the precautionary principle) into the strategy (the preliminary document includes the principles of sustainability, subsidiarity and governance);
- the design for a new coordinated programme with the character of pilot action for the open space system of the metropolitan area of Huelva.

The strategy will carry out a participation process with stakeholders, the public and other public administrations. Special attention will be given to municipalities (there are 771 municipal governments in Andalusia), because they are responsible for urban development plans and therefore their contribution to measures of landscape protection, planning and management are of a crucial role. It is foreseen to start a broad participation process in each of the eight Provinces of Andalusia, celebrating workshops, open days, seminars or establishing other measures in order to stimulate participation in the design of the strategy and to strengthen awareness rising of society about the importance of landscape.

The implementation of the strategy is not only a responsibility of the Andalusian Government, but also of other public administrations. On the other hand the strategy will explore and use all the possible ways of public-private partnership. Finally, the strategy will receive continuous scientific and technical monitoring and assessment by the CEPT and by the Observatory of the Territory of Andalusia (OTEA). Without excluding other instruments, the strategy will establish the elaboration of a periodical report “State and perspectives of landscapes in Andalusia”, based on appraisals of experts and a system of landscape indicators.



## **The connection of the strategy with the co-operation on landscape of European local and regional authorities**

The landscape strategy for Andalusia is intimately linked with the different lines of cooperation of Andalusia with other European regions or local authorities about landscape matters.

Firstly, the capitalisation of knowledge generated within the framework of territorial co-operation projects co-financed by the EU and lead by Andalusia means a great benefit for the design of the contents of the strategy and also to implementation related aspects. The first input in this sense originates from the good results of the project “Pays.doc: Good Practices for the Mediterranean Landscape” (2004-2007, Interreg.Iib, Medocc): 1) the creation of a (virtual) Landscape Observatory for the Mediterranean, the publication of a catalogue of good practices and, on the basis of this catalogue, the celebration of the second edition of the Mediterranean Landscape Award, 3) the publication of guidelines for the integration of landscape into sectorial policies, and 4) the creation of a specific website, which offers the most complete information about Mediterranean landscapes ([www.pays.med.net](http://www.pays.med.net)). On the other hand, the strategy will receive benefits from the ongoing project “Paysmed.urban: quality of landscape as a factor of sustainability and competitiveness of urban areas” (Operational Programme MED 2007-2013), with the participation of fourteen regions and local authorities from 4 EU member states and with RECEP-ENELC as an associated partner. The project deals with landscape issues which are important for attractiveness and competitive capacity of urban areas – landscape quality of periurban open spaces, urban entrances, townscape (views from the outside), urban fringes, landscaping for areas of economical activities, enhancement of suburban residential areas – and carries out six key actions (for example, the elaboration of a handbook for local administrations with guidelines for urban-periurban landscape, pilot actions in application of Article 6 of the European Landscape Convention)

Last but not least, it should be highlighted that RECEP-ENELC is giving an important input during the period of the interdepartmental formulation process of the landscape strategy for Andalusia.

Firstly, Riccardo Priore, the Director of RECEP-ENELC has assisted to the first meeting of the working group of the strategy celebrated in Seville in January 2010 invited by the Andalusian Department of Public Works and

Housing and presented during and after the meeting contributions to the preliminary document of the strategy. Secondly, RECEP contributes to the communication of the Strategy by publishing on the RECEP website the Preliminary Document of the Strategy. Finally, it is also foreseen to involve RECEP in the scientific monitoring and assessment of the implementation process of the Strategy after the approval of its definitive version by the Andalusian Government.

### **Speech presented by Riccardo Priore**

I take the floor at this workshop in response to the kind invitation of the Regional Government of Andalusia, Founder Member of RECEP-ENELC, and the European network of local and regional authorities for the implementation of the European Landscape Convention. I especially wish to thank Professor Florencio Zoido and the people that have collaborated with him for their efforts in conceiving and organising this event. The interest and esteem shown by many of you is a source of motivation to be here, today, and share with all of you, although very synthetically, our point of view and experience.

Andreas Hildenbrand Scheid has related how the project for a *Landscape Strategy for Andalusia* is supported by the network both at a regional and European level. In response to article 1 of the European Landscape Convention, this project represents without a doubt the expression of a regional landscape policy, that is, an approach through which the government of Andalusia conceives and organises its own administrative actions giving life to a renewed perception and social representation of its own territory. All of this needs the essential participation of interested populations and external individuals, projecting in this way the image of the region at a national, European and world level.

Being the expression of a general political will, a regional landscape strategy of this type should be necessarily founded on a high level of information, public awareness and should also be shared by the population at a local level. The achievement of this objective is closely linked to the capacity of the involved regional governments to coordinate between themselves and influence political decisions of the interested local authorities. In this sense, beyond the state-run initiatives, often in favour of very protectionist or sectorial approaches and not always supported by a direct democratic legitimacy, regional authorities can become the fulcrum to elaborate “landscape strategies”, which are respectful

with the principles of the European Landscape Convention and which are politically shared both at a horizontal/cross-sectorial level and a vertical/inter-institutional level. Working with the following basic political ingredients: internal cohesion, capacity of consensus, autonomous financing and a length of time ample enough to allow the observation of political results, regions can be considered in many European states the public territorial authority which is best positioned for the reinforcement of processes and structures which are capable of sustaining the integration of the “landscape issue” in decisive territorial, urbanism and infrastructure dynamics that have a great impact at a local level.

The demand of support on behalf of regional authorities to RECEP-ENELC, both at the political and bureaucratic level, in order to draw up landscape policies and strategies, is probably motivated by the will of the regions to implement the European Landscape Convention, feeling in this way not only supported by their own national ministries (bodies which sometimes do not pay enough attention to local and regional needs or lack enough political dialoguing skills) but also by an international body constituted by themselves with the objective of projecting their initiatives at European level in connection with the experiences developed by other territorial authorities in other countries. All of this, under the aegis of the Council of Europe’s Congress of Local and Regional Authorities, which as you will remember elaborated and proposed the adoption of the European Landscape Convention and the creation of our network. Within this context, RECEP-ENELC also supports other landscape policies and actions as well as the Landscape Strategy for Andalusia. These are autonomously carried out by regional and local authorities within their own competences regarding the principles of the European Landscape Convention. Regarding Spain, host to this Workshop, the experiences of the authorities (as well as Andalusia) which should be highlighted are Catalonia, Murcia, Tenerife, Galicia and Mallorca.

I would like to finish this short intervention reasserting the total availability and opening on behalf of RECEP-ENELC and other networks working for the implementation of the European Landscape Convention (UNISCAPE-CIVILSCAPE), both with the statute of observers at the Council of Europe, to establish on one hand a collaboration with all the bodies that within the Council contribute to implement the European Landscape Convention at an inter-governmental level and on the other the reinforcement of exchanges with the ministries responsible of this implementation at a national level.





## **WORKSHOP 2 / ATELIER 2**

### **Infrastructures and landscape in a sustainable model**

### **Infrastructures et paysage selon un modèle durable**

#### **Chairs / Présidents**

*Mrs Maria José FESTAS, Vice-Chair of the Council of Europe Conference on the European Landscape Convention, Ministry of Environment and Spatial Planning of Portugal*

*Mr Audun MOFLAG, Representative of Norway to the European Landscape Convention, Ministry of the Environment, Department for Regional Planning*

## **Metropolitan road projects in conformity with the landscape: examples in Andalusia**

**Mr Damián ALVAREZ SALA**

*Department of Public Works and Housing, Junta de Andalucía*

### **Road projects as a factor in bringing clarity to the landscape**

A selection of road projects that illustrate different planning strategies in urban and metropolitan areas in Andalusia is presented. Planning work and projects in areas with different types of landscape have been chosen to demonstrate the extent to which it is possible to adapt road space creatively to specific situations. They also illustrate the different functions that roads serve according to the overall strategy for the area in which they are located and the particular purpose for which they are designed: the organisation of a developing metropolitan area; the extension of an already existing urban area; or the association of neighbouring communities to create a common public space.

The aim of these projects has been to make the geometry of the construction and location of the roads understandable at first sight; that is to say that the form of the road is the result of functional logic and also the relationship between its road space and its surroundings. In each case the projects have always attempted to conform with the deep structure of the area concerned, and in particular to the unchanging features of the landscape, its physical relief and historic network roadways.

Roads are not merely channels for conveying traffic; they are spatial structures with significance to the area in which they are built. In fact, road networks are never built without their creating inhabited nuclei in the vicinity and contributing to the appearance of the area. Each new road adds something to the landscape, which leaves it either better or worse; the road provides it with form and meaning and either adds or subtracts clarity. When a road, whether rural or urban, enters into use the landscape is seen either more or less clearly, and is thus either better or less well understood.

In city environments, where it is not unusual for there to be a variety of landscapes, a project methodology is required that is sensitive to the values and conditions that this diversity brings to the project. To endow a developing city's landscape with clarity a project must concern itself with restoring

transversal continuity to the new road space. To this end, both urban and metropolitan roads must always be treated as spaces that interact with the space alongside them.

The landscape is not the principle issue in any of these projects, but it is a factor that lays the foundation for and enriches their design. The projects seek to be in conformity with the landscape; in other words, the new roads are integrated into the landscape and contribute to it the order of their layout and functional logic. To achieve this, the project involves the following tasks:

- field work: analysing and drawing the landscape;
- mapping at a suitable scale to represent the structural morphology of the territory;
- adjusting the layout to variations in the surroundings;
- studying and restoring the transversal continuity of the route;
- verifying the integration of the project into the landscape.

A study of the landscape during the initial phases of the project provides valuable information about the sites where the construction will take place. By serving as an immediate source of reference regarding the reality on the ground, the landscape is an effective and permanent parameter to be taken into account in the correction and adjustment of projects.

### **Some road projects in different urban settings in Andalusia**

#### *Road-system planning as a factor in landscape quality: The Seville metropolitan area urban plan*

From 1984, as part of the preparation for the 1992 Seville Universal Exhibition, the Andalusian regional government drew up a plan for the Seville metropolitan area and achieved a considerable number of its objectives. The main aim was to redirect the expanding, disperse urban development along the lines of a coherent spatial planning model and thus provide over a million people with clarity of perception and organisation in their everyday lives space (Figure 1).

The planning model consisted of urban nuclei, separate from one another and set in a common matrix of natural and agricultural spaces. The organisation

and transparency of the metropolitan space depended on two key factors in the development of two mutually complementary systems: a system of woods and parks and one of roads and public transport. The work was based upon precise mapping and the study of the metropolitan environment.

The plan identified two priority areas for action: one was the central section of the river and the other was in the area of greatest environmental value and most active residential development, the Aljarafe. A large part of the structural proposals were undertaken during or immediately after the preparation of the Urban Plan.

The structure of connections in the area across the valley was determined to a large extent by the course of the Guadalquivir river. This new structure included the displacement of the railway to the north and the recovery of the historic river course along a large stretch bordering the city. The access to Seville across a land bridge that since 1950 had dammed a stretch of the river was replaced with a new bridge crossing the restored waterway and in this way the city recovered the surroundings and landscape of the river, which are essential to a proper understanding of the city's origins and history (Figure 2).

One of the new valley roads was constructed between the north of Seville and the foot of the Aljarafe, near the site of the Roman city of Italica. This road had to be integrated into the plan for the La Cartuja sector, which included the headquarters of the Universal Exhibition and a landscape park that was already being laid out. A viaduct was therefore constructed over the artificial depression created in the centre of the large new public space, thus preserving the integrity and continuity of this area (Figure 3).

To connect these two roads the plan included a third road parallel to the flood defence wall in the La Cartuja sector. It consisted of the combination of an avenue and wooded area and had an important landscape value.

Two kilometres long, the Avenida de Carlos III is an "avenue-park", where the park is in reality a small wood of autochthonous Mediterranean species overlooking the flood plain of the Guadalquivir River and the surroundings of Italica. The avenue has two lanes and is bordered by three rows of plane trees. The road surface is beneath the level of the flood defence wall and thus the traffic is hidden from view from the west of the city by the trees and other vegetation of the wooded promontory (Figure 4).



Another of the priorities of the urban plan was to provide road structure and create order within the Aljarafe sector, one of the landscape areas involving major problems of disperse urbanisation, the destruction of structural resources and deterioration of the landscape (Figure 5).

The land that had not yet been urbanised was assigned general development functions, as a non-built-up area and an access corridor from the valley. A star-shaped road structure was created within this area to channel daily traffic in and out of Seville and to organise the space common to the municipalities in the area, thereby improving the connections between them.

The access road to the centre of Aljarafe consists of two lanes following separate routes adapted to the configuration of the land's relief. It has a wide central reservation and space of varying width alongside it left to allow for the metro line, the building of which was begun in 2009. The associated viaducts and underpasses were planned according to the criteria of economy and strict restraint in the shape and form of the structures.

#### *An avenue for the Puerto de Santa Maria urban extension project*

The Avenida de Valencia in El Puerto de Santa Maria, in the bay of Cadiz, is an example of a general road designed to form part of an urban extension. It is a kilometre long and its route lies between a sector earmarked for 3,500 dwellings and suburban areas with problems of access and lack of facilities. There is a difference in height of some twenty metres between one end and the other and its highest stretch overlooks both the new development and the bay itself. The avenue provides a general access to the city and also acts as a link and facility for the adjoining neighbourhoods (Figure 6).

It is made up of two straight sections linked by a wide radial curve. The cross-section of the road varies but is on average 40 metres. It is not hemmed in by buildings aligned along its route. Where it does come into contact with the adjacent neighbourhoods the landscape has been wooded and designed in such a way as to make a coherent transition to their streets and buildings. The central section has been designed as a flat raised area to serve as a main square or space connecting the urban areas on either side of the road.

The project includes promenades along the sides of the road and a garden that displays, on a small scale, the general type of vegetation intended for the future residential area: Mediterranean woodland and bushes on the highest

ground, pathways bordered by deciduous trees running down the middle, and Mediterranean gardens at the bottom.

*Improving a local road as a public space between municipalities: the 'Parque de las Alamedas' (wooded promenade) of Fondon and Laujar at the Alto Andarax in Almeria*

This project, which has not yet been initiated, is an example of the remodelling of a section of road that runs alongside and crosses a river with open access to the public. The road no longer carries through-traffic because of the construction of a bypass. The aim of the project is to build a shared urban structure consisting of a park and a local road between two municipalities lying near the source of the river Andarax, between the foothills of the Sierra Nevada and the Sierra de Gador mountain ranges in the province of Almeria.

The project includes the construction of two promenades alongside the road and the provision of facilities for walking along a stretch of the river Andarax, which the road crosses half way along its route between the towns of Laujar and Fondon. The promenades start from each town and meet up in the middle with walks along the river bank. Each of the promenades is a thousand metres long and about fifty metres wide, thirty of which consist of the main promenade and twenty of which run alongside the road, with its verges, bicycle lane and the hard shoulder of the road itself. Three rows of plane trees provide shade throughout the whole section, which is seen from within as a single space. The promenades have terraces where there are various services and facilities, amongst which are two landscape viewpoints (Figure 7).

## **Conclusions**

The common factor in all these projects is their concern for what might be termed the transversality of the roads, that is to say, all the complementary issues that must be born in mind apart from the mere beginning and end of the road, the details that go to integrate the whole road space into its environment.

The projects presented represent the very antithesis of the progressive cluttering up of a tidy area by speculative or incompetent urbanisation. Their intention is to introduce clarity of perception and design into the creation of contemporary towns. This clarity is, in short, the principle aim when working with the landscape.

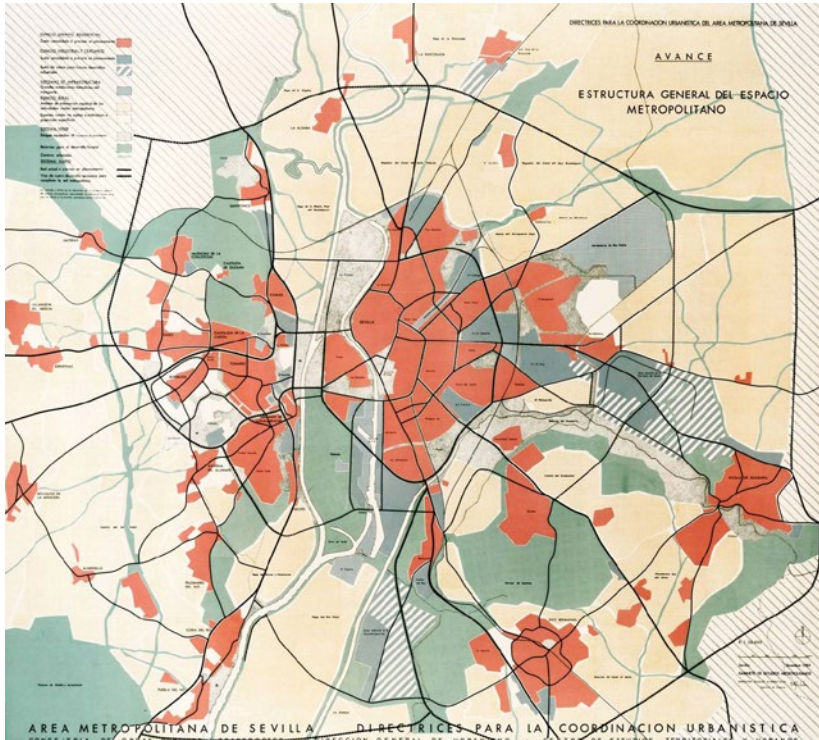


Figure 1: The metropolitan area of Seville planning framework, 1989:  
Planning space as a landscape quality objective



*Figure 2: Access to Seville*



*Figure 3: Planning space within a road project: the viaduct over La Cartuja*



*Figure 4: Seville, avenue and woods limit the city and the metropolitan landscape*



*Figure 5: A road structure orders space in the metropolitan area of Seville*



*Figure 6: The road and landscape of the city extension: Avenida de Valencia in El Puerto de Santa María*

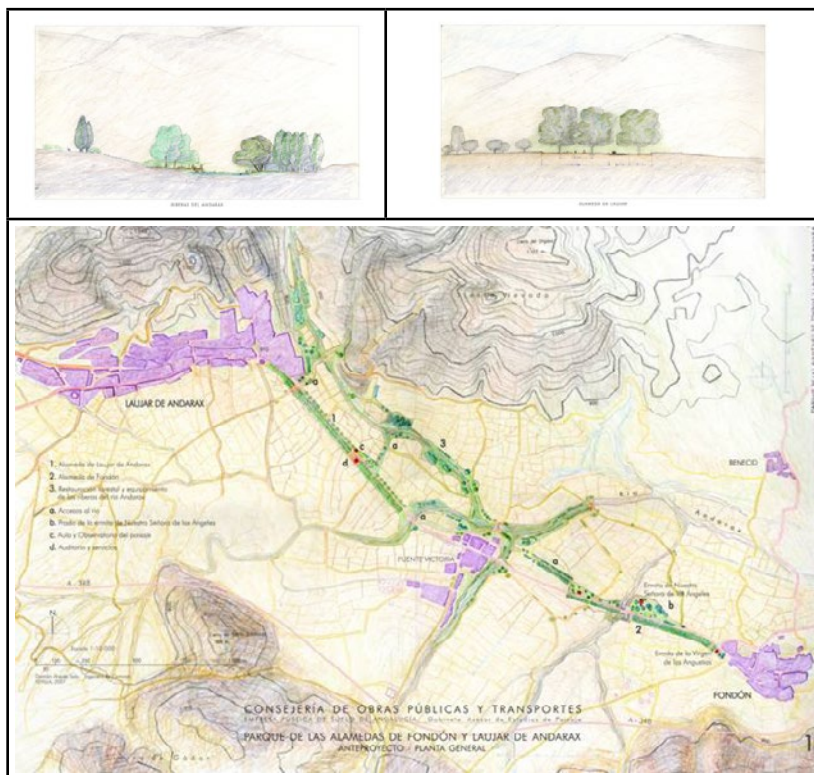


Figure 7: The Fondon and Laujar de Andarax promenade Park in Almeria: a common public space for both municipalities

## **Les politiques de la Turquie dans le domaine des infrastructures et du paysage**

### **M. Abdurrahman GUZELKELES**

*Expert au Ministère de l'Environnement et de la Forêt,  
Direction générale pour la protection de la nature et des parcs nationaux,  
Sections de la conservation des paysages*

### **Mme Serap KARGIN**

*Architecte du paysage, Ministère de l'Environnement et de la Forêt,  
Direction générale pour la protection de la nature et des parcs nationaux,  
Sections de la conservation des paysages*

### **Situation actuelle**

Ayant la superficie de 814.578 km<sup>2</sup> sur les deux continents d'Asie et Europe, entourée par des mers de ses trois côtés et avec sa différence d'altitude entre 0-5000 mètres, possédant la structure topographique variée, la diversité géologique et géomorphologique et beaucoup de diversité d'espèces, la Turquie contient des paysages très riches. En ce qui concerne la diversité biologique, la Turquie qui porte la particularité d'un petit continent et se trouvant dans trois différentes régions géographiques floristiques abrite plus de 9000 espèces de flores dont 3000 sont endémiques.

On peut noter que comme des aires protégées, la Turquie a 41 parcs nationaux (898.044 ha), 41 parcs naturels (79.410 ha), 31 zones de protection de la nature (63.000 ha), 105 monuments de la nature (5541 ha), 14 aires spécialement protégés, 13 zones humides selon la Convention de Ramsar, 135 zones humides d'importance internationale déterminés selon les critères de la Convention de Ramsar, 79 zones d'élevage de la vie sauvage (1.201.134 ha), 10379 sites naturels, archéologiques, urbains, historiques, urbains archéologiques et d'autres, et 9 zones classées au patrimoine mondial de l'UNESCO. La proportion de zones protégées sur la superficie de notre pays est de 6 %. Nous visons à l'étendre à 10 %.

En raison de sa richesse géographique, de plusieurs civilisations vécues, ses variétés paysagères naturelles et culturelles et ses valeurs d'héritage, la protection, la gestion et l'aménagement des paysages de notre pays et ses intégrations dans les politiques sectorielles par une approche intégrante à la planification sont très importants.

## **L'aménagement**

Hiérarchie de la planification en Turquie :

- Plan de développement (organisation de planification d'Etat) ;
- Plan de Régions (organisation de planification d'Etat) et Plan de bassin (Affaires hydrauliques d'Etat) ;
- Schéma directeur de l'environnement (Ministère de l'Environnement et de la Forêt – à l'échelle 1/50.000 et 1/100.000) ;
- Schéma directeur de l'urbanisme (municipalités et préfectures – échelle 1/25.000 et 1/5.000) ;
- Schéma de mise en œuvre (municipalités et préfectures – échelle 1/1.000) ;
- Plans sectoriels : des plans réalisés et approuvés dans le cadre de la législation sectorielle ; plans riverains, plans du tourisme, plans du développement à long terme).

Les politiques essentielles relatives à l'aménagement sont déterminées par les plans de développement effectués par l'organisation de planification d'Etat. Couvrant les années 2007-2013, le 9<sup>e</sup> Plan de développement est un document fondamental qui met en lumière de façon intégrante les transformations à réaliser dans le domaine économique, social et culturel. Dans la période du 9<sup>e</sup> Plan de développement les objectifs stratégiques cités en bas sont fixés comme les axes de développement en vue d'assurer en stabilité la continuation de l'agrandissement de l'économie et de développement social.

Axe 1 : augmentation de pouvoir de compétition ;

Axe 2 : accroître l'emploi ;

Axe 3 : développement humanitaire et renforcement de solidarité sociale ;

Axe 4 : assurer le développement régional ;

Axe 5 : augmentation de qualité et d'efficacité des services publics.

Les politiques sectorielles et thématiques et les priorités ont été traités sous ces axes et ont été associées de manière à servir les mêmes objectifs stratégiques. Le 9<sup>e</sup> Plan de développement a été conçu à la fois comme un document



essentiel stratégique pour contribuer au processus à la candidature à l'Union européenne. Dans le cadre de plan de développement, conformément aux législations concernées et les principes essentiels les établissements publics ont préparé des plans stratégiques, plans et programmes annuels.

Des secteurs tels que l'énergie, le transport, la métallurgie, le tourisme et la protection de l'environnement et le perfectionnement d'infrastructure urbaine qui sont liés en particulier au paysage figurent dans le premier axe. Les projets dans ces domaines sont soumis à l'évaluation d'impact sur environnement et la poursuite et le contrôle de ces projets dans la période avant, lors et après exploitation sont effectués par la régulation sur l'évaluation d'impact sur environnement en vertu de l'article 10 de la loi sur environnement. Cette régulation est une succession des méthodes utilisée pour la détermination des effets positifs et négatifs sur l'environnement d'une exploitation planifiée et la prévention ou la limitation des effets négatifs de façon à ne pas dégrader l'environnement.

Les lois et les régulations en vigueur sur environnement, les conventions internationales auxquelles la Turquie est Partie (Berne, CITES, Ramsar, diversité biologique, Convention européenne du paysage, Bucarest et Barcelone), les dispositions des schémas directeurs d'environnement et selon les études d'impact sur l'environnement, des espaces déterminées à protéger par leurs particularités actuelles et sur lesquelles la construction d'habitations est interdite sont pris en compte.

La protection de l'environnement et la réduction des risques environnementaux est l'un des instruments essentiels dans toutes les échelles de plans. Mais, le Plan de paysage n'existe pas encore dans la hiérarchie de l'aménagement du territoire et il n'a pas encore une place légale pour assurer sa mise en œuvre dans des différentes échelles de plans. Donc, lors des planifications sectorielles on n'a pas souvent effectué directement l'intégration du paysage dans les secteurs. En ce qui concerne ce thème les travaux sont en cours dans le cadre de la réorganisation institutionnelle.

### **Politiques d'infrastructure**

L'accroissement de la population, de l'urbanisme et de l'industrie a accéléré les investissements pour la construction d'infrastructures. Les services d'infrastructures influencent directement le développement social et

économique et parallèlement à leurs implications ponctuelles et efficaces, ils sont des services contribuant au développement des pays et à l'accroissement de la prospérité de la société. Le paysage, étant un facteur essentiel pour la qualité de vie, est un composant vital des développements culturels, économiques et sociaux. Quant à l'examen des secteurs qui influencent et font pression sur le paysage naturel et culturel et leurs travaux d'infrastructures qui ont la nature publique.

### **Transport**

On adopte les politiques de transport sensibles à l'environnement, économiquement fécondes et durables dans les travaux menés par le ministère de transport et ses filiales (voiries – autoroute, routes d'Etat, voies à quatre et plus de quatre bandes – voies ferrées, aéroports).

Le manque de développement des infrastructures ferrées et maritimes face à l'accroissement de la demande de transport a pesé sur le réseau des voies routières pour le transport de passagers et de marchandises. Cela a provoqué un système de transport déséquilibré et improductif entre les moyens de transport. En vue d'éliminer ces problèmes, les travaux concernant le Plan stratégique essentiel pour le transport ont été terminés en 2005.

Même si le transport de voirie qui a de l'importance pour le développement économique et l'accroissement de la prospérité est une activité économique en soi, il représente un secteur de service très liée aux autres secteurs en ce qu'ils les affectent positivement ou négativement.

Le 9<sup>e</sup> Plan de développement a visé à augmenter le cadre de vie en réduisant les effets environnementaux affectant l'environnement naturel et les êtres vivants résultant du système de transport de voirie.

Les facteurs suivants, pour la détermination de la voirie et le choix du parcours, sont pris en considération :

- zones de sustentation utilisées comme source d'eau ou bien lacs de barrage pour l'utilisation du peuple ;
- qualité atmosphérique actuelle ;
- utilisation du terrain et végétation naturelle (flore et faune protégés et habitats) ;

- milieux des espèces en danger ;
- sites archéologiques, culturels et historiques ;
- le nombre de population à proximité de voirie et dans les zones de cartes de bruits et cartes de qualité atmosphérique ;
- sécurité interne et externe (transport des matières dangereuses et sécurité du tunnel ;
- zone à risque sismique.

Les travaux menés par la Direction générale de Voirie ont pour but de réduire les effets à l'environnement à un niveau minimum, de favoriser l'aspect esthétique et d'assurer l'harmonie fonctionnelle entre la voie et le terrain. A ces fins, après la réalisation de la voirie, les projets tels que la restauration du terrain dégradée lors de construction de voirie, la protection des talus de découpage et remplissage contre l'érosion, la constitution des barrières de neige, assurent la continuité paysagère tout au long de voirie. La réparation des ponts historiques, des travaux sur la préparation de projet dans des terrains convenables pour délaissement au long de voirie dans le cadre de projet de paysage sont effectués.

Selon le 9<sup>e</sup> Plan de développement, les éléments suivants concernant le transport urbain sont pris en considération :

- l'assurance de la diversité et de l'intégration des types de transport urbain en prenant en considération la structure propre, les dynamiques et les potentialités de chaque ville ;
- dans le cadre de l'accession à l'Union européenne et en vue d'encourager un système de transport urbain durable, sont favorisés la mise en place de voies pour les cyclistes et les piétons et l'utilisation des transports publics ;
- l'élaboration d'une stratégie nationale de transport urbain de grande ampleur et en conformité avec les politiques d'énergie, d'économie, de l'habitat, du terrain et du territoire, et en même temps impérative pour les administrations publiques et directrice pour le secteur privé.

Le transport urbain et ses travaux d'infrastructure (arrêts, refuges, métro, voies pour les piétons), les travaux d'infrastructure pour les projets de

transformation urbaine, le design paysager, les arrangements des alentours et des services de projet sont menés par les municipalités.

## **Energie**

Les travaux concernant les lignes de transmission énergétique, stations de pouvoir thermique, station convertible de gaz naturel, oléoducs et gazoducs, stations génératrices du vent sont menés par le ministère de l'Énergie et des Ressources naturelles et ses agences. Le but essentiel est d'assurer l'énergie de façon permanente, en sécurité et à un coût minimum dont le développement économique et le progrès social ont besoin. Lors qu'il s'agit de flexibilité énergétique, afin de minimiser la dégradation environnementale, d'augmenter au maximum le niveau de la proportion des sources nationales et renouvelables dans le système de production, et de réduire les effets environnementaux de l'utilisation énergétique on a visé à donner la priorité à la production énergétique.

La construction et l'exploitation des centrales hydrauliques et des barrages sont menés par les Affaires hydrauliques d'Etat au sein du Ministère de l'Environnement et de la Forêt.

Après achèvement des activités de construction d'infrastructure concernant l'énergie, en vue de protection du paysage et de diversité biologique, de soutien des mesures contre l'érosion, on effectue les travaux de biorestauration. Lors de ces travaux on s'efforce de façonner (structurer) les terrains sur lesquels des interventions ont été effectuées selon des contours originels et de les intégrer dans le paysage aux alentours de façon légère et continue.

## **Les mines et matériaux**

Les travaux miniers sont menés par la Direction générale des études et de recherche minières au sein du Ministère de l'Énergie et des Ressources naturelles. Pour la métallurgie durable et l'adoption au principe d'environnement, les objectifs sont le développement des technologies de disposition et d'assainissement, l'augmentation d'efficacité des travaux sur le contrôle et l'inspection et l'acquisition à l'écosystème en réhabilitant des terrains utilisés en métallurgie.

Les matériaux miniers extraits directement comme la matière première utilisée dans les travaux d'infrastructure sont les unes des préoccupations

importantes dans les terrains naturels, ruraux et urbaines de notre pays. A ces fins, les dispositions de la régulation sur l'extraction, exploitation et le contrôle des matériaux comme des cailloux, des sable et matières semblables sont appliquées et des plans de gestion de l'environnement sont préparés de façon à ne pas endommager la santé humaine et l'environnement.

Dans les plans de gestion de l'environnement les principes sur la protection de l'intégrité des écosystèmes, et non pas de dégradation de la vie sauvage, la conservation des formes des canaux des cours d'eau et la conservation de structures géomorphologiques des rives sont essentiels.

Les dispositions de la régulation sur les activités minières et réaffectation des terrains dégradés à la nature sont appliquées et les plans de réaffectation à la nature sont préparés concernant les excavations pour des matériaux et des sols, les déversements et les déchets laissés à la nature en vue de regagner la structure naturelle qui a été dégradée.

Le plan de réaffectation à la nature est préparé avant les travaux sur le terrain par l'exploitant selon le réarrangement de la structure naturelle dégradé, la constitution de l'équilibre naturel et constitution du terrain de façon à être utilisé en sécurité par l'homme ou bien par d'autres êtres vivants ou à être utilisé pour divers buts. Les travaux de réhabilitation sont initiés de manière synchronisé avec ceux de mines, d'excavations et de déversements et continuent pendant l'exploitation et prennent fin suite à l'alignement pour recouvrement du terrain dégradé pour l'utilisation après exploitation.

## **Tourisme**

Dans les travaux tels que des installations touristiques, l'infrastructure sociale dans les zones de tourisme (établissements sanitaires, religieux, culturels, administratifs et des parcs, jardins d'enfants) et l'infrastructure technique (l'électricité, gaz naturel, de l'eau potable et usagée, des vidanges, de toute espèce de transport, la communication, assainissement des eaux usagées, télésiège, ligne de collecteur) le Ministère de la Culture et du Tourisme a pour but d'attacher un soin maximum aux approches de protection et de développement de l'environnement naturel, historique et social dans le contexte des investissements opérés dans ce secteur.

Dans le chapitre concernant la stratégie sur le transport et l'infrastructure de la stratégie du tourisme sont prévues :

- l'encouragement des secteurs privés dans les investissements d'infrastructure et de transport ;
- l'exécution des travaux pour le perfectionnement d'infrastructure dans les espaces où la potentialité du tourisme à haut niveau et le développement du tourisme assuré et dans des espaces où le développement du tourisme prévu avec la collaboration des autorités locales et les établissements publics concernés ;
- pour le développement du transport lié au tourisme, la constitution d'une intégration entre les divers types de transport est prévue.

A ces fins le ministère prépare ou bien fait préparer des plans de protection et de développement pour la culture et le tourisme, des plans des centres touristiques et plans de zonages à caractère protecteurs.

Lors que des plans de zonages à caractère protectrice sont préparés, les objectifs qui figurent ci-dessous sont prévus :

- la protection des valeurs culturelles et naturelles dans la conception du principe de durabilité ;
- prendre en considération des espaces d'interaction ;
- la détermination des stratégies propres aux terrains en faisant des études nécessaires sur l'environnement historique, le patrimoine culturel et naturel, l'infrastructure technique et sociale, la structure sociale culturelle, économique, la situation du propriétaire en liaison avec l'intégrité urbaine.

Lors de réalisation des Plans de zonages à caractère protecteur, prenant en considération les circonstances de l'espace de planification et ses besoins pour le futur, on adopte les standards minimum montrés dans la régulation sur les bases relatives à la réalisation des Plans du Ministère du Travaux Publics pour les équipements sociaux et l'infrastructure technique. Mais lors des plans de zonage à caractère protectrice couvrant des espaces établies, les équipements sociaux et les espaces pour l'infrastructure technique sont déterminés par les décisions du plan en prenant en considération les particularités physiques et propriétaire des valeurs culturelles et naturelles immobilières et les circonstances de l'espace de planification et ses besoins au futur.

## **La protection de l'environnement et l'amélioration de l'infrastructure urbaine**

La pression augmentant de plus en plus sur l'environnement et les ressources naturelles, la consommation inconsidérée des ressources naturelles, et l'insuffisance d'infrastructure urbaine deviennent des problèmes d'environnement de plus en plus importants. Cela nécessite de plus en plus de besoins pour les services d'infrastructures environnementales et urbaines.

Les travaux dans ce domaine sont menés par le Ministère de l'Environnement et de la Forêt et le Ministère des Travaux publics, leurs agences, les préfectures et les municipalités. Dans le Plan de développement national on vise à constituer des systèmes de gestion de l'environnement dans lesquels il s'agit d'opérer un équilibre entre la protection et l'usage pour les ressources naturelles sans compromettre les besoins de futures générations et de profiter de ces ressources pour chacun de façon juste.

Dans ce contexte on a déterminé les priorités sectorielles et les politiques dans le Plan national sur la stratégie environnementale et le Plan d'action préparé par le Ministère de l'Environnement et de la Forêt. Dans son chapitre relatif à la protection de la nature, flore et faune naturels et leurs écosystèmes et leurs améliorations en basant sur le développement durable et l'équilibre entre la protection et l'usage et la prévention de la perte de diversité biologique sont visés. En 2007 on a préparé la Stratégie nationale sur la diversité biologique et un plan d'action en trois catégories comme la diversité génétique, diversité d'espèce et la diversité des écosystèmes. On a constitué une base de données sur la poursuite de diversité biologique intitulé bateau de Nuh (Noé) dans laquelle des espèces, des habitats et des espaces existent, ouverte au public.

On a visé également dans le 9<sup>e</sup> Plan de développement, le développement de capacité des préfectures et des municipalités concernant la planification, des projets, la mise en œuvre et l'exploitation des services d'infrastructure environnementale (eau potable et usagée, réseau de vidange, terrain pour les déchets solides) menés par les préfectures et les municipalités.

Le Plan stratégique a été préparé par le Ministère des Travaux publics et la Stratégie de développement durable urbaine et le projet de préparation sur le Plan d'action ont été ensuite initiés. Ce projet a été traité en tant que thème relatif au « Patrimoine urbain, qualité de l'espace et design urbain » et des stratégies ont été établies.

Les politiques de transformation durable des espaces où seront effectués la réhabilitation, le renouvellement et l'épuration avec les dimensions économiques, sociales et physiques de transformation urbaine sont appliquées par l'Administration de développement d'habitations. Assurant la priorité aux services d'infrastructure technique et sociale les projets de transformation sont préparés selon la constitution d'un cadre de vie sain, sécuritaire et de bonne qualité et le développement social et culturel local. En coordination avec l'Administration, les investissements relatifs à l'infrastructure doivent être terminés dans le même délai avec le projet de transformation.

La Turquie considère que la réponse à apporter aux besoins d'infrastructures techniques et sociales représente un principe essentiel. Ces infrastructures différant selon l'augmentation de la population et les progrès technologiques et sociaux, des stratégies sectorielles sont préparées pour le futur. Ces stratégies sectorielles déterminent les décisions sur le plan physique général et les processus de développement social et économique, conformément au principe de durabilité.

Dans le cadre de la Convention européenne du paysage à laquelle nous sommes parties, nous avons initié un projet sur la protection, gestion et aménagement du paysage dans un territoire déterminé afin d'examiner les caractéristiques paysagères et d'élaborer une méthodologie au niveau national. Il est envisagé de le généraliser en l'appliquant à l'échelle régionale. En préparant la Stratégie nationale paysagère et le Plan d'action, notre objectif est d'intégrer le paysage dans les politiques d'aménagement du pays, des régions et urbaines ainsi que dans des politiques culturelles, environnementales, agricoles, sociales et économiques ainsi que dans d'autres politiques qui pourraient influencer directement ou indirectement le paysage.



## Landscape and photovoltaic energy production<sup>2</sup>

**Mr Mathias MERIDA**

*Professor, Department of Geography, University of Malaga, Spain*

**Mr Rafael LOBÓN MARTÍN**

*Architect, Spain*

### Introduction

Photovoltaic solar power has undergone an important expansion in Spain in the last years, reaching about 3 400 MW of installed power at present, which mostly come from the power generated in photovoltaic power plants. The proliferation of these devices has led to the appearance of problems of territorial and scenic nature, because of its location in rural areas, the vast occupied stretch of land (if it is compared to other conventional energy sources) and the typological singularity of its devices. Furthermore, the landscape transformation has taken place very quickly by an activity which has a positive image due to its nature of being a clean and renewable energy. Therefore, what could be labelled as an environmental paradox arises: potentially impressive systems on the landscape, but which are perceived as environmentally positive.

Andalusia is one of the Spanish regions where the development of the photovoltaic solar power has been higher, achieving at present the second place among the autonomous regions in installed power, with 584 MW. The research project in which this work is framed (Mérida and Lobón, 2009) tackles the typological and landscape singularity of the photovoltaic power plants in Andalusia, it analyses the impacts over the landscape and it establishes landscape integration proposals of the devices. These aims are organised in five large sections: the location and site of the plants, the design of the whole compound of devices, the design of its components, their inner organisation, and, finally, the inclusion of possible corrective measures. Likewise, the work studies in depth the social perception analysis of the

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2. This paper presents results derived from the research project “Estimation of impacts and landscape integration proposals of the devices generating solar power in Andalusia”, supervised by Matías Mérida Rodríguez and Rafael Lobón Martín and subsidised by the Department of Public Works and Transport from the Autonomous Government in Andalusia.

scenic impact of this type of the devices by means of the results obtained from a survey which has been carried out to nearby towns. Finally, the project indicates landscape integration guidelines specifically directed towards each of the large types of landscape which exist in Andalusia.

The impact of photovoltaic power plants on the landscape considers two criteria: the influence on the quality of the existing landscape and the alteration which is generated in the existing environmental views. With regard to the first criterion, the sign and intensity of the impact is proportional to the quality of the existing landscape: in quality landscapes its introduction would be advised against whereas in diminished quality landscapes its introduction could be used as a tool for the landscape recovery. The second criterion, the alteration of the views, entails analysing different visual parameters, like the visual basin, the visual impact generated and the alteration of the quality views or perspectives due to the devices intrusion on the image.

The integration of a particular photovoltaic central power station into the landscape or, at least, the achievement of an acceptable level of integration into the landscape can be attained by means of the implementation of one or several integration measures organised in different strategies: adaptation to the existing landscape or to some of its components, reference to the existing landscape or to some of its components, and thirdly, reference to landscapes or landscape components of historical and heritage value. Its implementation can be useful to different landscape management models like the protection of valuable landscapes, the improvement of damaged landscapes, the recovery of diminished areas, and even useful to the creation of landscapes, by using the photovoltaic power plant as the object of artistic treatment. As a starting point, both the location and the design of the photovoltaic power plant, deprived of its function, acquire a great importance to guarantee its integration into the landscape.

### **Location, density and site of the devices**

Besides technical and economic parameters, the implementation of photovoltaic power plants also responds to factors of geographical nature. In the first place, the annual insolation received by the territory; secondly, the proximity to electric power distribution networks. For this reason, the mountainous areas, remote from the main distribution networks, have a lower implementation of this type of device. Instead, they show a clear preference for plains, valleys and countryside on agricultural land.

The impact of the photovoltaic power plants location occurs mainly in mountainous terrains due to the slopes, as well as in natural areas, especially woodlands, because of the higher contrast of land-use. In general, human-modified landscapes receive a lower impact due to the location of photovoltaic power plants; being higher or lower depending on the degree of transformation occurred: minimal in industrial areas, higher in traditional agricultural areas. At a territorial level, the photovoltaic power plants location adapts primarily to certain types of landscape and landscape components, either by their physiognomic resemblances or by their semantic similarities. Specifically, the following landscapes or landscapes components have been considered adequate for the implementation of these devices: greenhouses, industrial landscapes and remote industrial systems (Figure 1), mining landscapes, peri-urban areas, landscapes of water (flood zones), lake areas (current or historical), irrigated landscapes, conventional energy devices, renewable energies landscapes, and especially the inside or proximities of transports infrastructures, both in large transport centres (air, port, rail) and near linear infrastructures (Figure 2).



*Figure 1*



*Figure 2*

The density of systems on a specific territory affects its landscape impact due to the synergistic nature of the impact. In general, a low density of photovoltaic power plants makes it possible to reduce their impact by means of the implementation of landscape integration measures, especially if the size of the devices is, at least, moderate. The space or distance existing among the plants must be taken into account, preventing them from being joined in a middle distance perception.

The usual locations of the photovoltaic systems analysed in the project are plains and hillsides. Hillsides are more impressive, to a greater extent the

greater the slope is. To enable their integration into the landscape, horizontal layout terrains must be selected. Therefore, plain sites are clearly preferable and, in hilly areas, subsidence zones. Intermediate shelves or benches are more suitable on the hillsides.

Typically, the photovoltaic power plants sites possess wide visual basins, increasing their impact. The ideal location should produce a reduced visual basin, like subsidence areas or narrow river valleys. Largely, they also have a high level of visual impact; this is why the ideal location must produce a reduced visual impact. This location must move away from crowded points or movement of the population, such as large road infrastructures or settlements.

On some occasions, the landscape impact is also derived from the topological proximity to particular elements from the landscape, of historical, monumental or religious interest, or from the alteration of valuable perspectives. As a rule, these devices must move away from particular elements so as not to disrupt quality views.

### **Design of the whole compound of devices**

One of the key factors leading to landscape impact on a photovoltaic power plant is its extension. They are usually reasonably large devices, reaching in some cases up to hundreds of hectares. In general, integration into the landscape is more feasible with small or moderate surfaces. It is also important to consider the relative extension, adjusting the occupied area by the system to the average extension of the existing parcel in the environment of the chosen location.

Photovoltaic power plants usually present a quadrangular morphology. At times, this morphology may potentially be an impact factor, especially when geometric shapes are introduced in natural environments or agricultural lands marked by irregular parcels. In any case, the external morphology of the system must also adjust to the one which is dominant in the pre-existing parcels or in the dominant landscape components: regular or irregular, linear or massive.

The composition of photovoltaic power plants is often characterised by its partitioning into sectors. This fragmentation produces in itself a considerable impact due to the introduction of orthogonal axes corresponding to space gaps (Figure 3). As a rule for its integration, the composition must tend to be indivisible; likewise it is still advisable for it to follow only one pattern of internal organisation.



Figure 3



Figure 4

Perimeter fencings may also represent impressive elements in the landscape, either by their typology (Figure 4) or by their layout. It is recommended that the fencing is done with little visual prominence materials, semi-transparent, such as the wire mesh, whose colouring is very similar to the structures of the system, or reusing previous fencings. Regarding the layouts, a higher degree of integration is achieved if the fencings are adapted to the contour lines of the pre-existing landscape.

Some photovoltaic power plants produce topographical changes generating land clearings, terracing and retaining walls that produce abrupt chromatic and morphological changes. As a general rule, hillside locations and remote solar tracker structures are often the most aggressive combination with the relief. In other cases, impacts come from terracing and levelling. In order to achieve their integration into the landscape, the devices should pursue the greatest adaptation to the pre-existing relief as possible.

Finally, in order to facilitate its integration, the design of a photovoltaic system must consider the incorporation of natural and human components from the landscape, especially woody vegetation and agricultural buildings and devices. In the case of dilapidated buildings, the project may consider reuse, adapting them as additional technical devices.

## **Design of the components**

### *Structures*

There are two main types of structures, continuous in rows (Figure 5) and discontinuous with remote solar trackers (Figure 6). In general, remote solar trackers produce a greater impact on the landscape than continuous rows, and

therefore its integration into the landscape is more complicated, due to its isolated nature as well as its vertical layout and, to a lesser extent, due to the movement they introduce. The panels in continuous rows are less impressive, due to their greater continuity and horizontal development. Mixtures of different structures in the same photovoltaic system increase its impact on the landscape, as they disintegrate the landscape generated by the system, break its continuity and make harder its adaptation to other landscape components.



*Figure 6*



*Figure 5*

The design of structures is derived exclusively from their functionality. Up until now, the devices suffer from the absence of any standard search in their design, prevailing rectilinear and quadrangular morphologies, respectively, in supports and panels. This involves the introduction of geometric shapes of industrial inspiration, producing abrupt physiognomic changes with the environment. Other potentially powerful elements from the structures are the bases, especially in remote solar trackers, due to their size and the material used.

From the point of view of their integration into the landscape, it would be important to make progress on the design of these structures, both on the remote solar trackers and on the rows beyond their functionality. The incorporation of innovative ways would provide a quality image to the system.

The height of the structures may also represent an impact factor, especially in remote solar trackers, which surpass the human scale, in some cases reaching 20 meters. The panels generate a greater impact in terms of size, fitting more easily the smaller its size, or, in other words, the smaller the number of photovoltaic modules. In any case, the use of different sized structures must be avoided, since the discontinuities they produce increase their impact on the landscape.

The typical colour of the structures is the most functional, metallic grey, being used both galvanised steel and aluminium materials. Their impact is greater in remote solar trackers, more visible, especially at their bases. A modification of the colour towards the tones present in their environment can mean a good integration strategy. The structures of fixed installations in soil tend to be much less visible, being their chromatic treatment less necessary.

### *Photovoltaic modules*

The type of photovoltaic module depends on the material of which it is made up. The most common one is blue-greyish mono-crystalline silicon (Figure 7). It produces a minor impact due to its chromatic similarity to water, sky or plastics. However, the hexagonal morphology of photovoltaic cells generates many rhythmic discontinuities in the photovoltaic diamond-shaped module, which increase their impact and make their integration difficult. Advancing on the chromatic treatment of these discontinuities may be an appropriate way of integration into the landscape. The second most used material is bright blue multicrystalline silicon (Figure 8), heterogeneously distributed on the photovoltaic module. Its square photovoltaic cells give greater continuity, even though the grid remains visible, so a chromatic treatment of the gridlines would be equally desirable. Amorphous silicon is less used, which is arranged in a continuous way in the photovoltaic module, generating a continuous surface of lesser impact. Its tones are usually darker than the other materials. In any case, mixtures of materials in the same photovoltaic power plant must be avoided.



*Figure 7*



*Figure 8*

In general, the chromatic treatment of the modules represents another means of investigation in the introduction of quality designs in these systems:

green in farmed environments, yellow or ochre in arid areas, and so on. There is photovoltaic cells availability in different shades on the market, both monocrystalline and in multicrystalline silicon, though their efficiency decreases with the chosen colour. Amorphous silicon also allows a certain range of colours, from reddish brown to blue. The use of this material is feasible, because it compensates for being less efficient with lower manufacturing cost.

The design of the photovoltaic modules, both on remote solar trackers and on the rows, is also located exclusively in the context of its functionality. So far, the photovoltaic modules, like the rest of the components of the system, lack any standard claim in its design, dominating the rectangular morphologies. Sometimes different arrangements of modules are combined, oblong and vertical on the same panel, increasing their impact. A line to explore on the design of photovoltaic systems can be to design photovoltaic modules with new morphologies. Currently, innovative designs are only found in singular systems of a symbolic nature which are closer to urban structures, known as photovoltaic trees.

Regarding the size of the photovoltaic modules, larger ones, provided they do not affect the panel size, are less impressive, due to the creation of a continuous surface and the elimination of intermediate gaps. The frames surrounding photovoltaic modules are metallic with greyish tones. Compared to the colour of the photovoltaic cells, the contrast is greater, appearing with whitish tones in the middle distance. In continuous systems, they generate a highly impressive geometric mesh, so it is convenient to introduce chromatic changes in the frames in order to reduce the contrast.

#### *Other systems*

Booths for transformers and inverters are sometimes important elements of the photovoltaic power plant landscaping. Their impact can be greater than the panels themselves, and this impact is often derived from their typology and their colouring. In this type of construction, designs where the horizontal lines dominate over the vertical are desirable and, above all, a chromatic and textural appropriate treatment. In any case, it is necessary to avoid mixtures of colours within ancillary technical systems of the photovoltaic power plant itself. It is also advisable to use pre-existing abandoned constructions as ancillary technical systems.



The turrets and wiring are potentially impacting due to the morphological and chromatic contrasts they produce, respectively, particularly if the turrets are badly placed or if the wiring used is of red colour. If the law allows, neutral colours must be committed for the wiring or, at least, they must be placed in inconspicuous spots, the same as turrets.

The posters also respond to technical requirements. Their large dimensions, with their vertical morphology and colours used, have a great impact on the landscape, especially in row systems and in locations in plains. Posters must receive a quality treatment to enable a greater degree of integration into the landscape, both in material used and their morphology, colours, typography, and so on. Their proliferation should be avoided, especially those which respond to advertising reasons.

Access roads can represent elements of great impact on the landscape. Their relevance depends on factors like the road surface, potentially very powerful when the chromatic contrast is noticeable. Other features of the access road that often have visual impact is its breadth, sometimes excessive, and in sloping areas, the layout and the creation of clearings and embankments. The treatment of access and internal roads must pay attention to these factors.

Finally, among the structures, between different sectors of the system or on their perimeter, free spaces are usually plentiful, and produce a significant visual impact on some occasions, especially when the land is bare and has a significant albedo. Similarly, the existing soil beneath the structures may also have a significant landscape importance, especially in systems with remote solar trackers. In general, these lands must be subject to some kind of treatment, plant or stony, in order to reduce the visual impact of bare ground on areas where they have a great contrast.

### **Internal components organisation**

The structures and photovoltaic panels can have an impact on the landscape, in addition to their design, also due to their internal organisation. In the case of continuous rows, the impact is produced by the vision of alternating strips of panels and free lands, and it grows if different orientations are mixed in the same device or if such alignments which they can take as reference do not exist in the environment (e.g., olive groves or citrus trees). On sloping areas, the impact can be generated by the perpendicular layout to the contour

lines of the rows. To ensure a higher degree of integration, the rows must be arranged regularly, parallel to the contour lines on sloping grounds, and with the minimum separation which is technically required. It is also recommended that the rows, if necessary, continue the existing alignments on the environment. Finally, it is recommended to avoid mixtures of orientation in the rows.

The impact of the organisation of remote solar trackers, meanwhile, is due primarily to its own internal space, which often generates large intermediate gaps; to make its integration easier, they must tend to concentrate, trying to create a homogeneous panel mass. Secondly, their pattern of organisation may also have an impact on the image, particularly if it has a contrast with their surroundings. The unanimous use of geometric patterns defectively fit in environments marked by irregular patterns of organisation. By contrast, the impact is greatly reduced if the environment presents a regular organisation, more so if it fits the layout of the alignments, as for example in tree crops.

Due to their typological features, ancillary technical systems are sometimes more prominent in the landscape than the structures themselves and photovoltaic panels, especially when they are arranged in a rhythmic way (Figure 9). For the same reason, a group of such devices in a part of the system tend to be less impressive. Irregular arrangements are preferred, and even concentrated in specific points, particularly in the least visible ones. If they are not grouped, it is advisable for the technical devices to organise in space following the pattern of distribution, where appropriate, of the scattered habitat or the houses for tools.



*Figure 9*



*Figure 10*

## **Corrective measures**

Given its size, the effectiveness of corrective measures in the entire photovoltaic power plant is relative, making it practically impossible to hide or reduce its impact. Instead, they can be very relevant to the adequacy of some of the parts of the landscape: slopes, perimeter fenceings or access roads inland. They are also advisable in the treatment of structures, particularly their rear and side views.

Among the corrective measures, the perimeter landscape screens have a limited application, since they can not provide shade for the system; it makes more sense in the case of devices with solar trackers or devices located at higher elevations than the existing viewpoints. They can be used more effectively in the treatment of perimeter fenceings. In any case, it is always advisable to select plant species depending on their existing landscape unit. Another feasible measure is the creation or maintenance of landscape screens remote from the system and located within the existing perspectives from the points of greatest visual impact.

Other types of corrective measures proposed are of topographical nature, like the making of slight movements of land and the use of the created platforms (Figure 10) as screens for other border infrastructures (canals, roads). Occasionally, corrective measures may range from the building of stone walls to the planting of plant species inside the device (herbaceous, shrub), to chromatic or textural covering of certain components of the system.

## **Conclusions**

Fitting photovoltaic power plants into the rural landscape constitutes a challenge of territorial and scenic nature. The appropriate selection of the locations and, especially, the introduction of quality design in their creation, must be understood both by the administration and by private initiative as unavoidable actions to ensure their correct alignment with the countryside. In this context, the adoption of criteria for the integration into the landscape is a very useful tool to achieve that goal.

## **Landscape as a reference to sustainable policies: the case of the Nansa Valley**

**Ms Ángela DE MEER**

*Professor of Human Geography, University of Cantabria, Spain*

**Mr Rafael MATA OLMO**

*Professor of Regional Geographical Analysis,  
Autonomous University of Madrid, Spain*

### **Context and approaches of the Nansa Valley spatial development project**

The Nansa Valley, situated in the Cantabrian mountains, in the north of the Iberian peninsula, covering an area of approximately 500 km<sup>2</sup> and just over 3 000 inhabitants, is a good example of a mountain area presenting low population density, intense depopulation, particularly in the upper zones, and a certain degree of marginalisation in the regional context, with little capacity for innovation and few economic alternatives. The valley, however, has a high level of territorial and landscape heritage resulting from sharp natural contrasts between valley bottoms, steep sun-exposed and shaded slopes and high mountaintops, and from a long history of occupation and organisation of the rural space, coherently adapted to the territory's varied agro ecological potential. This heritage, secularly created and managed around a large group of small settlements and connected by a dense network of historical trails, is quite well conserved, partly due to the valley's relative marginality. It is a valuable legacy which, as with many other areas with similar characteristics, is at risk of deterioration or disappearance as a result of the decadence of traditional production activities and a lack of alternatives.

In this context, the Marcelino Botín Foundation (MBF), a deep-rooted organisation in the Cantabria region's civil society, is promoting, within its "Territory and Heritage Programme", the project "Appraisal of the Nansa Valley Territorial and Landscape Heritage"<sup>3</sup>. The project consists of

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3. This text synthesises a part of the research project "Appraisal of the Nansa Valley territorial and landscape heritage" within the Marcelino Botín Foundation's Territory and Heritage Programme, conducted by the research groups at Cantabria University's "Spaces and Territory: Analysis and Management" and "Research and Management of the Natural Environment" and the "Landscape Research Group" at Madrid's Autónoma University (2006-2008).

a territorial development initiative, committed to safeguarding and valuing heritage and landscape and to sustainable development of the region based upon its own resources – natural, economic (particularly forestry and livestock farming), cultural and landscape, all of these articulated within a global intervention proposal.

The initiative and development of the programme corresponds to the following stakeholders: a foundation as the promoting entity, a multidisciplinary group of specialists, in charge of studying the territory and formulating the proposal, based on expert knowledge and wide-ranging public consultation, local representatives (mayors) and, finally, the Cantabria Regional Government, which participates in and has adopted the programme, and which is to apply most of the proposals.

According to its director, José María Ballester, the programme is based upon “global intelligence of the territory”. Heritage is its guideline, and a sense of the territory’s heritage is integrated into this concept, of which landscape is, according to the European Landscape Convention, (Council of Europe, 2000), an expression of the territory’s character, and a synthetic way of reading and socially perceiving it.

The idea of heritage in the concept of territory is an attempt to do away with the mere “monumentalistic” approaches to heritage and with the fragmented perspectives that differentiate and even create opposition between “natural heritage” and “cultural heritage” (Plaza and Martín, 2006:273). The proposal for territorial heritage enables us to integrate as historical construction, according to José Ortega Valcárcel, natural elements and historical components in what is considered to constitute construction of the historic territory (Ortega Valcárcel, 1999). Thus, in an architectural analogy, territory would prove to be an artefact, a masterpiece historically modelled by society within and with nature, which would have the archaeological capacity to accumulate and integrate different layers of civilisation; as K. Lynch puts it, in reference to the city, territory-heritage would constitute “a vast memory system retaining history and ideals” (Lynch, 1960:126). This conceptual posture in relation to heritage involves a renewed vision of management of heritage-based resources as the basis of territorial development, a way of economically reconsidering territory-heritage and of functionally revitalising society and the management of the values of the territorial system (Troitiño, 2003).

Consequently, the project constitutes an excellent opportunity to apply the European Landscape Convention in Spain, but also to develop other objectives of recent legal mandates contained in state regulations, such as the Law on natural Heritage and (2007), the Law on sustainable development of the rural environment (2007) and the Montes (Forestry) Law from 2003, the latter concerning the Liébana-Nansa Forest resources Management Plan, and other sectorial regulations and policies of the Cantabria Regional Government relating to environment, agriculture, cultural heritage, tourism and land planning.

### **Integrated knowledge of territorial heritage and landscape, the basis of the proposal**

The project understands landscape, according to the definition of the European Landscape Convention and to the disciplinary traditions synthesised by this definition, as the physiognomic and visible expression of natural and cultural processes identifying the character of the territory, based upon the perception of the population. At small scale – that of the Atlas of Spanish Landscapes (Mata Olmo & Sans Herráis, 2003), for instance – the Nansa Valley, together with the mountain tops that frame it, constitutes a differentiated landscape, a large landscape unit, of relative visual, morphological and functional importance. The project, however, has considered both in the analysis phase and in that of the diagnosis and proposal, a bigger scale, “closer” to the community inhabiting the valley, which organises and lives in the territory.

The task of identifying and characterising the Nansa Valley’s landscape diversity has been cartographically represented at a scale of 1:25.000, which implies a visual close-up, through the region’s roads, trails, mountain passes and hills, and a treatment of the landscapes’ structural elements pertaining to this scale of organisation and interpretation of the territory. Considering the characteristics of this mountainous area, we took the following as structural elements of the landscape: configuration of the relief and hydrography; spatial organisation of ownership of the land (differentiating between public and private; size and shape of plots); the system of settlements and rural roads; vegetation and land uses; visual organisation of the geographic space.

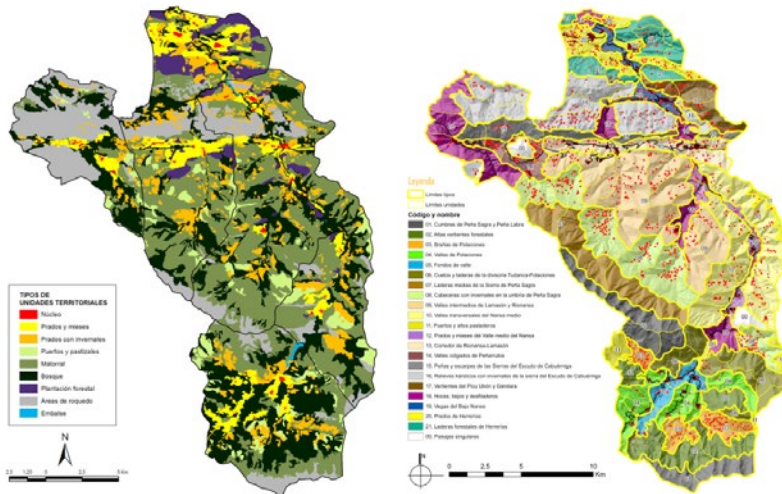


Figure 1: Territorial units and landscape units and types in the Nansa Valley

But apart from these components, the novelty and contribution of the study method adopted consists of considering the “territorial units” as the basis of the morphological and functional organisation of the landscape. These units are characterised by their formal homogeneity, but above all because they are the basic cells of the territorial structure of the Valley, resulting from historical modals of social organisation of the area and to which a determined social and economic function is assigned, both in the past and at the present time. The method for their differentiation is articulated around their definition, the historical models of social organisation, the new types of territorial units currently making up the territorial model of the Valley, and the technical criteria of demarcation. This resulted in the identification, characterisation and appraisal 563 units at a scale of 1:10.000 (Figure 2).

The territorial units, as basic components of the organisation and use of the territory, are integrated at a higher scale in landscape units, which mostly present a mosaic typical of a mountain area. Identification and demarcation of the landscape units therefore involves incorporating the territorial units, and adjusting, in some cases, their limits to those of the landscape and in others, breaking them down when, from the perceptive point of view, territorial unit is assigned to two different visual configurations (Figure 3).

## Method for differentiation of Territorial Units

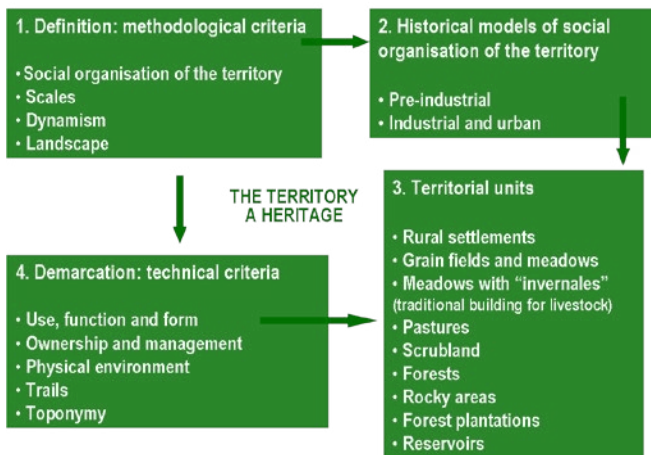


Figure 2

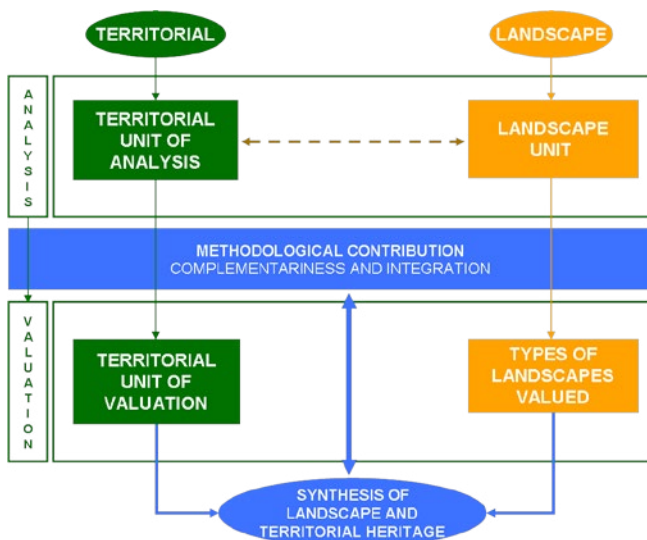


Figure 3: Methodological diagram of territory-landscape integration



This territorial study of the landscape is based, as with other landscape characterisations, upon hierarchised typology with two levels. At the base, the landscape units, parts of the territory which, at the work scale adopted, present a combination of elements that generates a particular physiognomy, a differentiated and visually distinguishable morphological organisation, that make one part of the territory different from another. This idea of landscape units implies that the landscape dimension of the territory resides in the vision of its particular physiognomy, in a determined arrangement and articulation of the parts making up the appearance of the territory and endowing it with its particular character. A total of 134 landscape units has been identified and characterised. This diversity, together with the good state of conservation of many landscapes, is the highest value of a region's landscape heritage. Over one hundred landscapes have been classified into landscape types, and a total of 21 of these has been identified, mapped and characterised. Each type results from the grouping of units whose structures are repeated in the territory. At the work scale adopted, the types provide a synthetic reading, but in sufficient detail, of the large landscape configurations in the territory, and they clearly express the diversity of the region's landscape heritage.

Together with the nucleus of the territorial and landscape study, we analysed other issues of a sectorial nature, relevant to the diagnosis and proposal for sustainable development: historical-cultural heritage, with particular emphasis on the historical trails of the valley and on the industrial heritage based upon hydraulic energy; the environmental state and management of the Nansa river; the situation of the valley's strategic production activities (livestock farming, forestry, tourism); the morphology and dynamics of settlements and of the elements of the dispersed rural habitat which are characteristic of the area, the "invernales", subjected to opposing processes of abandonment and functional change; and other aspects of the social reality such as access to services, facilities and infrastructures, as well as the state of the town and territorial planning systems. The different studies and contributions have been integrated into one single explanatory process and into one single geographic information system (GIS), as a common working base.

All this research and knowledge in relation to territory involved a permanent process of consultation and social participation adapted to the requirements

of the different phases of the programme. To this end, we combined surveys, in-depth interviews and different workshops, one with the mayors of the “comarca” (sub regional historical and natural area), and another three of a thematic nature with local agents in relation to livestock farming, the natural environment and rural tourism. Another important issue involved the setting up of a mixed follow-up commission (foundation, experts, social agents, Cantabria Regional Government.), which meets every two months to establish and orient the development of the programme and which is currently taking decisions in relation to some of the actions planned. With regard to landscape, the project has incorporated social perception by means of the method of in-depth interviews. We considered a suitable method for an area presenting the characteristics of the Nansa Valley (highly unpopulated), as well as a complement to the abundant information obtained from the workshops. The material collected is therefore provided by close contacts with people and social agents in the region, who have a strong, vivacious and active relationship with the features and dynamics of the landscape.

### **Diagnosis of values, conflicts and opportunities relating to heritage, and design of a proposal for territorial development**

This exhaustive study on the territorial and landscape heritage has highlighted as the Nansa Valley’s greatest strength and potential its outstanding territorial and landscape diversity from its constitutional elements to its large components (563 territorial units, 134 landscape units and 25 landscape types), the good state of conservation of much of this heritage, as well as the little existing knowledge or appreciation thereof, even within the region and especially outside it.

But the diagnosis has also identified, through the results of the previous phase and the set of different thematic reports on the region’s<sup>4</sup> strategic axes, imbalances and conflicts between the existing heritage-based values and the activities and processes affecting the functioning and character of the landscapes and the components this comprises.

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4. The themes of the reports are the natural environment and forest areas, population, livestock and tourism, morphology of villages, historical trails, landscape heritage, planning and local development.

The action plan aims to correct these imbalances and to promote territorial development in the Nansa Valley, and is conceived as a global intervention proposal. Its strength lies in its transversal nature and in its willingness to harmonise and favour the synergies between economic innovation and maintenance of the values of territorial heritage and landscape as a development resource. Thereby, we attempt to move away from the idea of survival of mountain areas (Ortega Valcárcel, 2000), adopting one of promoting dynamics and integration through improvement of the region's quality of life, setting up contexts of activities for local and external agents and promoting quality travel for visitors. Ultimately, it constitutes an exercise of governance.

The plan is articulated around the four above mentioned strategic axes (Figure 4), and for each one of these, we have established objectives and actions that value landscape and territorial heritage, contribute to the socioeconomic development of the Nansa Valley and promote social and institutional involvement. Furthermore, territory-landscape integration enables two scales of intervention to be included: the municipal one, based more upon the territorial units and very useful for defining the territorial model and establishing land classification in town planning, and the sub regional one, based on the territorial and landscape units, preferably to be applied to territorial planning instruments or to landscape plans at the sub regional scale.

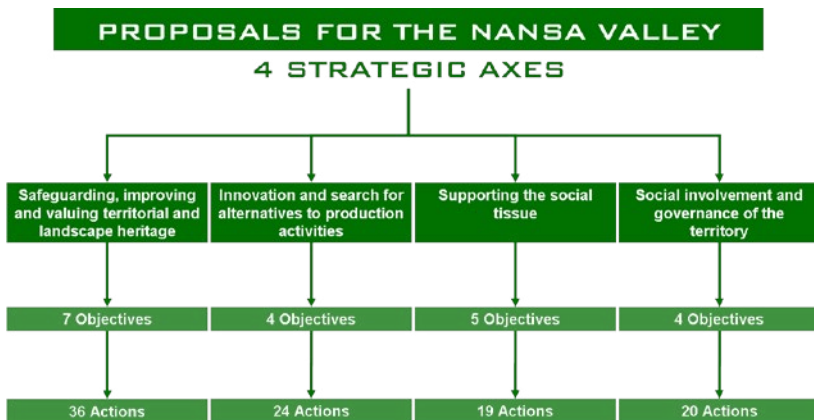


Figure 4: The proposal phase

Four types of proposals have been distinguished. Firstly, those aiming to safeguard, recover and value territorial and landscape heritage, through active conservation actions and management, of systems of sectorial coordination and of studies and programmes for awareness of the population in relation to the development of a territorial and landscape culture. Secondly, economic ones, aimed at seeking production alternatives based on use of local knowledge, technical innovation, associative and online management, energy saving, respect for the environment and the integration of new land-uses in the landscape. Thirdly, eminently social proposals, aimed at improving quality of life and supporting the social tissue. Lastly, development proposals based upon best practices in territorial planning and management, within the scopes of local development, town planning, territorial planning and municipal policy.

Among the actions underway, we can highlight a project involving an intervention in the river and in the hydro-graphic network in the Nansa Valley, aimed at the revitalisation and management thereof, making uses compatible with public enjoyment, and ecological and landscape values compatible with rational use of water resources; participating in this initiative are the Marcelino Botín Foundation and the administrations and institutions involved in the application of the European Water Framework Directive (Northern Spain Hydrographic Confederation, the contracted hydroelectric company – originally, *Salto del Nansa*, currently integrated into Endesa – and Cantabria Government departments). This action aims to recover and value the Nansa River, and is the first of the strategic axis of “safeguarding, improving and valuing territorial and landscape heritage”.

A second action that has been initiated involves the design of territorial planning through the figure of the special plan, an instrument of the Cantabria Government’s town planning and territorial planning legislation. Apart from contributing to the defence and management of territorial and landscape resources for all the municipalities in the Nansa Valley, the plan aims to make advances in one of the objectives of the 4<sup>th</sup> strategic axis: social involvement and governance of the territory, as the special plan is to provide a suitable administrative framework in order to improve management of the numerous public administrations involved and to facilitate coordination.

Within the previous strategic axis, and to improve the environmental and economic management of “Montes de Utilidad Pública” (Public Forest

Areas), collaboration has been established with the team drafting the Forest Resources Management Plan, promoted by the Cantabria Government in order for management of uses and activities in the different forest areas to be in consonance with environmental, production and social objectives, and for it to be based on the identity and character of the territorial and landscape units defined in the project.

A special historical trails plan is also to be set up, which will enable a resource of great cultural value to be catalogued. This plan will adopt protection and improvement measures and will promote, with due caution, the use of historic trails for access to the territory and the landscape, integrating unique elements of heritage on these trails (architectural, archaeological, ethnographic, etc.), which often constitute excellent viewpoints for illustrated interpretation of the landscape. Specifically, this action is the first of those intended to reach the objective of conserving heritage within the strategic axis of safeguarding, improving and valuing territorial and landscape heritage.

Within the strategic axis for innovation and the alternative search for production activities, one objective involves modernising the livestock farming system based on the use of forest areas and neighbouring pastures, through actions such as the development of a line aimed at supporting the genetic improvement of autochthonous breeds, preferably the Tudanca cow, as well as horse breeding or the recovery and adaptation of traditional systems of grazing rotas and calendars based upon vegetative cycles and livestock species.

In short, the action plan attempts to contribute to the development of the Nansa region based on territorial and landscape values, promoting a new model of territorial government involving cooperation and coordination between social, public and private agents, with feasible and sustainable economic alternatives, capable of strengthening the Valley's social tissue and improving its external image.

## **The aesthetics of sustainable landscape infrastructure**

**Mrs Kathryn MOORE**

*Representative of the European Foundation of Landscape Architecture (EFLA)*

At the “Seeing the Bigger Picture” Symposium held in Birmingham in April last year (<http://www.urbanevents.org.uk/detail.asp?EventId=109>) and in conferences around the world and in recent publications, there is evidence of a considerable shift in planning and development hierarchies with the landscape determined as the lead driver for change, an important economic and social concern that is now firmly on the mainstream political agenda<sup>5</sup>.

What is being articulated here is a holistic vision of the landscape. In the built environment, it is no longer enough to simply consider the landscape or take it into account. It is not an afterthought, the bits left in between the buildings, developments, highways and town centres, or a vague blanket cover that will look after itself. Given its proper status, it is the context upon and within which these dynamic processes take place. With all of its potential, the landscape is seen as a base layer, against which decisions about all future development need to be made. What better way is there to define landscape infrastructure? In these projects for example:

- the Blue Isles Plan for artificial dune islands off the cost of Belgium and the Netherlands to neutralise the rising sea level for the coming century and provide a million lots for small estates by West 8;
- Palmboom and van der Bouts plan for 450 hectares of urban extension at Amsterdam consisting of 18,000 dwellings on the IJmeer Lake. The plan consists of six islands of different sizes, the city and the water work together as a whole; the buildings are treated as part of the landscape, the configuration of land and water and the composition of shorelines preceded the land use planning decisions;
- the work of Juurlink and Geluck in the Leek-Roden inter municipal landscape master plan for 6 000 dwellings and 110 hectares of business

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5. This paper is extracted from and based on *Overlooking the Visual, Demystifying the Art of Design* (Moore 2010).

activity on the Drents plateau. Surrounding the park, a model of scattered urbanity is used to create great diversity in living environments by spreading the dwellings along different landscape types;

- the reclamation of Vall d'en Joan cuts across the artistic/ecological divide. Batlle i Roig's extraordinary idea is to work with the engineer's technological requirements to create dams and platforms, but transform them into terraces and fields and use technical, agricultural solutions to re-create the romance of long-lost agricultural landscapes;
- the landscape-planning project for the Black Country in the West Midlands based on the concept of broadening horizons, derived from an understanding of the regions topography, the history and mineral exploitation and landscape despoliation. The proposal is based on the manipulation of layers of urban topography, urban floor and urban architecture to radically change the visual and spatial identity of the region over 30, 60 and 90 years;
- in the Mersey Valley, the proposal is to take a forensic, systematic approach to the collection of the narratives, systems, character and quality of the estuarine landscape of the Mersey. Inspired by the precision of the Victorian engineers who constructed the rail, canal and hydrological infrastructure of the estuary, focusing on the strategic potential of transport, water, urban agriculture this project sees the region developing as an urban landscape research laboratory monitoring weather, water, wildlife and energy;
- a 75 km stretch of coast on the Dead Sea in the Rift Valley where Gross Max have assessed abiotic, biotic and human factors along with the requirements of future users and the availability of flat land to inform the development process (Topos);
- Mumbai where the edge between the sea, the monsoon and river has been redefined in an exhibition challenging conceptions of the relationship between the city and water (Mathur and Cunha 2009);
- Birmingham's Spaghetti Junction as a point of arrival rather than as a means of escape, as something to look at and watch from nearby and far away requires an investigation in terms of its topographical location, locally and regionally; a geographic sensibility;

- and in Norway where landscape architects from the Norwegian Public Road Authority have helped create the necessary legislation to require multi-disciplinary working across many departmental boundaries, environmental management plans for the construction and operation phase of new roads to deliver a national and local strategy for the highway infrastructure. The Norwegian Public Road Authority's ambition is to design all new roads without adversely affecting important landscape features, and if possible add beauty to the surroundings.

All of these projects are a far cry from the landscape being relegated to hard won square metres of grass, trees, hedgerows and ditches, or where 'nature' is levered in after the important economic decisions have been made, nothing more than 'living embroidery'. Holistic, artistic and conceptual approach to landscape infrastructure for large scale planning and regeneration, these projects demonstrate a way of defining and working with landscape infrastructure that is within the spirit of the European Landscape Convention.

But to have any real chance of providing a sustainable and lasting blueprint for the landscape, this way of working needs to become whole heartedly absorbed into all of the decision making institutions and organisations responsible for policy, strategic or regional planning at a national or international level, as well, of course, in education. To do so requires rethinking many of the assumptions we have about the nature of landscape and aesthetics so that these kinds of projects do not happen by chance, but by design. One way to do this is by developing a pragmatic, holistic approach to consciousness and perception and this is what I have been working on for the last decade or so.

A radical new definition of perception has far-reaching implications in the studio, setting a new *modus operandi* for tutors and students alike. But it also offers a conceptual and practical basis for an entirely different way of addressing design matters beyond the studio, providing a mechanism both to appreciate and work cohesively with the richness and significance of the social, physical and cultural context of our lives. More than anything else, it extends design right into the political/social arena, putting it at the heart of development and change as well as at the top of the quality of life agenda.

Although rarely articulated, the concept of a sensory interface embedded in traditional theories of perception is hugely pervasive, affecting almost every facet of Western culture. It is at the heart of the idea that art involves a different



conceptual framework from science, a different mode of thinking that art is a pleasurable pastime whereas science is a serious endeavour. It lies behind the commonly held assumption that it is possible to forget all you know in order to fully appreciate a piece of music, a painting or the landscape, embracing the sensuality of the experience with a clean slate, uncontaminated by knowledge or rationality and why, despite so much evidence to the contrary, we still characterise scientists as cool, detached, unencumbered by emotion and artists as passionate, subjective and slightly deranged, why we think decisions can be made on the one hand intuitively without knowledge and on the other objectively, without value judgments.

Using a new paradigm to work out old problems, the philosophical argument changes the nature of the discourse, not by discovering a new language as such, but by fusing, overlaying and cutting across concepts that have up till now, been compartmentalised and segregated by a collection of psychological and philosophical beliefs packaged, promoted and sold so successfully over time that they have become part of our way of life. It overcomes the old dichotomies that set in opposition nature and culture, emotions and intelligence, science and art, quality and quantity, facts and values, visual and verbal, ideas and form. Each one of these damaging dualities stems from the same outworn theory of perception.

Collapsing the visual, intelligence and language and many other fragments of consciousness into a holistic concept of perception takes the supernatural element out of the equation. This changes the picture quite dramatically. By stripping the metaphysical dimension out of perception we can define design more sensibly. For example, as I mentioned last year, anyone who has a responsibility for the landscape, whether they deal with words rather than drawings, a computer rather than a pencil, they are effecting, predicting or managing spatial change. It all has a visual dimension; it is all about designing one way or another. There is nothing mysterious about it. It does however take considerable expertise to do it well – to work with and express ideas through technology, in a spatial, visual medium, whatever the scale – from the most ecological to the most hi tech, from the restrained to the exuberant. What this means is that most of us here, like it or not, because we have a responsibility for the landscape, are designers.

From this perspective, landscape is not just about ecology, nature conservation or matters of heritage. Its not only the physical context, the constructed public

realm, the national parks, coastlines, squares, promenades and streets, it also reflects our memories and values, the sense of pride we share in the places where we work and live. The experiences we have of a place, as citizens, employers, visitors, students and tourists. It is the material, cultural, social context of our lives. The landscape is about ideas, and the expression of these ideas shapes the quality of our experience. This is the link with aesthetics.

As with any other kind of human experience, aesthetic experience occurs in response to our interaction with the physical world about us, in all its multifaceted, cultural, social and complex sensuality, marked indelibly by memories, associations and preconceptions. We react and respond holistically, to the environment influenced by knowledge, mood and context.

Effectively booting out the presumption that there is something psychologically elemental in our responses, aesthetic experience then, is real enough, but not in the way it has traditionally been conceived. What might cause an aesthetic experience, the object or the activity, is immaterial. It's the response that counts. If we are lucky, we will be rendered speechless by the power of a painting, the beauty of a landscape, or the balance of a mathematical equation. Pleasurable, emotional, moving and inspiring experiences can happen when reading a classic novel or merely wandering down the street. The surprising revelation is that the breathtaking nature of the aesthetic experience is dependent on and limited by what we know. This even includes the experience we have of nature.

It is not the painting that counts, or the landscape or the music, but the quality of the experience. Since the quality of the experience we have is defined by what we know, this makes it entirely accessible. Knowledge we can teach, judgements and values can be learned. Understanding the aesthetics of place is a question of becoming culturally and visually alert. That is as far and as deep as it goes.

There are many other implications of course. It changes our concepts of objectivity. The bottom line is that in any study, design or otherwise, we are constrained or liberated by the language and concepts we have at our disposal. There is no other way of knowing, no other kind of meaning to uncover, no genial spirits to give us a nudge in the right direction. Not the site or what lies beneath, within or without it, nor even the fears and desires of our prehistoric ancestors. Equally, there is no way to operate with the presumed objective

neutrality of a so-called scientific approach often presumed to be the goal of regional planning studies.

Just compare the 1950s' first plan for Harlow New Town by Frederick Gibberd, described by Sir Geoffrey Jellicoe as a 'strikingly beautiful plan seemingly inspired by the painter Ben Nicholson' to the 1960s' wavy grid of Milton Keynes (Milton Keynes master plan, Llewelyn Davies) the non-place, interactive grid inspired by network theory, communications and rapid mobility. Given how much transport policy has changed over the years it now seems incongruous that Derek Walker (1982), Milton Keynes's chief architect suggested 'The grid roads could be the most enjoyable part of the city – our Venice canals' – with some of the earlier planning projects I showed. Or compare today's transport, housing and agricultural policies with those of 15 years ago. Were all those 'experts' just plain wrong back then or simply working under different circumstances and with a different set of ideals?

As designers, planners, policy makers and politicians we need to recognise that there is no choice but to engage with ideas at every stage of the development process, whether this is in the initial research or surveying the scene. Preconceptions, habits of thought inform every aspect of our decision-making, any judgments we make about the value of what we find. The recommendations we make for future proposals, how and why we draw up a scheme in a particular way or plan the long-term management and care of the land, all are shaped and framed by the language and concepts we have at our disposal.

To comprehensively deliver the aspirations of the European Landscape Convention we have to move away from a paradigm dominated by ecological or technological details and the processes of participation and move into the realm of ideas. We need to recognise the importance of working with and expressing ideas at a strategic, policy and detailed level in order to achieve a transformation of the city fabric, as well as to understand the significance of connecting aesthetics, tectonics and culture to the social and physical context of our lives, recognising that this is also a question of politics, governance, health, profit and other issues relating to the quality of life.

To prepare students for this more holistic approach we are working with the agreement and support of the Birmingham City Council to carry out a critique of the Big City Plan (BCP), which is setting an agenda for the development

of the city for the next 20 years. Examining the extent to which global concerns about climate change, health, public transport and urban agriculture are being addressed, they are investigating examples of good practice from cities around the world, and with this wider perspective, imagining how these might be appropriately implemented in Birmingham. They are also using this work as the context for a 5-week project at Lancaster Circus, the new civic location of the City Council offices.

And in the final year, studies are being run to investigate the potential for master planning at a sub-regional scale, one in parallel with students from the University of Virginia, with students studying the Potomac Region and Washington DC. And in the Birmingham project, students looking at the Tame Valley in East Birmingham, to examine what could happen if the warehousing and remaining manufacturing in this valley were to be relocated beyond the city to reintegrate the M6/Spaghetti Junction corridor into the city.

It is time to stop disaggregating the landscape into numerous constituent parts, breaking it down into components such as visual, cultural, ecological or heritage, landscapes that are blue, green or grey – nothing more contributes to the woeful underestimation of its spatial and cultural significance. Illustrating the dangers of compartmentalising and central to the problem in the United Kingdom and I suspect, across Europe, is the fact that lots of departments have responsibility for little bits of the landscape. It is found in spatial and social planning, agriculture, economics, transport, engineering, culture and environment. Sometimes it even features in education and health policy. There can scarcely be a more compelling example of divide and rule

We have to legitimise the value of design expertise – understanding the skill it takes to get the design of the landscape right, whatever the scale or context – it is no longer acceptable or even possible to just make do. We need to make evident the social and economic value of good-looking, quality environments. The numbers of jobs created or homes built cannot be our only measure of success. Safety, a sense of pride and involvement, the value of making people feel good about their surroundings, these ideas may not be as easily quantifiable, but they are not just airy utopian conceits. They are real indicators of the success or otherwise of a place. We have to convince

everyone, the politicians, the mandarins, big business, that a high quality built environment is central to sustainable economic growth and the real measure of how we define ourselves as a nation. That is when we will see proper investment.

It is hard to overstate the importance of language in all of this. At present, the constructed public realm is dismally misrepresented as public open space, recreational space, green space, grey space, etc. The paucity of official planning jargon inevitably leads to ignorance in policy and often in practice, of the rich complexity and subtlety of the physical context, thereby seriously underestimating the impact it has on the quality of life. To address the problem therefore, we must look to change the habitual descriptions and references. A more differentiated vocabulary, making explicit the quality and character of places, one that elucidates the multitude of uses and functions of space from the highly symbolic to the everyday is needed to make the physical fabric of our lives more tangible. To effect real change, an evocative, expressive way of speaking that accurately reflects the way we live our lives has to permeate official documents and guidelines, become accepted and then expected in project and competition briefs, etc. If we really want to fully articulate the way we experience the world, there can be no room for the dry bureaucratic talk that squeezes the life out of any debate about place and space. It is not as though we are stuck for ideas. There is a wealth of literature and research, evidence scientific, academic and anecdotal, imaginative narratives to inspire and show us things we had not noticed in the world.

Partly this is about raising aspirations, making it crystal clear what is possible and what can be achieved. The very least we can do as advisors, teachers and practitioners is to let people know what they can and should expect. If an essentially run down, demoralised city like post-Franco Barcelona can be transformed in 20 years into a world class city with an unparalleled urban infrastructure then why not envisage the Black Country as a sustainable collection of villages that will match the cultural diversity and excitement of any metropolitan area in Europe, but without the associated sprawl and grime? Or think that nearby Aston, an area shredded by the Spaghetti junction's intervention could become renowned for its international, locally sourced cuisine and food markets, rather than as a shabby, unloved urban 'badland'. This is what raising aspirations means; encouraging, demonstrating and ultimately providing a persuasive and imaginative view of the future.

We need to find ways of connecting spatial strategies to real places and developing ways of working that encourage and demand the expression of the ideas that are fundamental to achieving design excellence, the ability to create good-looking places, because the quality of our environment is directly proportional to the quality of our lives. It is an equation as simple as it is compelling.

My continuing research explores the connections between theory and practice, the importance of working with and expressing ideas at a strategic, policy and detailed level. The lifeblood in this work is the philosophical basis of the research. I am currently working on a proposal to look at beauty with a view to developing radical artistic and conceptual approaches to design and planning to deliver the quality, meaningful environments expected by society, rather than the pervasive generic aesthetic we see all around us. The project involves working with aestheticians, cognitive scientists, linguists, anthropologists and architects to examine the implications of this paradigm shift for their own areas of expertise and practice. It is being proposed through the centre for urban transformations at Birmingham City University, where we are defining a new discourse in between research, teaching and practice, one that is both philosophical and practical, esoteric and day-to-day, political, theoretical and pedagogical.

## **Infrastructures in the landscape: the case of Mallorca**

**Mrs Maria Luisa DUBON**

*Counsellor of the Territory, Island Council of Majorca,  
Balearic Islands, Spain*

Discussing infrastructures and landscape management in Mallorca at a gathering that acts as an umbrella for the 9th meeting of the Council of Europe Workshop for the implementation of the European Landscape Convention and 3rd International Landscape and Infrastructures Congress is clearly a major challenge, particularly given the recent approval of the Revised Mallorca Road Sector Master Plan, back in December 2009, and initial moves to introduce a strategy for the development of the European Landscape Convention on the island.

One constant factor throughout the whole process is the notion that infrastructures are fundamental in the region's make-up, now and in the future. Having said that, the envisaged spatial model has seen certain changes.

From the 1960s onward, the need to take into account the region's insularity and its spatial limitations was voiced by the local university, the first ecologist movements and by citizens. Closely linked to the subject of infrastructures, it is important to highlight the contributions of geographer Albert Quintana, who clearly raised the impact of infrastructures on the region's makeup in his doctoral thesis *El Sistema Urbano de Mallorca (Mallorca's Urban Development System, 1979)*.

Island regions obviously stand out for their many peculiarities, but size and scale are two key factors. A specific initiative that might have relative repercussions in mainland regions can make a huge impact in island ones.

At the same time, the concept of a landscape has also evolved. The decision adopted at a plenary session of the Mallorca Island Council in February 2008 to implement the European Landscape Convention at an island level has implied the introduction of initiatives aimed at achieving this goal.

A strong process of urban development can be said to have occurred in the 1960s and 70s, tied in with the development of infrastructures, with special repercussions on coastal areas. Subsequently, there was a growth in large-scale inland infrastructures, with developed urban areas moving inland, motivating people to live in a different place from where they worked. This,

in turn, generated new insular mobility patterns and a growing demand for infrastructures, mainly close to roads leading into the city of Palma, where most workplaces could be found.

As for the evolution in what is understood by the concept of a landscape, we can synthesise by saying that this evolution can be inferred from a whole series of spatial, heritage-related and environmental laws and regulations passed from the 1980s, all directed at conserving areas and items of substantial interest, albeit with a fragmented spatial vision.

To offer a better insight into current relations between infrastructures and the landscape, I shall make a summarised analysis of the process leading up to the Revised Road Sector Master Plan, which spanned two parliamentary terms of office. The starting point was a complex situation, firstly because the review of the Road Sector Master Plan initially began during the last parliamentary term when a different regional government was in power, based on the idea of a growing need for mobility, and, secondly, with the inertial drawback that a highly compartmentalised approach was taken to the subject of infrastructure. The government of the Balearic Islands has authority over public transport outside urban areas and also over railways, whilst authority over road sector master plans is incumbent upon the corresponding island council. In practice, this meant that the Road Sector Master Plan was contemplated as having to overcome all mobility problems in Mallorca, without bearing in mind the fact that new initiatives that are currently being put into practice, in connection with the railway system for instance might substantially alter new mobility requirements. This is a very brief description of the starting point on which work was based.

Additionally, the initiative to implement the European Landscape Convention and to draw up a set of guidelines for the development of a landscape strategy in Mallorca was set in motion by the Spatial Planning Department while the Department of Public Works was responsible for drafting the Road Sector Master Plan. This called for greater efforts in order to achieve the desired goals. It was from the plan's initial approval, coinciding with the period for the submission of allegations, that political and social debate took place and certain changes were introduced to bring the plan more into line with the intended new spatial model and to take into account the concept of the landscape in an explicit way.



Thus a general consideration was raised: that all action that was taken should bear in mind landscape criteria established in the guidelines for a Mallorcan landscape strategy. More specifically, document no. 5, entitled Action Plans, states that all actions proposed in this Revised Road Sector Master Plan for Mallorca shall bear in mind the criteria established in the document *Guidelines for a Mallorcan Landscape Strategy*, drawn up by Mallorca Island Council's Spatial Planning Department. This document, which develops the European Landscape Convention, is committed to the conservation of Mallorca's scenic heritage from all perspectives. For this reason, Mallorca Island Council's Department of Public Works will work in permanent coordination with the Spatial Planning Department to achieve the proposed goals.

Mallorca Island Council's Spatial Planning Department is currently drafting technical instructions that will outline how landscape impact analyses should be conducted when new action is envisaged relating to roads, particularly when new roads are created, like new urban ring roads.

Some general considerations are also posed relating to public transport, integrating in the plan the possible creation of bus lanes or high-density vehicle lanes (VAO) in roads leading into the city of Palma (the places with the worst traffic problems in the whole of the island), taking advantage of the creation of second or third lanes along these routes. This means that measures to promote the use of public transport are incorporated in the plan; a factor that had always been overlooked in this kind of plan.

Another general measure that is contemplated is the need to create car parks on the outskirts of the city of Palma to dissuade vehicles from entering the city in order to optimise urban transport and avoid the traffic jams that occur, which then bring about calls for further infrastructure.

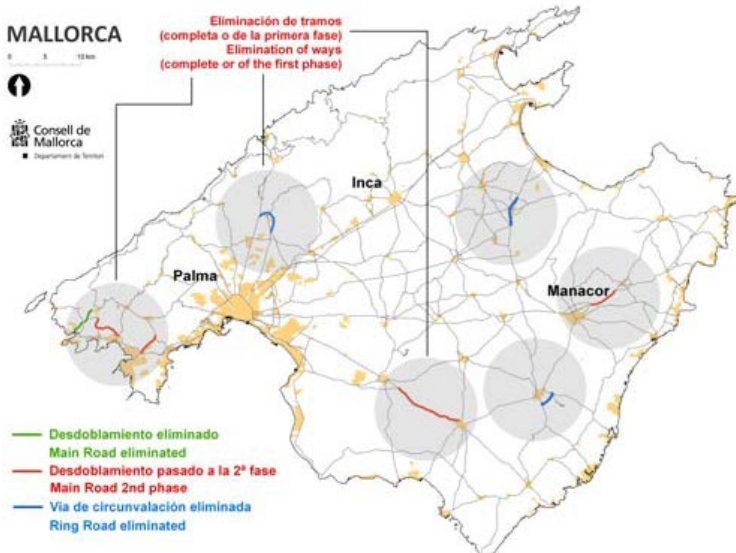
Going into greater detail, one major change is introduced. The planned motorway between Inca and Manacor is eliminated. This would have crossed the middle of the island: an area of great scenic value known as Es Pla, having a big negative impact on this landscape unit that could not have been justified in any way, neither technically, financially nor socially.

Furthermore, some changes are made to infrastructure envisaged in the initially approved plan. The widening of the road between the town of Andratx and the port of the same name is cancelled, since it would have been

completely out of proportion, given the number of vehicles that use the road, as well as having further negative visual repercussions on a municipality whose landscape suffered considerably between the years 2000 and 2007.



Three urban ring roads or by-passes are also eliminated. The first was intended for Bunyola, a municipality that forms part of the Serra de Tramuntana Mountains, which aspire to be declared a World Heritage Site. Its construction would have made a big scenic impact. The second and third correspond to the towns of Santa Margalida and Felanitx, in the north and east of the island respectively, whose current roads into the towns coincide with their traffic needs.



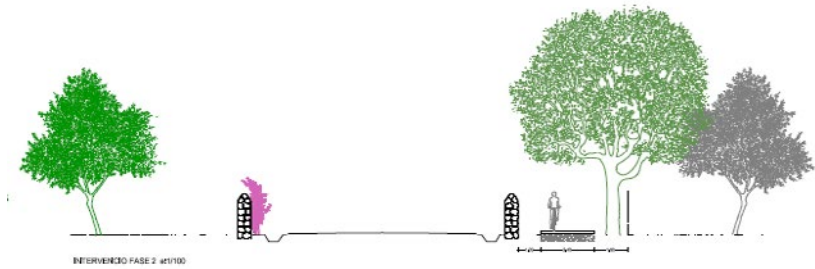
It is important to add that the plan has been drawn up to encompass two main phases. Phase 1 lasts from its approval through to 2017 and corresponds to the actual time span of the plan. Phase 2, which covers the period 2017 to 2024, is really an anticipated future planning model subject to review at least one year before the expiry date of the plan.

Lastly, it must be noted that one of the most important changes to be introduced during the process of the revised plan's approval is the elimination from phase 1 of all planned widening of roads between different towns in the island. Only the creation of the occasional additional lane along existing motorways has been left during phase 1, together with the widening of some pending stretches of Palma's new ring road if current traffic requirements make it necessary.

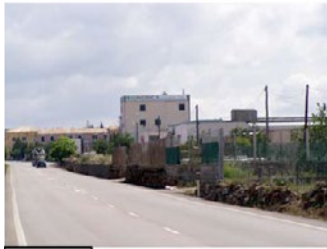
In this way, mobility requirements can be reconsidered once phase 1 – the actual time span of the plan – has concluded, and the outcome of action carried out as part of other initiatives can be observed.

In the *Guidelines for a Mallorcan Landscape Strategy*, aimed at defining guidelines for the application of the European Landscape Convention, a series of proposals are made on the subject of how to deal with infrastructure. Some general guidelines are given, but a series of proposals on certain specific issues are made, focused on advocating a landscape-sensitive approach in the design and planning of infrastructure. Some examples are put forward associated with infrastructure aimed at the restoration of the landscape. In this respect, two audiovisual presentations have been designed that can be seen in the visual exhibition room, as part of the proposed workshops. These presentations come under category B (landscape criterion for infrastructure design), where three specific examples are given, with another two examples coming under category C (infrastructure for landscape appreciation and restoration).

In continuation a brief outline of these presentations will be given. Firstly, we have chosen three presentations under the general title *spatial restoration and the creation of new landscapes*. The first describes the landscape restoration of a stretch of road: an old road that now carries residual traffic. The aim is to create a pedestrian and cycle route that links the two towns of Santa María and Consell, rectifying any negative visual impacts.



*Landscape restoration along highways and byways*



Nowadays



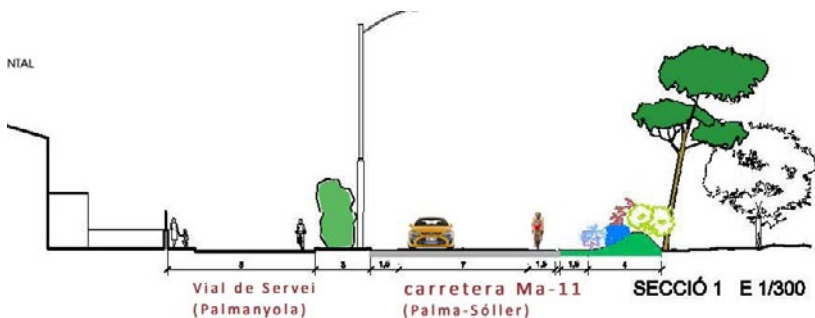
Proposal

The second is a minor initiative to restore the roadside, following a former attempt to redesign the Palma to Sineu road, which was not properly finished off.

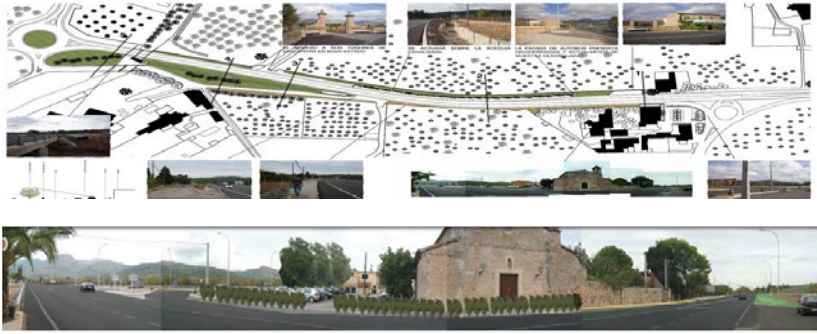


The third is a very ambitious initiative, which must be attempted in stages. It tackles problems generated by large-scale infrastructure: Son Reus, Mallorca's waste treatment centre which also generates electricity. To date,

minor roadside work has been completed. The project has been carried out with public participation, and the small part that has been completed was given priority by local residents.



Lastly, we have selected two presentations under the general title *a threatened landscape / a landscape of opportunity*. The first concerns the scenic restoration of areas at a crossroads. It is a modest initiative but can help to make infrastructure compatible with items of heritage and natural assets.



The last presentation is a very ambitious one, aimed at rectifying the negative scenic impacts of a large-scale piece of infrastructure, the Balearic's new main hospital which is unsuitably located and must be urgently integrated into the landscape. In this case, public participation was also involved, together with the cooperation of different authorities.



## Summary of papers submitted to the Workshop

### Mr Pascual RIESCO CHEUECA

*Senior lecturer of the High Technical School of Industrial Engineering,  
Centre for Landscape and Territory. University of Seville, Spain*

This paper sums up the communications submitted to the second workshop *Infrastructures and landscape in a sustainable model*, belonging to the series of meetings promoted by the Council of Europe for the implementation of the European Landscape Convention (ELC). Suitable design and planning of infrastructures for transportation, communication and energy play a major role in the construction of sustainable landscapes. A variety of infrastructural issues has been reviewed in this workshop within a sustainable landscape vision. The framework set by the European Landscape Convention provided a solid methodological reference in the subsequent discussion.

### Introduction

The different contributions to the workshop have addressed a variety of aspects inherent to infrastructural policy in a frame of sustainable landscape protection, management and planning. Sustainability can be defined as the management and conservation of natural resources and the orientation of technological and institutional change so as to ensure the continuous satisfaction of human needs for present and future generations (Ceña, 1999). Sustainability implies a systemic approach, where a detailed consideration of the interconnectedness of the socio-natural world is deeply incorporated to analysis and policy; it also entails that the local and the global scale have to be taken into account simultaneously; and all development needs to comply with a diversity of pre-requisites, which are a dual source leading to constraint (by restricting unhindered and uncritical development) and to subtlety and design enrichment (by fostering a nuanced, balanced and richly negotiated public initiative).

This is a well-accepted concept, whose implementation however faces a diversity of controversial aspects. Large-scale, visually dominating technical elements have been introduced in the recent past: highways, electrical power lines, wind power plants, sewage treatment plants, and cell phone and broadcasting masts. Infrastructure has a twofold effect on landscape. It is a source of impact, by introducing potentially over-scaled elements and

impacts in the territory; but simultaneously, it is a door to the landscape, by supplying elements that provide an access to the land (roads, paths) and therefore determine the frequency and the nature of observation actions. As an example, a study on ecological road-effect zone estimates that transportation infrastructure in the United States has a perceptible effect on one-third of the total land area of the country (Forman, 2000). At the same time, this infrastructure is a window through which the landscape is observed and interpreted by the population: it is a transformer of landscape perception and a territorial dispenser.

In the particular case of city landscape, Strang (1996) and other researchers have pointed out that there is a potential for infrastructure to add to the urban experience, and to shape urban form. The same can be predicated for non-urban settings, provided that the design is sensitive and collaborates with the character of the place rather than negating it. Accordingly, the ambitions of some environmental theorists can be extended to landscape; green infrastructure is defined as an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations by fostering health, leisure and quality of place (Benedict and McMahon, 2000; Fábos, 2004). In a narrow sense, green infrastructure is a network of multi-functional green spaces that provide natural habitats for wildlife and recreational spaces for people (Core Strategy for Ashfield, UK). Would it be possible to articulate mainstream infrastructural development in such a way as to promote landscape awareness and to increment resident and traveller well-being?

Infrastructures inscribe deep footprints on the territory, both in terms of formal rearrangement or disruption and as a source of subsequent change: highways, dams, energy lines and similar aspects are landscape-generators, as elements that guide further evolutions of the territory. Impacts are multiple, and include formal effects, dictated by the sheer size of infrastructures and the patterning and orienting effects caused by them: infrastructures may supersede former landmarks, such as church steeples or hilltops, by their overpowering size (Nohl, 2001); fragmentation, loss of character, degradation, decreased resilience are other well described consequences. In addition, dynamic effects are observed, involving evolutionary responses of the territory dictated by new functions and operational modes of the space which are promoted by the infrastructure, combined with new societal



needs. In particular, new urban and agricultural processes are triggered by infrastructure, and long-term consequences can be read in the landscape evolution. Different research efforts have dealt with the consequences of infrastructure on the landscape: highways (Sancho Royo, 2002; Español Echániz, 1998), wind energy plants (Seguin, 2004; Macaulay Land Use Research Institute and Edinburgh College of Art, 2004), solar energy, industrial landscape (Schindler, 2005).

New technologies are extremely powerful, in that they are able to produce substantial change in a short time span. Earth-moving machinery and synthetic construction materials enable the immediate erection of gigantic walls, energy towers and bridges, and originate sudden topographic transformations, including deep trenches, hill flattening and other radical modifications. Some authors have mentioned that humankind has always been a source of territorial transformation. Nevertheless, it should be kept in mind that a distinct property of the new human predicament is the immense transformative power we manage, thanks to modern technology. A roman bridge was a painstaking effort built by accretion of local or regional material, and its dependence on the topographic features of the site implied a reverence to the *genius loci*, which was never ignored in the design. On the contrary, modern bridge construction technology is so versatile and unconstrained that it can be used to produce forms that are almost completely oblivious of the local context, overarching and dwarfing every minute landscape feature. The risks inherent to such overpowering technology are therefore asking for some restraint and self-criticism.

Modern infrastructural elements are also prone to introducing banality and homogeneity in the landscape, because of the repetitive, standard and anonymous design of these facilities, whose technical content remains hidden to non-experts (Nohl, 2001). Such elements are a source of scalar contamination, in that they are linked to a global scale, and can only be understood in the frame of a wider spatial logic (energy production, water management, global transport), extending well beyond the scale of the local landscape. Infrastructure gives rise to nodes and networks of influence: each node is in itself a source of impact; but there is a systemic, network mode of influence, whose impacts travel along a world-wide mesh of infrastructural agency.

Environmentally sensitive infrastructure, under the guidance of the landscape concept as a criterion for territorial consistency (Zoido, 2007), combined with the insights gained by sustainability science, could embrace a great part of the program of what Benedict and McMahon (2000) describe as “green infrastructure”. An adaptation of this program in the spirit of the European Landscape Convention would include the following principles:

- recognising and addressing the needs of people and nature as embodied by landscape;
- providing a mechanism to balance environmental and economic factors;
- supplying a framework for integrating diverse natural resource and growth management activities in a holistic, ecosystem-based approach;
- giving a rational underpinning to the layout and location of protected areas and development areas;
- identifying key landscape areas prior to development; and ensuring that infrastructure is compatible with the character of the site;
- identifying opportunities for the restoration and enhancement of naturally functioning systems in urban areas;
- providing a unifying vision for the future, in accordance with landscape quality objectives;
- enabling communities to create an infrastructural system that is greater than the sum of its parts;
- providing communities and developers with predictability and certainty;
- enabling conservation and development to be planned co-operatively.

## **Contents**

The communications in the present workshop can be summarised as follows. In the tradition of landscape architecture, Arcila and Satizábal disclose a procedure to increase the connectivity of a dynamic coffee-producing Colombian region, the Caldas district, by opening up a transportation network suitable both for pedestrians, bicycles and automobiles, whose main role is to create an interface between the population and the cultural landscape of coffee production. The proposed transportation network

incorporates connections to development areas and has the goal of increasing the liveability of the public space.

The basis for the project is a diagnostic research on the landscape of the area. The visual structure has been studied in detail, and the resilience and potential of the landscape are considered key elements in the design procedure. The double interaction of transportation infrastructure users with a proximity landscape (elements at close distance to the infrastructure) and a background landscape (providing the setting for the global scene) is a source of inspiration for the layout of the network. A careful integration with the local environment is pursued, by choosing vegetation selected from the natural context of the infrastructure.

López, Tejedó and Benayas are concerned with the assessment of visual impact caused by infrastructural developments. This is, in their own words, a complex task influenced by subjective preferences of the engineer in charge of the project. Therefore, visual impact methodologies should be as objective as possible. A study carried out in 2006 is presented, where a public participation process is adopted to examine the loss of landscape quality caused by telecommunication and broadcasting structures (cell phone transmission masts and similar infrastructure). A visual impact methodology for such developments is derived, showing that expert criteria are not always coincident with public opinion. Understanding the relationship between the two perception patterns is an important component of radio communication design.

Lay and expert landscape preferences regarding transmission masts are largely coincident, however, in some aspects. The installation of telecommunication infrastructure in an artificial setting is considered to cause a minor impact, while aerials in well preserved or scenic areas are construed by most respondents as being aggressive and disruptive. The authors observe that intrinsic aspects of the infrastructure (design, complexity and size) are perceived as being less important than the emplacement where it stands. Chromatic harmonisation is valued as a positive step, as well as the coordinated layout of multiple aerials. A logical consequence would be to draft norms that unify the different networks so as to minimise transmitting impact by integrating within multi-purpose platforms the plurality of structures demanded by our increased dependence on telecommunication.

Requejo and Moreno focus on the landscape public preference in a rural area (southern Cordoba, in Andalusia, Spain). A survey of attitudes to landscape quality is carried out including interviews, and stimulated by photographs and computer simulation images. A systematic list of questions is filled out with the answers of participants. The landscape evaluations are directed to rural and urban respondents. Their preference is strongly correlated with their background and the familiarity with local landscapes.

A preference pattern is discerned, with a clear distinction between rural respondents, whose valuations attach more importance to functional and productive aspects, and urban respondents, which show a growing interest for the natural and the idyllic. In relation with infrastructural development, however, both groups show similar attitudes. This might be an indication that infrastructure is perceived by rural and urban population alike as a phenomenon belonging to neither of both spheres, therefore as an alien evolution of the space.

Sustainability is also regulated by social dimensions. Lagoeiro de Magalhães looks at the transportation infrastructure around Rio de Janeiro. This is a metropolitan area, with almost six million inhabitants, where the territorial construction is heavily constrained by poverty and disempowerment. The author advocates tourism as a development solution. While the amenities presently available are curtailed by socio-spatial failure, an adequate layout of a tourist accessibility network would open the door to a renewed outlook, both by local inhabitants and visitors.

A network providing access to the landscape is argued for as an instrument enhancing the local population awareness of their territorial identity. This is a clear case of an infrastructure being planned as a means for landscape appreciation. The aim is to go beyond present locomotion modes (basically commuter travel) and to irrigate the territory with a sensitive infrastructure that invites travellers to look at the land and to have their leisure in intermediate stations of the network. In this example, and in other similar ones, the guiding principles of land planning provide the key concepts for infrastructural design.

Napadensky considers the effects caused on the transportation landscape of Chile by the privatisation of highways' construction and operation. According to the definition by the World Bank, a concession is a contractual arrangement

through which a private firm obtains the right from government to provide a service under conditions of significant market power. Concessions are typically used for introducing private participation in infrastructure. Some of the implications of private management of infrastructure are heavily contested, owing to the potential impact of public works on the territory. There is a variety of arguments and observations that highlight the changes introduced in the Chilean landscape by the new market-government geometries, combined with modern locomotion styles.

Figueroa et al. address the global picture of the transportation network in a context of climate change. In a first contribution, they introduce the concept of the road system as a potential CO<sub>2</sub> sink. This is an ongoing research, carried out in collaboration with the regional Ministry of Public Works in Andalusia, under the general label *Infrastructural Carbon Metabolism in a Climate Change Scenario*. Roadside use of plants is the solution proposed: about seventy tree and shrub species have been considered in terms of their ability to absorb carbon dioxide.

Different sections of the road system are compatible with the planned CO<sub>2</sub> sink. Service roads, round points, median strips, roadside slopes and other components of the highway structure are available for vegetation. The CO<sub>2</sub> absorption capacity of a given species depends on its photosynthetic activity and the local climate and soil. Such species as *Alnus glutinosa*, *Crataegus monogyna*, *Pinus sylvestris*, *Quercus faginea*, *Salix alba*, *Berberis vulgaris*, *Cistus monspeliensis*, *Cytisus grandiflorus*, *Cytisus multiflorus* are being studied in view of attaining a zero-balance road system.

In a second communication, Figueroa et al. consider the infrastructural network under the light of a particular branch of landscape ecology, the so-called territorial ecology. Integration of the infrastructures in the territory requires a careful balancing of their layout and design in terms of the landscape metabolism. In addition, the road system can provide a set of ecological services, by being complemented with green corridors and other features; and therefore roads are able to sustain general ecosystem functions. The whole can be brought under the global strategy *Millennium Ecosystem Assessment*, a pro-active line of action evaluating the consequences of ecosystem change for human well-being and defining the scientific basis for action needed to enhance the conservation and sustainable use of ecosystems.

## **Conclusions**

The different contributions to the workshop illustrate the richness of the infrastructural debate concerning the optimal integration of public works in the natural setting and the landscape. As indicated in the European Landscape Convention Guidelines “Landscape plans and studies should be part of energy management programmes, infrastructure (all types), and transport programmes and projects; plans for catchment areas; tourism programmes and plans”. Such requirements go beyond standard environmental impact assessment, by incorporating landscape as an interface between ecology and human society.

Landscape, as a concept and a methodological tool, provides a reference for a holistic, comprehensive consideration of infrastructure in the frame of master plan landscape strategies: “It would be useful to apply the guiding principles of strategic environmental evaluation with a view to the estimation and verification of spatial-planning plans and programmes, since such evaluation involves a comprehensive and overall consideration of the whole landscape, and particularly of its capacity to tolerate the planned developments” (European Landscape Convention Guidelines). A further recommendation states that “evaluation of landscape effects should be considered separately from the infrastructure or construction project and involve specific documentation and procedures, whilst allowing an overall integrated analysis of the relationship between the sites concerned and the development project”.

In addition to the general harmonisation and orchestration of infrastructure, under the guidance of strategic land planning, modern infrastructure is calling for the incorporation of a growing concern for landscape and environmental integration. A series of steps can be taken in order to reduce the impact of a given infrastructure. Van Bohemen (1995) identifies two modes of action: mitigation refers to measures to stop or reduce negative effects on ecological values caused by building and by the use of infrastructure (tunnels, underpasses, and overpasses adapted to the behaviour and the needs of the local fauna). Compensation is an attempt to counterbalance the ecological damage, foreseen as a consequence from human intervention, by financial investment, the funds being used for the benefits of nature and the environment. Both principles are perfectly extensive to landscape; as indicated in the European Landscape Convention Guidelines (Council of Europe, 2008), “major

public works, projects and public infrastructures should devote a minimum percentage of their budget to landscape dimensions”.

There is a wide research field for modern materials, methods and design that minimise impact. “Infrastructures of sustainability will be elements with scant weight and easy to recycle or recombine, so as to adapt to the demand mutations which are to be expected through the 21st century. The new infrastructure will probably be characterised by its functional versatility, i.e. the aptitude, inherent to its concept and design, to adapt itself to the changes produced by a new and complex socio-economic paradigm” (Folch, 1999).

The choice of materials for sustainable infrastructure is an important research area. Rust-red *CorTen* steel, weathered metals, raw stone and other anti-reflective materials and bio-surfacing provide a valuable path by avoiding glare and leading to colour and texture integration. A judicious incorporation of trees and shrubs, the reference to vernacular architecture (stonewalls and similar features), and the inspiration from green roof technology and vertical gardening, can produce nature-friendly, landscape sensitive infrastructure.







## **WORKSHOP 3 / ATELIER 3**

### **Landscape criteria for infrastructure design**

### **Critères paysagers pour la conception des infrastructures**

#### **Chairs / Présidents**

*Mr Andranik HOVHANNISYAN, First Secretary, Ministry of Foreign Affairs,  
Republic of Armenia*

*Mr Hugh LLEWELYN, Director, Department for Environment, Food and  
Rural Affairs, Representative of the United Kingdom for the European  
Landscape Convention*

## **Road design for landscape integration**

**Mr Justo BORRAJO SEBASTIÁN**

*Head of Highway Department, Ministry of Public Works, Spain*

Among the criteria for planning and designing roads that are integrated with the landscape, a distinction should be drawn between the territory in which roads are located and the type of road project envisaged.

It must not be forgotten that planning is the art of reconciling conflicting interests and that, therefore, in the planning and design of roads, landscape values may conflict with design speeds and may have to be reconciled with safety considerations.

In road planning, an analysis must be made of the territories in which projects are to be implemented, bearing in mind that each territory has its own landscape. We must therefore consider, on the one hand, the areas of great interest or vulnerability in which no work may be carried out, and on the other, management of the changes introduced by the road, including even restoration, rehabilitation and management of areas damaged by other projects. Many of the landscape problems which arise in the planning and design of roads stem from the fact that the main criterion applied is getting from one point to another as fast as possible, forgetting that, in urban areas for example, the most important thing is the reliability of journey times or that, in areas of high landscape value or particular vulnerability, the most important thing should be their preservation and the safety of the road itself.

Neither should we forget the linear nature of roads and their associated structures (bridges and tunnels), which require special treatment. Criteria such as relieving ordinary roads in vulnerable, high-quality landscapes of high-speed long-distance traffic and creating alternative routes so that they can be turned into scenic roads have to be taken into account in the plans. It must also be borne in mind that roads passing through rugged landscapes may not be suitable for conversion into scenic routes.

When addressing landscape concerns in connection with road-building projects, some general criteria also have to be taken into account: the aim must not be to hide but to integrate; different road types must be distinguished (motorways, new ordinary roads or new road layouts) and their functionality must be identified in relation to the features of the environment through which

they pass (urban, peri-urban or open country); all changes must be gradually introduced (continuity is one of the most important aesthetic principles in road building); the lengths of straight line sections of the road must be matched to those existing between the specific components of the environment; a distinction must be drawn between observation of the landscape from the road and observation of the road in the landscape; and, lastly, there are no ready-made solutions to all the problems which may arise.

The key parameters of a road project in relation to the landscape are the design speed and the width of the roadway, because they determine the earthworks that will be necessary. The Spanish road design rules lay down some desirable geometrical features for cases where there are no other limitations, but they are not applicable in specific areas such as urban areas or areas of high environmental or landscape value, as specified in the preamble to the rules, although this is all too frequently overlooked. Neither should it be forgotten that the design and operating speeds of a road establish a certain visual range, i.e. a breadth and depth of vision that can be obtained under safe conditions.

Applying the aforementioned criteria, the Ministry of Development's Directorate General for Roads made plans for improvements to a national road passing through a gorge (that of the River Deva in northern Spain) parallel to a river with densely wooded banks. The height of the gorge and its sheer walls are such that the viewsheds are narrow and small, with the result that the road can only be seen from 27% of the surrounding viewshed in 5 km. The landscape is very steep with rupestral vegetation which, where the slope permits, forms large masses of trees and shrubs very rich in wildlife. When the gorge opens up, areas of pasture and farmland come into view.

The aim of the project was to achieve functional continuity of the route in order to increase its safety. Geometricisation of the road layout to achieve a predetermined design speed was rejected as a solution. Each section was accordingly analysed on a scale of 1:500 to upgrade it, by widening it or slightly adjusting its layout, in a manner strictly consistent with the surroundings: the physical and natural environment and the landscape.

The widening of the roadway to 8 metres, narrowing to 6.5 metres at specific points, and the provision of a hard shoulder reduce to a great extent the risk of leaving the road and of head-on or sideways collisions, without any need

for further widening which would involve major earthworks or encroach on the riverbank vegetation.

Other design criteria were to make the road compatible for use by vehicles, cyclists and pedestrians; adaptation of existing vantage points and stopping areas and creation of new ones (9 in all); and landscape integration of the functional elements of the road through the choice and use of materials.

The construction of walls and overhangs reduces earthworks and lessens the impact on riverbank vegetation. The maximum height of the walls is 4 metres, with rough stonework up to a height of 1.5 metres and stone-faced concrete above that. The overhangs range from 0.5 to 2.5 metres and are placed along 19% of the road section.

There are also four narrow bridges with masonry structures which cannot be widened. The solution found therefore consists of prefabricated reinforced concrete slabs resting centrally on the arch fill and various overhangs.

It can be said in conclusion that there are technical solutions for planning safe roads which are integrated harmoniously with the landscape provided predetermined layout criteria are not applied, as these usually place speed considerations above all else.

## **Infrastructures de transport terrestres, écosystèmes et paysages : Programme de recherche du Ministère de l'écologie, de l'énergie, du développement durable et de la mer de la France**

**M. Yves LUGINBÜHL**

*Directeur de recherche émérite au CNRS, France*

Le Ministère français de l'écologie, de l'énergie, du développement durable et de la mer a mis en place un programme de recherche destiné à apporter des réponses à la réalisation des infrastructures de transport terrestres et leurs conséquences sur les écosystèmes et les paysages. Il complète le panorama des programmes de recherche que ce ministère a engagés depuis douze ans avec un premier programme intitulé « politiques publiques et paysage : analyse, évaluation, comparaison » (1998-2005) et le programme « Paysage et développement durable » (2005-2011). Ces programmes aident la communauté scientifique à constituer un corpus de connaissances sur le paysage et cherchent à favoriser la coopération européenne en finançant soit des comparaisons en coopération avec des équipes européennes, soit directement des travaux d'équipes scientifiques non françaises.

Le programme « Paysage et développement durable » a délibérément pris cette orientation en aidant des équipes françaises à développer des réseaux de collaboration scientifique entre universités et laboratoires européens, comme par exemple un réseau sur l'esthétique environnementale qui mobilise des chercheurs européens et américains ou un réseau sur l'économie du paysage. La dimension économique du paysage souffre d'une déficience théorique qui trouve son origine dans la trop grande focalisation de la discipline économiste sur une conception mercantile. Mais le paysage offre une nouvelle voie qui commence à se développer comme dans le domaine de l'écologie où les spécialistes réfléchissent à une approche économique qui raisonnerait en termes de services offerts par les écosystèmes ou en termes de fonctionnalité. Dans le domaine du paysage, il est possible également de raisonner autrement, en considérant qu'un paysage est le produit d'une économie et qu'il est possible d'évaluer l'apport économique d'un paysage en emplois, création, exportation et importation de capitaux, services offerts à la santé humaine et au bon fonctionnement des milieux naturels. La discipline de l'économie scientifique doit cependant faire un effort conceptuel et

chercher à sortir de la conception de l'offre et de la demande qui restreint le fonctionnement des sociétés à la sphère du marché. Les sociétés humaines ne fonctionnent pas uniquement en fonction du marché, mais elles mettent en œuvre d'autres visions du monde qui, précisément, s'inspirent de leur caractère fondamentalement humain, avec des valeurs non quantifiables, des idéologies, des utopies et des désillusions. On ne peut dire que l'on a vraiment progressé sur ce chemin, mais certains chercheurs s'engagent dans cette voie salutaire.

Pour en revenir à notre sujet principal, nous allons développer les enjeux du programme de recherche sur les infrastructures de transport, les écosystèmes et les paysages, et les orientations principales mises en place par ce programme avec les équipes de recherche financées.

### **Enjeux théoriques**

Le programme de recherche a pour ambition de remettre les infrastructures dans une conception du paysage qui s'entend comme une construction sociale à double dimension : d'une part une dimension matérielle composée de milieux naturels ou anthropisés, animés par des processus biophysiques modifiés par les activités sociales ; d'autre part une dimension immatérielle qui renvoie aux sociétés et à leurs dynamiques, c'est-à-dire aux changements sociaux représentant à la fois les changements de leur composition mais aussi des représentations qu'elles se construisent des paysages.

Ces deux dimensions répondent ainsi à un autre enjeu scientifique mais aussi politique : il s'agit en effet de passer de la notion d'impact qui a été fortement mise en avant dans les règlements élaborés dans le mouvement d'intérêt aux questions environnementales à la notion d'interaction. Celle-ci signifie que non seulement les activités sociales modifient les milieux naturels ou anthropisés mais également qu'en retour, les modifications de ces milieux agissent sur les sociétés en en modifiant l'organisation et les représentations qu'elles se font du paysage. Il s'agit donc d'une double action, dans les deux sens et non dans un sens unique des sociétés vers les paysages, ce qui est radicalement différent.

Ces deux enjeux théoriques sont apparemment modestes, mais ils impliquent des modifications des conceptions du paysage et renvoient à sa définition dans la Convention européenne du paysage où le paysage est conçu comme une « partie de territoire telle que perçue par les populations et résultant de facteurs

naturels et/ou humains et de leurs interrelations ». Mais ils impliquent aussi des transformations des méthodes mises en œuvre qui tentent de considérer le paysage dans sa complexité et surtout dans celle des relations multiples qui se nouent entre la sphère matérielle et la sphère immatérielle des « valeurs » esthétiques, symboliques, sensorielles, utilitaires...

### **Enjeux méthodologiques**

Les méthodes qui peuvent être mises en œuvre dans ce contexte sont conduites à interroger tout d'abord la dimension spatiale concernée par le passage d'une infrastructure dans un paysage et dans des écosystèmes. Cette dimension spatiale concerne d'une part les habitats des espèces animales et végétales et d'autre part les flux de matière biologique ; elle ouvre ainsi sur l'espace pertinent du fonctionnement écosystémique ; mais également sur espace pertinent du fonctionnement paysager et pose la question de son échelle et de sa signification pour les acteurs.

Mais ces méthodes doivent également envisager la dimension temporelle dans deux directions : d'une part la temporalité pertinente du fonctionnement écologique, d'autre part la temporalité pertinente du fonctionnement du paysage. La notion d'interaction devant être ainsi comprise comme l'interaction entre la dimension temporelle et la dimension spatiale, c'est-à-dire le jeu à double sens des transformations des paysages et des écosystèmes envisagées dans diverses échelles de temps et d'espace.

### **Enjeux opérationnels**

Dans le champ de l'opérationnel, le passage de la notion d'impact à celle de l'interaction signifie ainsi un double questionnement : il s'agit en effet de s'interroger tout d'abord sur les dispositifs sociaux à mettre en œuvre, sachant que les infrastructures modifient les écosystèmes et les paysages mais qu'en retour, ces transformations modifient aussi l'organisation et les représentations sociales ; ensuite, il s'agit de se demander dans quelle conception de l'action politique la question des infrastructures doit être replacée. C'est-à-dire dans quelle forme de gouvernance l'action politique pour résoudre les problèmes issus de la réalisation des infrastructures doit être pensée.

Par ailleurs, aujourd'hui, le passage d'une infrastructure dans des écosystèmes et des paysages est envisagé notamment à travers la notion de correction des effets écologiques et paysagers. L'avancée conceptuelle doit ainsi permettre le

passage de cette notion de correction à celle de projet territorial, qui interroge l'ensemble des acteurs concernés sur les places respectives de l'écologie et du paysage dans l'action politique et sur la pertinence du « projet de paysage ».

### **Un questionnement complexe**

La réalisation d'une infrastructure de transport n'a pas d'effets paysagers et écosystémiques que sur la stricte bande de passage de la ligne de transport envisagée. Elle implique certes des effets directs sur les écosystèmes et paysages traversés, mais également sur les activités sociales pour des raisons multiples et à des échelles multiples. Elle a également des effets indirects sur ces mêmes écosystèmes et paysages à moyen ou long terme et à moyenne ou longue distance, parce qu'elle induit des processus de transformation entraînant des modifications des milieux par diffusion des flux de biomasse d'une part et des paysages par déclenchement de nouvelles activités motivées par le passage de l'infrastructure.

C'est dans ce domaine que les lacunes de connaissance sont les plus flagrants, parce que les efforts ont porté davantage sur la bande étroite de passage de l'infrastructure alors qu'elle entraîne des effets indirects à plus ou moins longue distance et à plus ou moins long terme. Ainsi la connaissance des effets des infrastructures sur les écosystèmes doivent prendre en compte les conséquences que la modification des milieux entraîne sur un territoire plus vaste par diffusion des flux d'espèces. De la même manière, les infrastructures peuvent entraîner des effets sur les représentations sociales des acteurs sociaux, car la simple information du passage d'une infrastructure peut entraîner des modifications sur la manière dont ces acteurs se représentent le territoire traversé et les bénéfices ou les inconvénients qu'ils peuvent en tirer : à partir du moment où l'annonce d'une future infrastructure est faite, les acteurs se projettent dans un nouveau territoire d'action et modifient leurs pratiques ; ils programment leurs actions en fonction de la future infrastructure.

De la même manière le passage d'une infrastructure entraîne des modifications d'un paysage. Les acteurs concernés vont imaginer d'une part ce qu'ils peuvent tirer de ces nouveaux paysages ou d'autre part ce qu'ils vont avoir à en subir. Ils peuvent imaginer que ces paysages modifiés par l'infrastructure leur permettent de développer de nouvelles activités comme ils peuvent penser que ces paysages transformés peuvent leur apporter des nuisances dans leur vie quotidienne.



### **L'infrastructure de transport terrestre (ITT) au cœur d'un projet territorial**

Sur ces bases conceptuelles et méthodologiques, le programme de recherche sur les infrastructures, les écosystèmes et les paysages propose de replacer la question des infrastructures dans le cadre d'un projet territorial que celles-ci impliquent. En effet, à partir du moment où un projet d'infrastructure est annoncé, comme on vient de le voir, modifie les objectifs des acteurs et leurs représentations sociales des écosystèmes et des paysages. Le programme envisage ainsi l'évaluation des effets de l'infrastructure sur le potentiel d'action des divers groupes sociaux concernés ou des réactions de rejet par certains groupes d'acteurs ainsi que les mesures compensatoires qu'il est possible d'identifier ; par ailleurs, il demande que soient précisées les représentations sociales de l'infrastructure chez les acteurs et en particulier l'effet sur la délimitation du projet ; l'infrastructure projetée va en effet induire de nouvelles pratiques sur le territoire traversé et il importe d'identifier les limites de l'espace dans lequel les transformations des écosystèmes et des paysages seront perçues : il s'agira alors de procéder à l'évaluation des effets sur les écosystèmes et les paysages en précisant l'étendue de ces transformations et leur ampleur.

### ***L'interaction entre processus naturels et processus sociaux***

La mise en œuvre de l'interaction entre les processus naturels et les processus sociaux, de même, conduit à s'interroger sur les modifications apportées par l'infrastructure sur des écosystèmes à plus ou moins long terme et donc sur les paysages, à évaluer les réactions des sociétés concernées et les effets des pratiques sociales induites par le projet d'infrastructure sur les paysages et les écosystèmes.

Un projet d'infrastructure peut être considéré comme contribuant à l'émergence de projets particuliers des acteurs : le projet territorial sera alors envisagé comme la somme de projets sectoriels, collectifs ou individuels, mais devra évidemment conduire à une organisation ou à des modifications ou des inflexions collectives de ces divers projets intégrant les diverses phases de la réalisation de l'infrastructure d'une part et celle des mesures compensatoires d'autre part.

### ***Objectifs généraux***

Les objectifs généraux du programme peuvent ainsi être identifiés selon les cinq orientations suivantes :

- l'obtention de connaissances approfondies des paysages et des écosystèmes et concernés par des effets de l'infrastructure ;

- le développement de méthodologies d'analyse des effets des infrastructures sur les paysages et les écosystèmes ;
- l'élaboration d'outils d'aide à la décision ;
- l'analyse de mesures juridiques et institutionnelles ;
- l'expérimentation sur des cas concrets.

Le programme est structuré selon plusieurs axes théoriques et méthodologiques :

*Axe 1 : Le territoire potentiellement concerné*

Cet axe est justifié par l'élargissement de la problématique de l'interaction entre un projet d'infrastructure et les écosystèmes et les paysages traversés. Il s'agit en effet d'identifier l'espace dans lequel les effets de l'infrastructure se feront sentir et de proposer des méthodes spécifiques qui permettent :

- d'identifier les espaces, paysages et écosystèmes à différentes échelles :
- celles de la voie et/ou du fuseau ;
- sur lesquels les effets directs sur paysages et écosystèmes se font sentir ;
- sur lesquels les effets indirects, à plus ou moins longue distance et plus ou moins long terme posent des problèmes ;
- d'une manière plus générale, d'élaborer des méthodes d'évaluation des effets du passage de l'infrastructure, directs ou indirects ;
- ou des méthodes de compensation ou d'aménagement, de protection ou de gestion des paysages et écosystèmes.

*Axe 2 : Articulation paysages – écosystèmes*

Les théories du paysage se partagent entre les approches des sciences sociales et celles de l'écologie du paysage, les secondes ne reposant pas sur les mêmes concepts et les mêmes méthodes et notamment sur la production de biomasse et les flux d'espèces. Cet axe se propose de tenter d'articuler les deux approches pour :

- proposer des méthodes permettant de comprendre comment peuvent s'articuler les méthodes d'analyse des paysages et celles relatives aux écosystèmes et à la production de la biodiversité ;

- élaborer des méthodes de prise en compte les échelles des écosystèmes et habitats des espèces par rapport aux paysages existants et à leurs caractéristiques ;
- confronter les concepts de l'écologie du paysage à ceux du paysage d'aménagement.

Il s'agit d'un enjeu fondamental important qui tente de concilier une conception du paysage considéré comme une construction sociale et écologique et une autre vision davantage orientée vers la compréhension des processus biologiques qui se déroulent dans l'espace géographique.

#### *Axe 3 : La question du projet territorial*

Cet axe constitue l'originalité du programme de recherche. Il vise à :

- tester des dispositifs de collaboration entre chercheurs, techniciens, élus, ONG, dans un projet de réalisation d'infrastructure envisagé dans sa dimension territoriale ;
- analyser meilleures configurations sociales facilitant le débat entre les acteurs et la mise en œuvre des mesures décidées ;
- analyser les effets d'un projet d'infrastructure sur les représentations sociales des paysages et des milieux naturels chez les acteurs du territoire ;
- éprouver les avantages et inconvénients des procédures *top down* et *bottom up* dans un projet d'infrastructure.

#### *Axe 4 : Prospective*

La prospective est une approche difficile qui n'a pas vraiment encore été efficace s'agissant des questions de paysage, car les individus ont des difficultés à se projeter dans l'avenir d'un paysage. Mais les perspectives des changements écologiques et sociétaux actuels demandent un effort particulier. Cet axe prospectif pose ainsi les quelques questions suivantes qui demanderont des réflexions plus générales s'appuyant sur les connaissances produites dans le cadre des projets de recherche retenus :

- quelles perspectives pour les infrastructures dans le contexte du changement climatique ?
- quelles perspectives pour les infrastructures dans le contexte d'épuisement des carburants d'origine fossile ?

- comment envisager les effets des infrastructures sur les paysages et les écosystèmes dans le contexte du changement climatique ?
- quelles perspectives pour les infrastructures existantes ?
- comment les mesures du « Grenelle de l'Environnement » français (c'est-à-dire la nouvelle politique française de l'écologie et du développement durable) vont-elles peser sur la réalisation des infrastructures et sur leurs effets sur les paysages et les écosystèmes ?

### **Les projets de recherche retenus : sept équipes de recherche sélectionnées**

C'est davantage en termes de résultats attendus qu'il est possible de raisonner actuellement en l'absence de projets totalement achevés.

#### ***Ecologie et paysage***

Les projets retenus visent à évaluer les effets d'une infrastructure sur des espèces protégées ou menacées (lynx, batraciens, outarde canepetière,...) : on attend ainsi des connaissances nouvelles sur les territoires concernés, les paysages concernés, les relations entre les habitats et le paysage, les dispositifs de négociation relatifs à des objectifs précis. Ils se proposent de mesurer les effets des modifications des habitats sur les paysages et ainsi de préciser les relations entre écosystèmes et paysages, le rôle du jardinage dans la biodiversité et les conséquences sur les relations biodiversité/paysage.

#### ***Participation des acteurs***

Les projets de recherche retenus permettent d'espérer de recueillir des connaissances :

- sur la place de la société civile dans la négociation des tracés d'infrastructure (TGV Nîmes Montpellier, contournement Autoroute Arles, infrastructures périurbaines) ; ou
- sur les formes des dispositifs de négociation sociale et notamment : la place des experts techniques et scientifiques ; la place des ONG ; la place des sociétés autoroutières par rapport aux autres groupes d'acteurs ; ou
- sur les rôles des habitants dans la gestion des paysages et de la biodiversité ; ou encore,

- sur la participation des acteurs non scientifiques à la production des connaissances : dans des projets de recherche associant chercheurs et acteurs opérationnels ; par l'organisation de séminaires entre recherche et acteurs opérationnels.

### ***Methodologies***

On attend ici des projets de recherche que soient précisées :

- les articulations entre les méthodes paysagères et les méthodes écologiques ;
- l'évaluation du territoire potentiellement concerné par l'infrastructure ;
- les interactions entre la dimension matérielle et la dimension immatérielle des paysages ;
- la mise en œuvre de dispositifs de négociation sociale ;
- la mise en œuvre de dispositifs de recherche / action.

### ***Prospective***

Les projets de recherche doivent permettre l'élaboration de nouvelles connaissances sur le rôle des infrastructures principales et secondaires dans régulation changement climatique ou sur la relation entre les infrastructures et la biodiversité.

### **Conclusions**

Les conclusions sont évidemment provisoires. Elles peuvent cependant espérer que le passage de la conception de l'impact à la conception de l'interaction permettra la prise en compte de la complexité de l'interaction entre des processus sociaux et des processus biophysiques et en particulier d'avancer dans la compréhension des interactions entre les activités sociales et les transformations écologiques.

Par ailleurs, le programme vise à élargir la question du paysage hors de l'approche visuelle : il s'agit en effet de prendre en compte les autres sensibilités paysagères et en particulier l'ensemble des sens mais également les dimensions sociales et écologiques.

Enfin le programme a un objectif opérationnel affirmé : l'extension à une dimension politique s'entend dans le sens du paysage comme projet mais

pas uniquement formel, bien davantage comme projet d'une société dans un territoire donné où l'infrastructure agit comme déclencheur et facteur de projection des activités sociales et des processus écologiques dans l'avenir.

### **Bibliographie**

Programme de recherche du ministère de l'écologie, de l'énergie, du développement durable et de la mer, France. Site WEB du ministère de l'écologie : développement durable.gouv. fr

LUGINBÜHL (Y.), BERLAN-DARQUE (M.), TERRASSON (D.), 2007, Paysages, de la connaissance à l'action, Ed. QUAE. / *Landscapes: from knowledge to action*, Ed. QUAE.

LUGINBÜHL (Y.), 2007, Pour un paysage du paysage, Economie Rurale, N° 297-298, janvier-mars 2007, pp. 23-40.

LUGINBÜHL (Y.), 2008, Paisatge i benestar individual i social, in Paisatge i salut, Collection Plecs de Paisatge de l'Observatori del Paisatge, Generalitat de Catalunya, pp. 16-35.

LUGINBÜHL (Y.), 2008, Las representaciones del paisaje y sus evoluciones, in Paisaje y territorio, dir. J. Maderuelo, CDAN Editores, Huesca, pp. 143-180.

LUGINBÜHL (Y.), 2008, Indicateurs du paysage, rapport pour le ministère de l'écologie, de l'énergie, du développement durable et de la mer, Paris.

LUGINBÜHL (Y.), 2009, Indicadores sociales del paisatge, in Indicadores de paisatge. Reptes i perspectives, Collection Plecs de Paisatge de l'Observatori del Paisatge, Generalitat de Catalunya, pp. 48-76.

LUGINBÜHL (Y.), 2009, « *Rappresentazioni sociali del paesaggio ed evoluzione della domanda sociale* », in Castiglioni (B.), De Marchi (M.) (a cura), Di chi è il paesaggio, la partecipazione degli attori nella individuazione, valutazione e pianificazione, CLEUP, Padova, pp. 59-67.

LUGINBÜHL (Y.), 2009, Participer au paysage de demain, in Di chi è il paesaggio, La partecipazione degli attori nella individuazione, valutazione e pianificazione, a cura di Benedetta Castiglioni e Massimo De Marchi, CLEUP, Padova.

LUGINBÜHL (Y.), 2009, Biodiversité, changement climatique et paysage, in *Humanité et biodiversité, manifeste pour une nouvelle alliance*, Ligne ROC, Descartes et Cie, 314 pages, pp. 212 à 237.

LUGINBÜHL (Y.), 2010, Théories et méthodes du paysage en France, in *ATTI*, ouvrage de l'Istituto Veneto di Scienze, Lettere ed Arti, Classe di Scienze Morali Lettere ed Arti, 168, II, pp. 429-444.

## **Landscape, nature and road integration in Greece**

**Mr Kimon HADJIBIROS**

*Professor at the Technical National University of Athens, Greece*

**Mr Demetris ARGYROPOULOS**

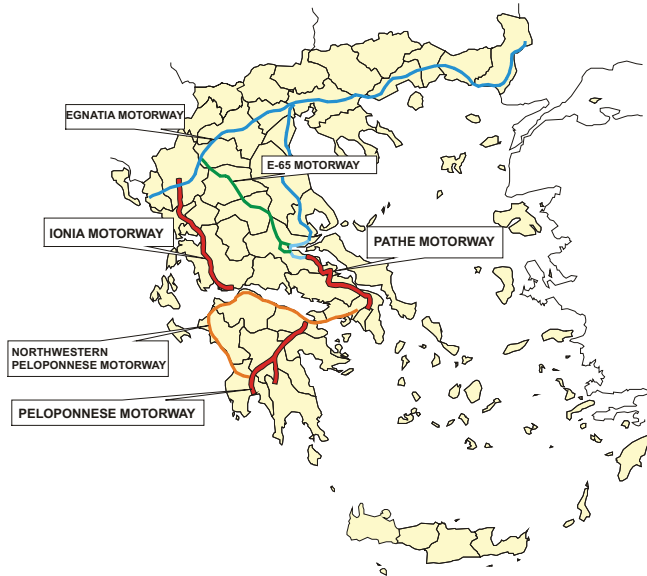
*D. Argyropoulos and Associates Greece*

### **Introduction**

The Greek natural environment shows an extensive diversity of natural landscapes. Greece is a relatively small European country, with an area of 132 000 km<sup>2</sup> and a population of about 10 million inhabitants. A large part of its area is mountainous, only 35% of it is covered by agricultural land, while 60% is covered by forests and shrub vegetation. The greatest part of the country is surrounded by sea and the length of the coastline reaches 18 000 km, while the land's geological structure is relatively young; therefore, small catchment areas and landscapes dominated mainly by small valleys have been formed. Geomorphological factors combined with climate variability have created a great landscape and seascape diversity, as well as a variety of ecological habitats, resulting in the existence of a great number of important biotopes and an exceptional biodiversity. The number of natural sites with significant ecological or aesthetic value reaches several thousands. These sites include forests, wetlands, sea coasts, islands, alpine zones, rivers, lakes, ravines, springs, caves etc. Nevertheless, most sites of special environmental interest are characterised as being small in scale and vulnerable, a fact which increases their sensitivity to anthropogenic change.

A first record of Greek biotopes was undertaken in the context of the Corine European Network; 430 sites of international or national ecological importance with a total estimated area of 34 395 km<sup>2</sup> (26, 1% of the country's terrain) and 200 additional sites which also constitute important biotopes for threatened species have been identified; a more detailed record would end up noting thousands of sites of local ecological importance. Later, the Natura 2000 European network included about 300 sites (most of which were also Corine biotopes), covering more than 20% of the country's terrain. Although Greece is bound to European Union policy for its Natura 2000 sites, nature site protection is generally not adequate.





*Figure 1: Major motorway projects of Greece*

The country is also characterised by an exceptional cultural wealth, which contributes to the formation of valuable landscapes. Natural and cultural landscape characteristics, often interconnected, are found in a great number of environmentally important sites. One can realise, for example, that archaeological and ecological landscape characteristics occur, to some extent, at the same sites. Registering sites of special natural and cultural interest, contributes to the development of a system of protection zones. On the other hand, conservation of a generally common everyday landscape constitutes an important issue, too. Reliable information on areas of natural and cultural value may contribute to this target, as it helps improving environmental impact assessment for projects involving construction work or various industrial/agricultural activities taking place in sensitive parts of everyday landscapes. However, Greece lacks a specific and coherent landscape management policy and although the country signed the European Landscape Convention in 2000. In practice, landscape protection is rather fragmented and indirect, since it is mainly applied through legislation concerning specific protection of archaeological sites, traditional settlements, cultural monuments, ecological

habitats and natural monuments, as well as through environmental impact assessment for various activities.

During the '60s and the '70s, according to laws concerning archaeological heritage, a number of Sites of Outstanding Natural Beauty (SONBs) had been designated. They mainly included archaeological and historical sites, as well as traditional settlements. Later on, this list has been reviewed and completed, including 449 sites of natural and cultural interest covering a total area of 6 270 km<sup>2</sup> or 4,8% of the country's terrain. The new list has not yet been officially regulated. The SONBs have remarkable aesthetic characteristics and they either include natural or built landscapes exclusively, or a mixture of both. The SONBs, Corine and Natura 2000 site lists are part of the "Data Bank for the Natural Environment of Greece" ([www.itia.ntua.gr/filotis](http://www.itia.ntua.gr/filotis)), a program operating since 1990. In the framework of Filotis, descriptive and geographical data from registered sites has been collected and organised. Filotis data is derived from various bibliographic sources, not published data, as well as field-work research.

During the last decades, Greek economy and environmental status have been greatly influenced by European Union policies. European Union funding input determines to a large extent the country's development planning. Environmental legislation has also undergone significant European Union influence, although many legislative regulations are implemented in a more or less ineffective manner. Economic growth is the country's primary national goal, but the large diversity of the Greek natural and cultural environment inevitably means that almost every construction activity is bound to influence an important landscape. Specifically, large infrastructure projects such as motorway construction may significantly shrink landscapes in form and function. Negative impacts can either be magnified or minimised depending on construction characteristics and the choice of appropriate alternative solutions. In Greece there is a large number of existing road networks (motorways, national, local, urban, agricultural and forest roads) as well as a number of motorway projects either in planning or construction phase (see Figure 1). According to legislation, new construction projects or activities have to fulfil certain environmental requirements, which are set during the process of environmental impact assessment. In the case of motorway programs, great attention should be given on the issue of selecting appropriate alternative solutions. Strategic Environmental Assessment (SEA) can be very useful during this process.

The 2001/42/EC Directive on SEA, involves environmental control over plans and programs. This directive completes European policy on environmental impact mitigation of economic development, which first began with the 1985/337/EC and 1997/11/EC Directives on environmental impact assessment of construction projects. It should be noted that European legislation still lacks environmental control of development policies (e.g. for agriculture, industry, tourism, energy, transportations). Nevertheless, there are some concerns about the level of detailed control that can be reached during planning, given the fact that natural/ecological processes as well as development/social processes involve many complex parameters that cannot be easily foreseen.

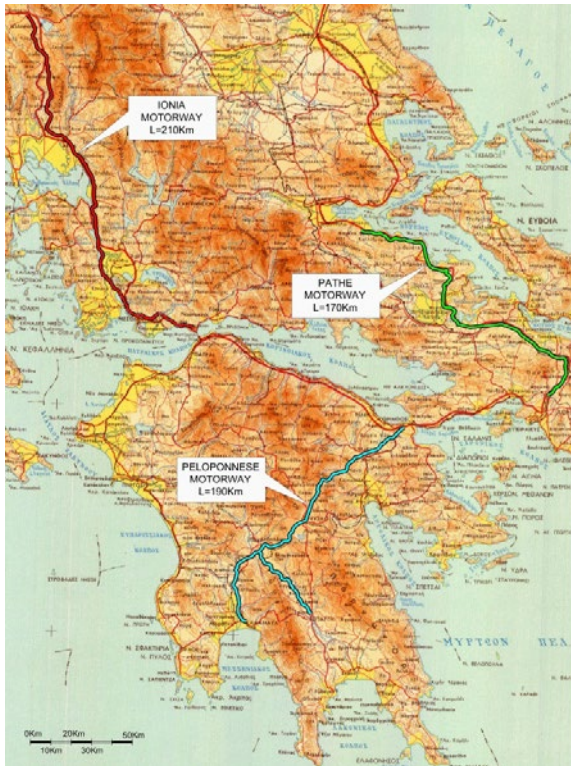


Figure 2: The study's motorway programme: the Ionia motorway (red axis), the PATHE motorway (green axis) and the Peloponnese motorway (blue axis)

Specifically, a SEA addresses the general impacts of a project in order to examine and select the appropriate alternative solutions on a wider scale, and to develop an effective environmental mitigation strategy by taking restoration measures. It is often useful to assess impacts while comparing them with the do-nothing scenario, namely the possible future landscape development without the proposed project. Moreover, SEA can help in finding threshold values of acceptable and non acceptable environmental impacts. Absolute quantification is usually impossible, though a qualitative approach can be used, such as characterising the importance of each impact as very serious, serious, medium, small, and minor. A project's SEA study and preliminary plan or programs have to undergo a public hearing. Their content should be available and open to authorities and the public, who must have an early and real chance –within a logical time period– to openly express their opinion before any plan or program approval.

### **Methodology**

A motorway, when it is the sum of different road construction works, constitutes a programme and is subjected to SEA. In this paper, SEA analysis is presented on some major Greek motorways: a) the Ionia motorway and the Peloponnese motorway (Korinthos-Tripoli-Kalamata-Sparta), which are now in planning or construction phase; the axis routing process for these motorways has already progressed based on technical and economic criteria, thus the alternative solutions examined were limited to a zone of about ten kilometres on either side of the axis and b) regarding the upgrading into a motorway of the existing PATHE highway (Athens-Lamina), as shown in Figure 2. The analysis focuses on environmental impact prevention e.g. axis routing correction based on environmental impact mitigation criteria and post construction landscape restoration wherever this is possible. The assessment methodology followed consists of the identification of environmental goals, environmental indicators and acceptable impact thresholds.

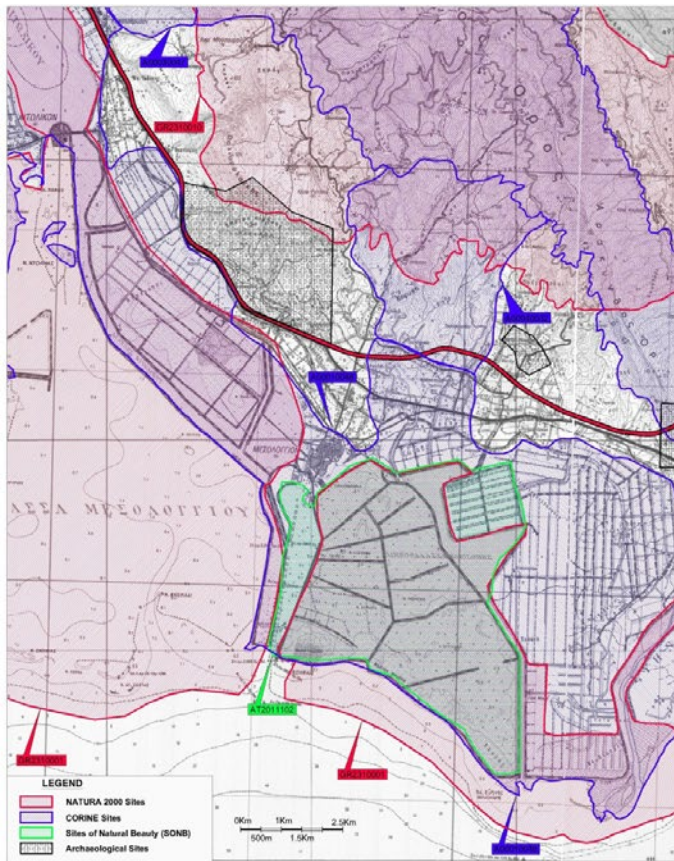
We assume that the impact magnitude of a motorway on the landscape basically depends on the following environmental parameters: landscape aesthetics, biodiversity, soil, water, the acoustic environment, agricultural activity, and the cultural environment. Possible impacts include visual intrusion and landscape consumption, disturbance or fragmentation.

Environmental goals are set for each parameter, and this can be achieved by using an environmental indicator approach. An environmental goal expresses the environmental parameter's desirable state/condition, while indicators are generally measurable quantities that represent the goals. The following environmental goals were examined for each parameter mentioned above:

1. Aesthetics: areas with remarkable landscape aesthetics and designated Sites of Outstanding Natural Beauty (SONBs) within the motorway broader area. Goal: General landscape quality conservation and non degradation of SONBs;
2. Biodiversity: many important biotopes with protected Natura and Corine sites within the motorway broader area. Goal: avoiding vegetation, flora and fauna degradation;
3. Soil: parts of the axis routing passing through sensitive geological formations or areas with a rough terrain. Axis routing through these formations might cause large excavations or embankments resulting in alteration of the terrain's morphology or stability. Goal: Soil stability conservation and avoiding conditions of imbalance;
4. Water: important and sensitive water bodies within the motorway broader area. Goal: Surface water (freshwater and seawater) and ground water pollution mitigation, maintaining a good ecological quality of water bodies;
5. Acoustic environment: Noise degrades landscape quality. Goal: avoiding natural landscape exposure to high noise levels;
6. Agricultural activities: axis routing passing through Valleys might disrupt agricultural activities. Goal: activity conservation;
7. Cultural environment: areas of archaeological, historical or cultural interest within the motorway broader area. Goal: conserving protected archaeological sites, non degradation of other sites with cultural value.

Indicators are given quantitative values based on their map depiction and the road's distance from sensitive zones or with the use of conceptual models (e.g. for noise). The relative importance of different indicators is assigned with weighting coefficients. The score for each alternative solution is

calculated based on the sum of the indicators' arithmetic values and thus a comparative approach can be achieved in order to select an alternative axis routing. However, if a particular impact on some environmental parameter surpasses a threshold, it is characterised as non acceptable; this alternative solution is then rejected even if its score based on the remaining goal indicators is not low.



*Figure 3: Ionian motorway axis passing through the Messolongi area. NATURA (red), CORINE (blue), SONBs (green) and protected archaeological sites (black) are shown*

### **Examples of environmental goal indicators and mitigation measures**

The selected environmental indicators for the “aesthetics”, “biodiversity”, “water”, “agricultural activity”, “cultural environment” parameters are the axis routing lengths passing: a) through or very close to sites of high sensitivity, b) at an intermediate distance from sites of high sensitivity c)



*Figure 4: The PATHE highway passes through the SONB “Area of Aghios Konstantinos/Kammena Vourla”*

through or very close to sites of medium sensitivity and d) at an intermediate distance from sites of medium sensitivity. It was also assumed that the impacts of an axis routing length within great distance from sensitive sites, are marginal. Of course, “the motorway broader area”, as well as “very close”, “intermediate distance” and “great distance” assessments depend on the vulnerability or the environmental parameter considered each time; for example for water bodies a distance of 0 to 200 m was assumed as “very close”, a distance of 201 to 500 m was considered as “intermediate”, while a distance of over 500 m

was assumed to have marginal impacts. In the case of “soil” parameter, the environmental indicators chosen were only the axis routing lengths passing through geological formations of high and medium sensitivity. In the case of the “acoustic environment” parameter, the area subjected to noise levels greater than 60 dB (A) was selected as an environmental indicator. In the case of the “aesthetics” and “agricultural activity” parameters, the axis routing length which does not follow already existing roads and thus causes new landscape or agricultural land consumption, was selected as an added environmental indicator for these parameters. Sensitive site mapping using geographic information systems preceded site characterisation process, as well as the selection of sensitivity criteria related to parameter vulnerability and the value of environmental factors disturbed. Setting threshold values for each environmental indicator was based on existing legislation, bibliography or the study team’s judgment.

Figures 3 and 4 depict the vast landscape vulnerability and complexity at particular locations in the motorways zones. The following data is indicative of the vast number of sensitive and protected areas (it should be noted that many of these areas partially overlap each other) that had to be taken into consideration during the SEA for Ionia, PATHE and Peloponnese Motorways:

- Ionia motorway broader area: 8 Natura sites and 2 Special protection areas, 18 Corine Sites, 2 Ramsar Sites, 12 SONBs, 6 Wild life shelters, 19 Protected archaeological sites;
- PATHE motorway broader area: 6 Natura Sites and 4 Special protection areas, 9 Corine sites, 1 national park, 2 Ramsar sites, 7 SONBs (Figure 4), 14 Wild life shelters, 19 protected archaeological sites, 11 non protected archaeological sites;
- Peloponnese Motorway broader area: 7 NATURA Sites, 7 CORINE Sites, 5 SONBs, 6 Wild Life Shelters, 3 Natural monuments, 4 Protected archaeological sites.

The choices of restoration measures must fulfil various criteria (in some cases partially contradictory). They need to be: economically feasible, appropriate for impact elimination, technically correct and applicable based on available means and experience, aesthetically acceptable, easily maintained, without serious side effects. In particular, landscape restoration measures for



motorways should include: balancing excavations and embankment in order to minimise transported materials during construction, shaping excavation and embankment slopes, reducing slope erosion, careful construction, planting vegetation, noise mitigation, avoiding animal corridor disruption, minimising road mortality of animals, being careful with temporary parking areas, managing the roadside advertisements appropriately, avoiding continuous landscape concealment perceived by the motorway users.

### **Discussion**

Road construction and traffic in environmentally sensitive areas produce significant negative effects on wildlife populations and ecosystems; they may lead to a large scale loss of natural landscapes or reduction in quality of the remaining ones. Evaluation of these effects should be a part of an environmental impact assessment. A document, but environmental impact assessments focus mainly on rather small-scaled, local effects. Some environmental impacts should be considered at a higher level of decision making, in a strategic environmental assessment concerning policies, plans and programs at a regional or even a national scale. In many cases, however, landscape evaluations cannot be fully documented and have to be based upon expert judgements, because no much relevant experience exists and new data cannot easily be gathered within short time limits. When analytical methods for landscape evaluation are not available, assessments should focus at the descriptive level, i.e. to consider lists of vulnerable species, habitats or landscape features.

The SEA analysis results for the three motorways (Ionia, Peloponnese and PATHE) were considered by authorities together with other related studies, during the compilation of construction specifications. However, during this time when the study was complete, authorities insisted on immediate promotion of all these projects and therefore the study's environmental assessments and analysis methods were not fully reclaimed. Nevertheless, many of the SEA study's suggestions were taken into consideration during the formation and selection of the projects' alternative solutions. Furthermore, contractors overall considered these studies together with their own detailed environmental impact assessment studies and the approved environmental terms for each project, when they started applying landscape protection measures during construction. Moreover, the study's analysis methodology

with the approaches used such as environmental indicators, the use of GIS, the application of simplified conceptual models and the quantitative weighted environmental indicator scoring had an significant impact on the way authorities, contractors and consultants would henceforth compile major motorway program studies (as well as other types of projects) and ultimately on the application of landscape protection and mitigation measures.

## Infrastructures routières : les allées d'arbres dans le paysage

**Mme Chantal PRADINES**

*Ingénieur civil, École Centrale Paris, Membre de l'Association "Arbres et routes"*

Les alignements d'arbres sont, par excellence, des éléments marquants du paysage. Lorsqu'ils sont associés à une route pour former ce que l'on appelle, dans de très nombreux pays européens, une « allée »<sup>6</sup>, leur importance est encore renforcée : ils modifient l'infrastructure qu'ils accompagnent, en lui donnant une dimension supplémentaire ; du ruban en plan, on passe au volume, à l'architecture, perceptible de l'extérieur comme aussi de l'intérieur. Une architecture vivante, qui varie au gré des heures et des saisons, se bonifie avec le temps, appelant tout naturellement les termes de « tunnel de verdure » ou de « cathédrale végétale », une architecture noble qui n'a cessé d'émouvoir peintres, écrivains et simples citoyens.

Eléments du paysage, mais aussi instruments du paysage : pour qui parcourt une « allée », le paysage apparaît sous forme d'une succession dynamique de tableaux encadrés entre les troncs. Ni totalement clos, comme par des haies continues, ni lâchement ouvert à perte de vue, l'espace cadré est ainsi mis en valeur.



Allées des grands jardins à la française, encadrées de files d'arbres, cours et avenues urbaines plantées, routes de campagne bordées d'alignements : du

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6. C'est ce terme d'« allée » que nous retiendrons pour désigner une voie avec ses alignements d'arbre de part et d'autre.

16<sup>e</sup> au début du 20<sup>e</sup> siècle, une histoire extrêmement riche s'écrit dans toute l'Europe. Une histoire issue de l'art de la perspective et intrinsèquement liée à l'histoire des jardins classiques.

Cette forme d'aménagement du paysage a fait l'objet d'un rapport présenté à la dernière conférence de la Convention européenne du paysage. Ce rapport, après avoir esquissé l'histoire des « allées » et montré en quoi elles constituent un patrimoine qu'il nous faut préserver, s'inspire des bonnes pratiques identifiées pour tracer le cadre d'une politique de préservation et de mise en valeur. Nous en donnons ici les grandes lignes.

### **L'esthétique au cœur des paysages**

On connaît les raisons pratiques ou techniques qui ont présidé, pour partie, aux plantations d'arbres le long des routes de campagne : délimitation du domaine public, réponse à la pénurie de bois, production de fourrage ou de fruits, assèchement et stabilisation des voies et des accotements, protection des terres contre l'érosion, protection et guidage des voyageurs.

S'il existe une filiation directe entre les alignements d'arbres de nos campagnes et l'art des jardins (les allées, d'abord cantonnées aux jardins classiques, se sont rapidement prolongées au-delà des limites de ceux-ci, réalisant un véritable maillage de la campagne environnante), la lecture des textes du 18<sup>e</sup> et du 19<sup>e</sup> siècle montre sans conteste l'existence d'une filiation « indirecte » : les raisons pratiques ou techniques, quelles qu'elles aient été, se sont accompagnées de tous temps de motivations d'ordre esthétique et d'un souci du prestige, de sorte que la comparaison des routes bordées d'arbres avec la magnificence des allées ou avenues des jardins était naturelle.

### **Au-delà du paysage, un apport riche et varié**

Descendants d'une tradition noble et de la « grande » histoire, les alignements d'arbres de bord de route sont aussi témoins de la « petite » histoire, porteurs de mémoires plus ou moins proches qui en font des éléments d'identité des territoires, identité renforcée par ailleurs principalement par le choix des essences d'arbres, fonction de la géographie, du climat, du sol, des usages locaux et de la mode.

Les alignements d'arbres de bord de route jouent un rôle important en matière de pollution, de climat et de biodiversité. En matière d'environnement et de santé publique, ils contribuent de manière quantifiable à la régulation des transferts

hydrauliques, à l'abaissement des températures, au captage des poussières et des polluants. Leur rôle en matière de biodiversité tient au fait qu'ils constituent des milieux de vie privilégiés, y compris dans les régions boisées. Ceci s'explique par le subtil mélange d'ombre et de clarté qui règne dans les « allées », et le microclimat qu'elles engendrent. Ce rôle, les « allées » le remplissent d'autant mieux que les arbres sont appelés à rester au bord des routes au-delà de leur maturité forestière pour pouvoir jouer pleinement leur rôle paysager. La géométrie des « allées » contribue également à leur rôle positif pour la biodiversité : structures linéaires, elles constituent des corridors écologiques d'autant plus indispensables que l'on se situe dans des paysages ouverts. Elles servent aussi notamment au guidage des chauves-souris. La dimension verticale des alignements présente par ailleurs l'avantage d'inciter oiseaux et chauves-souris à s'élever lorsque leur trajectoire croise la route, ce qui évite les collisions avec les véhicules, contrairement à ce qui se passe pour les routes bordées de haies.

Le rôle économique des alignements ne doit plus rien à la fourniture de bois : l'Europe ne connaît plus de pénurie en la matière. Mais les allées d'arbres continuent à jouer un rôle économique important au niveau de toute la filière de l'arbre et surtout en matière de tourisme : l'initiative allemande de la Deutsche Alleenstraße, portée par l'automobile-club allemand ADAC et divers autres partenaires dont le Comité allemand du tourisme, en atteste. Comme en atteste aussi le fait que ce sont les tour-operators allemands qui ont lancé l'alerte sur les projets d'abattage dans une de leurs destinations de prédilection, le « poumon vert de la Pologne », à savoir la Mazurie.



## **Une valeur patrimoniale élevée**



Les fonctions paysagères et de bien-être – aménités – ont reçu une traduction monétaire, sous forme d'une valeur patrimoniale. Celle-ci, qui se calcule à partir de barèmes reconnus par les compagnies d'assurance, augmente avec l'âge des arbres, contrairement aux autres équipements de la route qui, eux, se déprécient avec le temps. L'ordre de grandeur qui peut être retenu pour un double alignement adulte complet, de bonne venue, constitué d'arbres espacés en moyenne de 12 m est de 1 million d'euros au km. Cette valeur, considérable, doit figurer dans les comptabilités publiques, au même titre que la valeur des immeubles. Elle rend visible aux yeux de tous, citoyens et décideurs, la richesse du patrimoine et permet, le cas échéant, des arbitrages budgétaires à bon escient. On notera toutefois que cette valeur est encore sous-estimée, puisqu'il faudrait y ajouter la contribution à la lutte contre la pollution et à la biodiversité, non chiffrée.



## **Un patrimoine menacé**

La longue et riche histoire des alignements d'arbres a connu son apogée à la fin du 19<sup>e</sup> siècle et au tournant du 20<sup>e</sup>. Dans certaines régions, plus de 80 % de ce patrimoine a déjà disparu, et cette disparition se poursuit année après année. Les raisons en sont le vieillissement naturel, les épidémies ou les ravageurs, et le non compensation de ces dépérissements par des plantations d'envergure. Au vieillissement naturel s'ajoute d'ailleurs le vieillissement forcé par de mauvais traitements et des pratiques inadaptées, résultat d'une perte de compétences des personnels.

Mais cette disparition du patrimoine s'explique surtout par des abattages massifs réalisés dans les années d'après-guerre dans l'Europe de l'Ouest, plus récemment dans l'Europe de l'Est : une partie des arbres ont été ou sont abattus lors des travaux routiers, ou, beaucoup plus généralement, au prétexte de la sécurité routière.

Pourtant, les abattages effectués au nom de la « route qui pardonne » ou de la « vision 0 », manquent leur cible. On a pu mettre en évidence l'absence de corrélation, à l'échelle d'un territoire donné, entre la densité d'arbres au kilomètre et différents indicateurs d'accidentologie. L'analyse des données d'accidentologie met en évidence que la suppression des alignements d'arbres au bord des routes conduit à un simple déplacement du risque. Ce phénomène est bien connu des chercheurs. Il s'explique notamment par la présence de nouveaux obstacles, tels les fossés, une fois les arbres enlevés.

Est-ce à dire qu'il faille faire l'impasse sur la sécurité routière ? Non, bien sûr. Mais il faut rechercher l'efficacité : réductions de vitesse, interdictions de dépasser, offres de transport alternatives afin de diminuer l'exposition au risque, etc. Des mesures de ce type ont par exemple permis au Land de Mecklembourg-Poméranie-occidentale, en Allemagne, de diviser par près de 4 le nombre de tués dans des accidents avec choc contre arbre entre 1991 et 2007, en même temps qu'elles amélioraient la sécurité routière sur tous les autres fronts (puisque ce Land faisait mieux que certains autres Länder allemands plus pauvres en alignements).

Un autre élément fondamental à prendre en considération est que les alignements d'arbres jouent, de fait, un rôle positif en matière de sécurité routière – rôle non quantifié parce que non quantifiable (comment

comptabiliser les accidents évités ?) : ils signalent les virages, carrefours, entrées d'agglomérations, ils améliorent la lisibilité de la route, permettent de prendre conscience de sa vitesse. Canalisant les visions latérales, ils incitent aussi à plus de prudence, alors qu'une route trop dégagée fait baisser la vigilance et incite à la vitesse. Une étude suédoise a par ailleurs montré un lien entre la beauté d'une route et l'accroissement de la sécurité routière.

### **Une préservation qui s'impose**

Certaines régions ou pays européens ont pris conscience de la valeur de leur patrimoine et de l'urgence de sauvegarder ce qu'il en reste. L'analyse des actions engagées, les bonnes pratiques identifiées, tout comme les écueils entrevus, ont permis de dégager un certain nombre de recommandations qui figurent dans le rapport cité précédemment.

La reconnaissance officielle, par les Etats et les pouvoirs publics, de l'intérêt de préserver les « allées » et l'inscription de cette reconnaissance dans un corpus réglementaire constituent la meilleure garantie que leur avenir ne dépendra pas du seul bon vouloir, de la culture et de l'engagement de gestionnaires ou d'élus dont les échéances du parcours professionnel ou les durées de mandat sont sans commune mesure avec la durée de vie des arbres.

L'analyse des outils réglementaires en vigueur – protection dans la constitution du Land de Mecklembourg-Poméranie occidentale en Allemagne, par exemple, protection au titre des biotopes en Suède etc.– montre que cette protection doit concerner l'ensemble des alignements, simples ou doubles, complets ou partiels, publics ou privés, sans critères restrictifs de nombre d'arbres, de distance ou d'âge. Elle doit s'appuyer non plus sur une valorisation du bois comme bois d'œuvre ou de chauffage, mais sur l'ensemble des caractéristiques qui font l'intérêt des alignements : valeur historique et culturelle, valeur paysagère, valeur environnementale et de santé publique, apport à la sécurité routière. Et surtout, la prédominance de la recherche esthétique doit être constamment gardée à l'esprit et conservée comme ligne directrice pour les aménagements à venir, comme elle l'a été pour les aménagements passés.





La préservation doit s'entendre, bien sûr, comme l'interdiction de tout ce qui porte atteinte à la valeur patrimoniale des « allées » : tout ce qui, à terme, met en péril la vie de l'arbre (abattage – sauf dérogations spécifiques, liées à la stabilité mécanique de l'arbre – mauvais traitements en tout genre, y compris remblais, abaissement des nappes phréatiques, etc.) ou ce qui altère l'esthétique de l'alignement.



La préservation doit être assortie d'une obligation d'entretien et de restauration sans laquelle le patrimoine vivant est voué à terme à la disparition.

Cette restauration doit être effectuée à la fois sous forme de « regarnis » et sous forme de plantations continues de doubles alignements de grande longueur. Les « regarnis », qui consistent à combler les trous dans les

alignements, ont l'avantage de recréer une continuité entre des arbres d'âges différents, continuité nécessaire au regard de la biodiversité. Ils évitent aussi une disparition progressive des arbres qui les effacerait de la mémoire et nécessiterait à terme un effort de reconstitution plus important. Les plantations d'alignements bilatéraux complets servent à compenser au fur et à mesure les abattages lorsqu'ils sont nécessaires, mais aussi à compenser les abattages passés qui ont laissé des itinéraires entiers dépouillés.



Les distances de plantation par rapport à la route sont conditionnées par l'espace disponible : à moins d'acquisitions coûteuses, le gestionnaire de la voie n'est généralement propriétaire que d'une étroite bande de terrain. Les déficits actuels de plantation que l'on observe sont une autre conséquence des politiques de la « route qui pardonne », qui voudraient imposer des distances de plantation supérieures : outre le fait que les riverains ne sont pas nécessairement d'accord pour vendre leur terrain, le calcul effectué pour un département français montre que ces acquisitions s'y chiffrent à un million d'euros et les surcoûts d'entretien annuels à plusieurs dizaines de milliers d'euros.

Les distances de plantation sont également conditionnées par la recherche esthétique : recréer, à terme, un effet de voûte, total ou partiel, est impossible à obtenir avec des rangées d'arbres trop distantes l'une de l'autre. Le Land de Mecklembourg-Poméranie occidentale a justement prévu des distances de

plantation de 1,5 m par rapport au bord de chaussée pour des trafics inférieurs à 2 500 véh/jour.

### **Un engagement**

Une réglementation ne pouvant, à elle seule, garantir la pérennité d'un patrimoine, des engagements humains et financiers s'imposent.

Un vaste chantier de communication, de sensibilisation et de formation du public et de tous les acteurs professionnels, doit être engagé au plus vite. En particulier, il est essentiel de rompre avec la stigmatisation des arbres constatée dans de trop nombreux documents traitant de sécurité routière. Elle fait l'impasse sur la valeur historique, culturelle, paysagère, environnementale et économique des alignements et sur leur rôle positif en matière de sécurité routière.



Le coût d'une politique de préservation des alignements d'arbres doit être mis en regard de l'augmentation continue de leur valeur patrimoniale et des gains que cette politique permet, par l'accroissement de l'attractivité immobilière et touristique et l'amélioration de la santé publique, notamment. Le rôle important des arbres de bord de route en matière de captation de poussières et de polluants peut être rapproché du coût de la mortalité et de

la morbidité dues à la pollution liée au trafic routier, une pollution qui n'est pas circonscrite aux villes. Ce coût était estimé pour la France à près de 22 milliards d'euros en 1999.

La rationalisation des dépenses est une première source de financement. Les gisements d'économie sont importants et souvent inexploités, tant en matière de sécurité routière (la conduite apaisée et les actions de sensibilisation coûtent moins cher que la suppression des obstacles latéraux, pour un résultat meilleur), que de gestion des plantations. Les réglementations de préservation doivent intégrer des règles de compensation pour tout abattage ou toute atteinte à l'aspect ou à l'état des arbres, ces règles devant être fondées sur la valeur patrimoniale de l'ensemble et comporter à la fois un volet « plantation » et un volet « abondement d'un fonds *ad hoc* ». Enfin, les possibilités de financement privé (parrainages) et de financement par les entreprises (mécénat) doivent être explorées.

Une brochure de l'administration des routes norvégienne rappelle fort à propos le caractère brutal et irréversible des abattages, quand la « production » d'une « allée » est, elle, une affaire de siècle. Aussi, en attendant qu'une réelle politique de préservation de notre patrimoine culturel, paysager, environnemental ait véritablement pris forme, il y a une urgence : gardons nous d'abattre nos arbres de bord de route !

## Criteria for road design in sensitive areas

### Mr Luis RAMAJO RODRÍGUEZ

*Department of Environment of the Public Agency for Infrastructures of Andalusia S.A. (GIASA), Department of Public Work and Housing, Junta of Andalusia*

#### Introduction

Andalusia is one of the best preserved and richest regions in the European Union, hosting 126 protected areas which cover more than 18% of the autonomous region's surface area. This will increase with the introduction of the European Union Natura 2000 Network, which proposes 193 Sites of community interest, which partly coincide with currently protected areas. This means that nearly 30% of Andalusia's surface area will be protected because of the habitats and species that it houses.

Additionally, in some of the region's most singular landscapes there is also an important cultural heritage as well as responsible and sustainable farming practices.

The towns and districts located in these areas have a high development potential, generally focused on the sustainable development of their resources. However, there are often constraints derived from the network of infrastructures and services, which limit their present capacity for growth. Action is therefore required to respond to the population's demands, while refraining from compromising the preservation and sustainable use of such resources.

It is in these areas, often called "sensitive areas", the design and construction of roads and railways also has to be "sensitive", in that it should cause no damage to compromise their values and also enable or favour greater appreciation of such aspects.

In view of the large variety of situations found in the interaction between these areas and the construction of new or rehabilitation of existing roads, it is not advisable to apply standard solutions. Different possibilities have to be considered in each specific case, defining different approaches in order to achieve the best possible strategy.

In these cases, public participation processes, together with strict compliance with sectoral legislation, land ordinance, municipal and supra-municipal plans, are of the utmost importance.

## **Technical recommendations for the design and construction of roads and railways in sensitive areas**

In 2006, the Regional Ministry of Public Works and Transport of Andalusia published a series of recommendations to be applied to the design and construction of roads and railways in areas catalogued as sensitive. The idea was to establish a type of system that was appropriate for the setting's special characteristics, articulating and enhancing these areas without altering their resources and values. The environment was classified as one of the driving forces behind the region's economy.

The Manual first considers the need to coordinate environmental and infrastructure policy planning, evaluating the impact of infrastructure works on the environment and establishing more environmentally and landscape-sensitive technical criteria, in order to reduce environmental impact pursuant to the provisions made by the legislation currently in force.

Furthermore, infrastructures would have an added value because the road network can contribute to the interpretation, dissemination and promotion of the environmental resources for the users of those roads.

The general objectives can be summarised as follows:

- to identify a type of road structure for sensitive areas, ensuring that all roads are suitable for the setting and the society they are to be part of, following an initial analysis of their feasibility and functionality. Such structures should enhance the economic development, natural, landscape and socio-cultural resources of the areas concerned, without altering their representative characteristics;
- to favour activities supplementary to the preventive and corrective measures aimed at changing the behaviour of the users of infrastructures in sensitive areas. Such infrastructures themselves should act as elements informing and teaching about the values of their context and its sustainable uses;
- to ensure the application of specific measures during the construction and subsequent management of the infrastructure. Surveillance and monitoring are the only tools that can guarantee that we have the appropriate understanding of the environment and its capacity to react, in order to adapt to circumstances that may vary over time.

With regards to landscape, the Manual includes a series of recommendations and technical solutions to be studied on a case-by-case basis, aimed at improving the integration of infrastructures in the landscape. The recommendations range from the choice of layout, or the design of the road's characteristics that have the greatest visual impact, as well as the steps to be taken to enhance enjoyment and understanding of the landscape wherever this is possible according to the infrastructure's functionality.

### **Basic criteria to be considered**

The strategy for planning, defining and constructing road systems in sensitive areas inevitably involves appropriate knowledge of the setting as well as applying definition and construction criteria that are adapted to the situation and aim to preserve its values and enhance its resources.

The first and most important criterion involves adjusting the road design's functionality and design to the users' needs and the setting's characteristics. If the special impact that the infrastructure could have on a sensitive area is not taken into consideration, the design will be based on initial parameters that will limit any subsequent attempt to reduce said impact. The Road Act of Andalusia (Law 8/2001) clearly enables the use of parameters that are more restrictive than usual in singular conditions:

*Article 32. Drafting of road studies*

*“Studies of roads crossing protected nature areas shall be adapted to the setting by means of special landscape treatment”.*

The “special landscape treatment” concept should not be interpreted as limited to the final treatment of the infrastructure by solutions that disguise or mitigate the effects produced, but the application, from the very beginning of the project, of decisions and solutions aimed at its integration in the host site. In this respect, we find that we can give up using more generous design speed parameters and subsequently change the variables that determine the layout and elevation design according to the site (or pre-existing infrastructure), by adopting solutions aimed at improving road capacity and safety without jeopardising the landscape, natural or cultural values of the sensitive site.

Neither is the protected nature area concept to be strictly interpreted, as it is applicable to all sensitive areas as defined above.

The different technical criteria must be studied during each phase of the planning, design, construction and management process. Once the action to be taken in each of the phases has been defined, specific technical criteria are established for the different constructive parameters involved and for the potentially affected environmental factors that require the application of preventive and corrective measures.

When adopting technical design criteria, we also have to acknowledge that the *response is a single final solution*, complex yet unique, to a series of conditions that can occasionally represent contradictory interests. The designed infrastructure, if it is only based on landscape criteria, could be a poor solution, as it could determine irreversible effects on other values such as wildlife and plant life, cultural elements or users' requirements. The final solution is therefore a compromise reached after considering all the different conditioning factors.

The initial analysis involved in designing the layout and type of road must therefore consider defining variables such as:

- an earth movement balance enabling compensation of construction materials;
- habitat fragmentation and the barrier effect for wildlife or nearby built-up areas;
- elements to be protected, such as water courses and their banks, protected wildlife species and cultural and heritage elements;
- impact on the population of noise and vibrations, together with archaeological sites, etc.;
- erosion and instability phenomena affecting embankments, affecting the road's subsequent maintenance, and the possibility of restoring the plant cover;
- integration and restoration of the site affected by the work;
- visual field of the road and its impact on the landscape's visual and perceptive points of reference;
- the road's internal aesthetics.

We also have to forget the belief that a good infrastructure project should define and apply a large number of corrective and compensatory measures, at



a high cost. It is preferable to adopt preventive measures, adapting the road layout to the site, with direct action on the road's constructive elements, often representing a lower economic investment.

### **Integration of the landscape in road projects**

The regional government, through the specifications applicable to informative studies and projects, manuals and technical recommendations, has established criteria to be applied in relation to the landscape.

The studies conducted to draft the project reports, which analyse different alternatives for new roads, should consider the impact of the different layouts on the landscape, by means of the following:

- landscape unit mapping, analysis the visual fields per axis;
- evaluation of the quality of the affected units. Fragility, visual absorption capacity;
- inclusion of the landscape factor in the multi-criteria alternative selection analysis.

Certain project reports include a new dimension, according to which the landscape should not be considered only as one more factor to be assessed and protected, but as a variable that the design engineer should effectively include in his or her study and project. This involves seeing the landscape as an opportunity to provide the infrastructure with added value, enhancing its ability to generate a link between the public, the region and its landscape, facilitating enjoyment of the landscape that is crossed by the road. In this respect, different layouts have different landscape viewing capacities.

For layout and construction projects, the general specifications include the following as compulsory aspects:

- detailed characterisation of the landscape. Singular elements, visual fields;
- environmental optimisation of the layout. Progressive adjustments;
- establishment of general preventive and corrective measures related to the landscape;
- corrective measures to be included in the construction project;
- corrective measures in the landscape restoration project.

The objective pursued in these projects is to design the infrastructure including, from the very beginning, landscape integration criteria, as subsequent corrections (masking solutions) are not always efficient.

These measures must be implemented for design variables as heterogeneous as the layout, cross-section (central reserve, separate road sections), drainage, land movements, embankments and walls, structures and functional elements (road signs, barriers, central reserves) and largely depend on the type of road.



Junctions have to be studied in detail, analysing the position of slip roads and roundabouts relative to the main roadway and the setting, avoiding heavy alterations to the surroundings and preserving views.



Embankments are possibly the most decisive aspects of a road's aesthetics.

The impact on embankments can be reduced by building walls that prevent the presence of unstable rock-based surfaces subject to erosion, minimising the

natural area affected. These walls must be integrated in the setting, seeking similarity of textures and colours.

Some measures affecting embankments are systematically applied, after studies, such as reduction of gradients, avoiding excessive re-shaping, removing rough edges or covering with topsoil.

In projects affecting singular landscapes, false tunnels have been used to avoid major land movements and viaducts have been over-dimensioned to prevent the presence of banks.



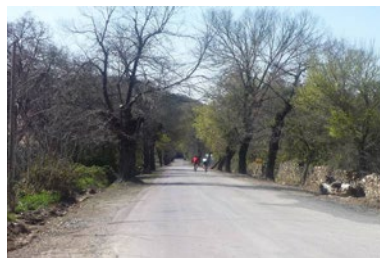
These measures represent a considerable increase in construction costs.

In the construction phase, landscape-related measures included in projects should be included in the contractor's Environmental Management Plan, which must describe how such measures are applied and controlled. Works Management units and the road authorities also monitor the environmental impact of these measures. Even in well-drafted projects, enabling appropriate integration in the setting, a less than thorough construction process can generate important effects on sensitive elements in a wide area,



Including water courses, plant life or traditional rural use, with a direct impact on the landscape. When work is being performed on existing roads, certain elements, which could be characteristic or traditional points of

reference, must be respected. Roadside trees are often the first victims when roads are widened. The same applies to the dry walls that are typical of hilly landscapes in Andalusia, where they mark the borders of property, pathways and roads.



We occasionally come across masonry bridges and drainage systems, which not only should not be demolished, but should be restored whenever necessary.

### **Landscaped roads**

Roads can be effective instruments for observing and learning about the landscape, as they form a large network that crosses the entire region. To a considerable extent, the criteria established for the design of roads in sensitive areas are particularly important for the creation of a network of landscaped roads in Andalusia. The Regional Government is currently drafting a specific landscaped road programme. A proposed catalogue of landscaped roads has already been defined in the initial phase.

In certain settings and in specific mobility circumstances, roads perform functions other than those merely related to transport, and it is evident that their landscape-related aspect requires specific measures that do not compromise their primary function. These special roads, known as landscaped roads, could become tourist attractions and, therefore, a factor affecting the economic development of some areas.

The landscaped road programme will include activities aimed at:

- improving roads' legibility and the user's perceptive framework. This involves considering road signs, margins, speed and road safety;
- integrating roads in the landscape, not only with re-vegetation but also by adopting specific constructive solutions;

- improving the road’s scenic qualities, by providing lookout and rest areas;
- providing the road with suitable functional and interpretative facilities;
- conserving or restoring the landscape seen from the road (“scenic servitude”);
- enabling non-motor driven means of transport in safe conditions, with different platforms for cycling or pedestrian use;
- fostering the use of these roads by providing appropriate information in institutional media, and improving and informing of their access from the conventional road network.

## **Landscape paths in the Czech Republic**

**Mrs Julia TOBIKOVA**

*Ministry of the Environment, Representative of the Czech Republic  
to the European Landscape Convention*

### **Infrastructure in the Czech Republic – statistical data**

The Czech Republic is an inland country with an area of 78 867 km<sup>2</sup> and has a population of 10 381 130 inhabitants.

The Czech Republic lies along the boundary between two mountain systems, with different age, geological and geomorphologic development. The western and central parts consist of the Czech uplands, mostly with the character of hilly country, and the central mountains (Šumava, Český les, the Krušné Mts., the Krkonoše Mts., the Orlické Mts. and the Jeseníky Mts). The Western Carpathians extend into the eastern part of the country (the Beskydy Mts.). The area between the two mountain systems consists of a valley zone. The soil cover is quite variable in both the grain size and soil types.

The main European watershed passes through the country and separates the North Sea, the Baltic Sea, and the Black Sea watersheds. To the main rivers belong the Labe, the Vltava, the Morava, the Dyje, the Odra and the Opava. There is a total of 24 906 water reservoirs and fishponds in the country. The hydrographical network of watercourses consists of 76 000 km of natural or modified riverbeds.

<b>Natural protected areas in the Czech Republic</b>			
<b>Categories</b>		<b>Number</b>	<b>Area (ha)</b>
National Parks	4	119489	1,51
Protected Landscape Areas	25	1086737,3	13,77
National Nature Monuments	106	3116,6003	0,03
National Nature Reserves	112	28486,0263	0,36
Nature Monuments	1199	20226.2692	0,25
Natural Reserves	789	37907.1342	0,48
Specially protected areas (total)	2235	1248879,65	15,81

<b>Infrastructure in the Czech Republic</b>		
Railways	Total length of constructed tracks	15716 km
	Total length of operated links	9586 km
Roads and motorways	Total road and motorways network	55654 km
	Motorways in operation	691 km
	Expressways	360 km
	Other roads / I, II, III class	54963 km
	Local roads (Forest and field roads)	74919 km
Waterways	Length of inland waterways	663,6 km
Air transport infrastructure	Public international airports	7
	Total number of airports	91
Pipeline transport infrastructure	Total length of pipelines	675 km
Landscape pathways	Footpaths (including paths for cross country skiing)	40157 km
(Source – Touristic website / marked pathways by the Czech Tourist Club)	Cycling treks	28282 km

Source: *Transport Yearbook of the Czech Republic, 2008, Ministry of Infrastructure*

<b>Land use in the Czech Republic</b>			
Arable land	38%	Water	2%
Forest land	34%	Built-up areas	2%
Grassland	12%	Others	9%
Gardens and Orchards	3%	Vineyards	<1%
		Hop-garden	<1%

### **History and philosophy of the Czech Tourist Club (CTC)**

Already in the 18th century, the German scientist, explorer and geographer Alexander von Humbolt laid the foundation of conscious and targeted the protection of nature and landscape. His idea was that the understanding of the natural beauties and values lays the first groundwork for the acquisition of awareness of the need for its conservation.

The Czech Tourist Club was founded in Prague on 11 June 1888. The main activities of this club were constructing and marking touristic paths, building chalets, view towers, restaurants and museums along these paths. The most significant act in this time was constructing the Petřín view tower in Prague

in 1891 (CTC was inspired by the Eifel Tower in Paris) and the cable-railway connecting the Petřín view tower and the town of Prague. Both sights are still in very good condition. Unfortunately, the First World War ended this likely developing fellowship. The Czech Tourist Club recovered surprisingly quickly after First World War. In reaction to new political situation in Europe Czechoslovakian Tourist Club (KČST) was founded in 1918. In the next 8-10 years, the Club developed rapidly, covering the area now known as the Czech Republic, the Slovak Republic and the Carpathian Rus (today being the western part of Ukraine). During this period nature and landscape protection became one of main topics within the club (the club management had their own officer for this field, who was already focused on a comprehensive understanding of environmental problems). The club supported efforts to set up first national parks and nature reserves in former Czechoslovakia. Activities extended from walking and hiking infrastructure to skiing and climbing areas and river rowing – special marking of cross-country ski paths was established at this time.

In 1990 the political situation in Central Europe changed again. CTC was restored in former way and the club joined the European Association of Tourist Clubs (EWV-Europäische Wandervereinigung ERA – European Ramblers Association, FERP – *Fédération européenne de la randonnée pédestre*). The European association set itself as a primary objective to connect all European countries with European remote walking routes. The idea is to connect the most beautiful and most important parts of European landscapes, culture and history. This network brings together 55 European tourist clubs from 28 European countries. One of the main objectives of this association is also the protection of nature and landscapes, as well as protection of regional traditions and landmarks. The main concern of the association is to assure the right of free access to nature for all citizens. This right is more and more restricted due to the continuous expansion of built-up areas, building of new motorways and last, but not least different interpretation of property rights in various European countries. Therefore, the association negotiates this issue with the EU institutions.

The CTC occupies a significant position among other organisations concerned with leisure activities in the countryside of the Czech Republic. From the early beginning of the club's history, one idea was emphasised: to consider organised tourism as a synonymous for the protection of nature and landscape. All activities are based on the discovery and preservation of natural beauty and monuments. Members of the club are looking for and granting an optimal



use of the countryside in terms of recreation, forest management and forestry, nature conservation, landscape water management and other interests. The purpose of tourism is primarily recreation. In an addition to healthy physical exercise, one has the aesthetic and cognitive experience as well. The aim of all of these activities is to teach the public about the geographical and natural peculiarities of certain regions and the historical monuments of the life and habits of the regional inhabitants and to preserve all of this for future generations. The club also tries to maintain the landscape character of the region. It supports constructions of new accommodation and recreational facilities using the original methods and local materials. The design of these facilities must always be in harmony with the local landscape character.

In 2008, the Czech Republic assigned a candidature of the Czech Tourist Club with the project “Marking system of landscape footpaths” for the Landscape Award of the Council of Europe. We consider it to be worthy of attention and a good example of protection and maintenance of our landscapes. It is a great awareness raising as well as a naturally educational project, with a great traditional history. Nowadays this project is by general public considered for something, what has been here since a childhood of every child – already for the fifth generation.

### **Sections of the Czech Tourist Club**

Today the club has almost 36 000 members, grouped in 512 departments in 14 areas (borders of the areas correspond to the borders of regions in the Czech Republic). Over 10 thousand members are under 26 years of age. The duty of every member of the club is to protect the natural and cultural heritage. The motto is: “Learn by experience and protect”.

The club has four thematic sections (methodological, homeland study, efficiency hiking and nature and landscape protection) and nine sections divided by the type of the activity (walking, alpine hiking, cycling, skiing, motoring, speleology, horse riding, hiking for handicapped and international section for folk character sports).

### **Projects of the Czech Tourist Club**

Since the early years of the Club, it has been establishing small tourist (natural – science) museums, in which tourists could easily learn geographical, natural and cultural peculiarities of the region.

View points and view towers are important parts to enhance the attractiveness of landscapes thus they are essential elements affecting traffic and visitor guidance routes. It is possible to achieve multiple aesthetic and cognitive effects by introducing such an element into the countryside. Some of the old view towers built before WWII are still exploited. CTC has continued in the tradition of building observatory towers and maintaining the old ones.

In the 80s, the club began to organise a competition, where individual acts of assistance or special protection of nature were appreciated (volunteer activities, marking activities, preparation and issue of methodological and promotional materials, mapping of flora and fauna and participation in other events).

The club helps to create a network of hiking paths in other countries. For example experts from the Czech Republic cooperate with Ukrainian colleagues on the creation of the marked network of footpaths in Carpathian Mountains.

The club also issues hiking maps, works on educational projects and materials and organises different free time activities.

The club pursues maintenance and technical adjustments of paths, benches, modifications of causeways and others that are in some areas absolutely necessary and may prevent significant damage of the environment (that inevitably occurs when neglected).

In 2006, the CTC opened a museum of tourism on the premises of the old Jewish synagogue in Bechyně. Many interesting touristic exhibits were concentrated in this museum. Many of which demonstrate the constant care of the club for the maintenance of cultural landscapes.

Marking hiking trails has been a stable activity since the foundation of the club. The club considers the process of building and marking hiking trails as its greatest contribution to nature and landscape conservation. It is clear, that the first step to do this should be bringing people into the most beautiful parts of nature and landscape and subsequently explaining, why this nature and landscapes should be protected. It is quite easy to regulate outdoor activities with the marked trails. The result is that the most sensitive parts of landscapes have not been affected yet by tourism. In the whole history of the club all marking activities were carried out by trained volunteer staff – pathfinders without any financial compensation. In fact, this is one of the largest volunteer activities in the Czech Republic.

## **Landscape paths in the Czech Republic**

In our country landscapes has been made uniquely accessible – hiking trails lead visitors to valuable sites in landscapes (natural monuments, natural reserves, cultural monuments) and lookout points. Hiking trails are reflected in the series of tourist maps, which cover entire territory of the Czech Republic. Maps include a detailed description of landscapes and natural and cultural sites, including their history as well.

One of the most important activities of the club members is marking and regular maintenance of tourist paths. The network of hiking trails and the marking system – its density, quality and complete coverage of the entire territory of the Czech Republic is highly evaluated worldwide.

The principle of the network is to show tourists the historical monuments and important places, perspectives and especially beautiful sites in our countryside. Some of these areas are subject to the protection of nature conservation bodies. These authorities approved the network at once in the past and new routes are gradually added.

An agreement was made between the club and Ministry of Environment concerning the marking of hiking paths. This agreement solves mutual cooperation and procedures on the system of marking, with regard to nature and landscape conservation. The perception of the club is: if we do not bring visitors to the landscape by marked trails, visitors will walk everywhere without restrictions.

As stated above, the maintenance of all types of landscape paths in the Czech Republic is based on voluntary contributions (financial aid but mostly manual labour). There is a possibility to receive national grants for restoration as well. It is a good example that state authorities do understand the necessity of these arrangements.

### **Marking system**

The first hiking trail was marked by the CTC on 11 May, 1889. The number of routes had quickly increased and in 1920 there were 25 000 km of marked paths in the former Czechoslovakia. Later on, a network of tourist paths was marked soon after 1989 which were previously inaccessible near the Austrian and German borders. Total extent of marked paths in the Czech Republic

had exceeded 38 000 km in 1994. Since 1997, the Department of Travel and Tourism of Ministry for Regional Development covers financial costs of tourist signs and boards. After the year 2000, individual regions have begun to contribute to the marking of hiking tracks as well.

Currently, the Czech Tourist Club does not deal only with marking of hiking trails, but with ski trails as well. Together with other organisations, (ex. State Forest – state enterprise, Czech Mountain bike Association and other NGOs) they cooperate to mark cycling routes and cycling treks as well. Since 2005, the club participates in the marking of trails for horseback riding. The Club also searches for and marks accessible tracks for disabled people.

There was indicated a total length of 40 157 km of hiking trails, marked by the club at the end of 2005. It also includes 2243 km of ski trails. In 2005 about 1 400 experts – volunteers fostered the maintenance and restoration of marking items and information systems on hiking routes.

Hiking trails are marked with striped signs, which consist of three horizontal bands. The middle band, which determines the colour of the route, may be red, blue, green or yellow. The two external bands are white to make the symbol more visible. The mark forms a square of 10 x 10 cm. If the trail turns into another direction, the mark is complemented with the arrow mark. Multi-coloured marks are used at a common section of several marked routes. Different marks and signs are used for the indication of the end of marked trails, branch line to the view point or to ruins of a castle, to the spring and other interesting objects. Educational paths are marked with striped signs or local signs. Guideposts or other information tables are placed in cities and villages, at intersections with other trails and at other important tourist sites. Guideposts indicate the name of the place, its altitude, and distances to other important sites further along the trail.

## **Main types of leisure activities in the countryside of the Czech Republic**

### *Hiking*

The idea of keeping visitors in desired locations with an accent on showing them the most beautiful places of our country, led the founders of Czech Tourist Club to the marking and maintenance of routes. A fundamental aspect of all of these activities was the adjustment and maintenance of paths, field roads and sidewalks to allow safe movement of visitors and to save

the environment. Pathways in the mountains, paths and stairs in rocky areas, observation towers and many others serve these purposes.

#### *Water – canoeing and rafting*

Canoeing means exploring the beauties of nature like the watercourse and its surroundings, vegetation, fauna and last but not least human interference with the natural water environment. One can see the landscape from another perspective and canoeists can get to places where another track does not lead. There is a system of water protection in the Czech Republic, which aims at ending canoeing in low levels of rivers. For better protection and safety of exquisite environment jetties and strengthening of riverbanks are created at the landing sites along the riverbanks. Navigation Safety and guidance are reached by the system of river track marking. Special attention is given to dangerous weirs and places on the river. This system is provided by the canoeist section of the club in collaboration with Czech Canoeist Association.

#### *Cross-country skiing*

It is absolutely necessary to reach an agreement with the forest authorities for creating ski routes (with the goal to eliminate stretch sanding). Ski routes should be kept separately from winter hiking trails, which are dedicated to pedestrians. This system is currently under construction. The designation and adjustment of ski-trails and cross country tracks is the basic method of influencing the direction of skiers in respect for requirements of nature and landscape and to the benefit of skiers as well.

#### *Cycling*

Cyclists use a bicycle as a technical vehicle with an action radius three times higher in comparison with hiking. To protect a soil cover, it is forbidden by law to ride a bike off the marked trails and forest roads.

Members of Czech Tourist Club together with other organisations (Czech Mountain bike Association, regions, NGOs) are involved in marking routes for cyclists. The total length of the cycling routes was 28 282 km in the Czech Republic in 2008. The club also provides maintenance of these paths. All of these activities are based on volunteers. Uniform marking and labelling of all cycling routes in the Czech Republic has been guaranteed by the Ministry of Infrastructure.

At the beginning of this decade, conflicts between bikers and hikers developed due to rapidly increasing popularity of mountain biking. The club understood that these conflicts could be very well avoided if the cycling routes are kept away from the pedestrian routes whenever possible. Besides this, after several months of discussions with representatives of different organisations involved in different types of leisure activities, “The Rules for the Movement in Countryside” were created in 2003. The goal of the club is to implement these rules to the relevant laws and other regulations. Members of the club work on continuous promotion of the Rules to increase their awareness.

#### *Types of landscape paths in the Czech Republic*

Forest roads are increasingly used not only for economic purposes (logging and forest restoration), but also for recreational purposes. They are used for hiking and biking in the summer and for cross-country skiing in the winter. The surfaces of forest roads may be consolidated or unconsolidated. Forest roads were built and are maintained primarily for forestry and fire protection. Prime care must be given mainly to the effects of erosion around the body of the road.

Terrestrial sidewalks are usually of simple construction but a special care must be given to the performance of a proper slope and drainage system.

Cobbled walkways are proposed in areas with plenty of quality and suitable local material. Joints are filled with subtle earthy material.

Gravel sidewalk is able to withstand the effects of extreme weather condition. It is therefore suitable for the most exposed sites of mountain ranges. The only requirement is to use local material.

Wooden walkways are built in wet locations with a small load capacity of soil. These walkways are located on the ground, or they are elevated above the ground that water can flow under.

Other paths used for leisure activities are for example field roads or asphalt pavements located in or near urban areas.

### **Other organisations and projects in the Czech Republic**

#### *Educational paths*

The first educational path in the Czech Republic was created in 1965. Currently there are about 200 educational paths in the Czech Republic.

Educational paths are built in nature or culturally interesting areas. Important local objects or events are highlighted with commentaries and pictures which create a content of educational panels. Educational paths are divided by: used technique, thematic orientation, length and use. These types of paths are built by regions, municipalities, non-governmental organisations, the CTC, etc.

### *Greenways*

“Greenways” is an assistance and grant-making programme of the Czech Environmental Partnership Foundation. The Foundation provides support to organisations and projects aiming at sustainable development along the trails and natural corridors through this program. Creation of a network of organisations and projects that can share experiences and exchange ideas nationally and internationally is an important goal of the programme as well.

Greenways bring benefits for nature conservation and heritage protection and interpretation, provide opportunities for better mobility, recreation and tourism, and challenge lifestyles and sustainable use of natural resources. Greenways inspire citizens, local politicians, authorities and businessmen for joined planning and enhancing quality of life in their community.

The Greenways programme focuses on projects that integrate solutions for several issues with the aim to enhance the quality of life for inhabitants of towns and villages. The main themes of the Programme are: local and regional development, sensitive and safe transportation, soft tourism, conservation of natural and cultural heritage and healthy lifestyles.

Surrounding areas of towns are under great pressure. There is a need to pay special attention to creating a network of paths for hiking and biking or other leisure activities. It is very important to consider disabled people and parents with prams. Use of suburban countryside for recreational purposes has its own special rules and it must also meet certain criteria from the aesthetic, availability and attractiveness. It is a great opportunity to create a liner park, open gym or a classroom for local natural or cultural history.

### *Single tracks*

The first single track network was officially opened in 2008 in the northern part of the Czech Republic (Jiserske mountains). This was a result of the cooperation of the Czech Mountain bike Association, Forests of the Czech

Republic – state enterprise and the union of local municipalities. The single-track is a type of one way trail for a single biker. It meanders among trees and mild slopes and it never goes straight for a long time. It respects the forest environment and bikers can enjoy the outdoor activity it provides.

Another project of Czech Mountain bike Association is the restoration of historical forest paths. Many of these paths were created at the end of 19th and the beginning of 20th century for gaming and hiking purposes. Today, although they are abandoned and even forgotten, they still have their historical value. If they are restored, they can serve another generation for different leisure activities.



## **Landscape in the road-building activities of the Governing Council of the Andalusian Autonomous Community**

**Mr José Antonio GOMEZ CASADO**

*Director of Engineering and Sustainability of the Public Agency of Infrastructures of Andalucía S.A. (GIASA) Department of Public Work and Housing, Junta of Andalusia*

### **Background**

When, almost ten years ago, the Department of Public Works and Transport decided to change its infrastructure management model, it was making a firm commitment to the environment. From the planning stage through design and construction to the actual commissioning of the road network, these infrastructures have been conceived as part of a whole, established in a given area with a number of well-protected natural values. These facilities must also be established in a manner compatible with the conservation of the environment in which they are located. Particular emphasis is placed on the environmental variable. Specific procedures and design criteria are laid down depending on the locations of the infrastructures, and a sustainability compromise must be reached between development and preservation of the natural assets of the area.

Landscape is an increasingly important environmental variable to be taken into account in pre-design studies for infrastructures. This variable, which is considered right from the onset of this new phase, is becoming increasingly important in our road planning activities. The Department of Public Works and Transport set up the Landscape and Territory Centre in 2005, tracing the proactive path for the future of this variable.

Incorporating landscape is a very important, and often decisive, factor in terms of choosing between alternatives, defining or locating road layouts and deciding on construction methods. Integrating infrastructures into the landscape means considering them as part of the landscape.

The specific “landscape road” concept appeared in the latest catalogue published in 2009, although in 1997 the Department was already conducting work that took account of these values of respecting landscape and allowing people to enjoy it.

A wide range of laws and procedures were adopted confirming the determination of the Governing Council of the Andalusian Autonomous Community to consider landscape as one of the main factors in road design.

The 2001 Law on Roads, the Andalusian Spatial Planning Strategy, the Infrastructure Plan for Transport Sustainability, the White Paper on roads and protected natural areas, the Environmental management Procedure, the technical Specifications for the drafting of projects, the Handbook on road design for sensitive habitats, and the landscape rehabilitation Projects are outstanding examples of this determination to include landscape as a priority tool for creating road infrastructures in the Autonomous Community of Andalusia.

### **Examples of roads built by the Governing Council of the Andalusian Autonomous Community with particular emphasis on landscape**

We might highlight the following achievements by the Department of Public Works:

#### *Almonte – Los Cabezudos landscape road*

An original project involving a traditional single lane road with a reduced roadbed was adopted for this road, a speed-limit of 60 km per hour was imposed, with some sections limited to 40 km/h, the roadway was coloured, special passages were built for wildlife, particularly amphibians, land movements were minimised by levelling the road edges with the natural earth... It was one of the first ever projects which we might call specifically landscape-oriented.

#### *The A-369 landscape road from Ronda to Gaucín*

This road follows the natural route from the Ronda Mountains to the Costa del Sol and Campo de Gibraltar. It is a mountain road sweeping along the Genal Valley, with an outstanding natural and cultural landscape. The layout is closely tailored to the terrain, as the winding road formerly imposed driving conditions which precluded any reading of the landscape. The roadbed was enlarged, improving conditions of safety and comfort, and such road furniture items as safety barriers, ditches and walls, etc, were adapted, integrating the roadway into the environment and installing viewpoints, rest areas, etc, in order to provide access to panoramas of a magnificent landscape which had previously been blocked off. The road now serves as a means of publicising

these panoramas, and is being used as a specific means of changing drivers' attitudes, helping people to interpret the assets and resources of the territory and thus publicising them.

### *Cortijos Nuevos – La Ballestera*

The A-317 road from Cortijos Nuevos to La Ballestera crosses the Casorla, Segura and Las Villas Nature Reserve. It is a mountain area of major landscape value, with a mixed pine and holm-oak forest. A 22 km stretch of the road covers an area which is highly complex in geotechnical terms: special building and functional solutions were needed, and wildlife passages, cattle roads, wooden security barriers, viewpoints, etc, were installed.

### *Jerez – Los Barrios*

The A-381 motorway from Jerez to Los Barrios was the infrastructure which required the greatest technical and financial efforts from the Department of Public Works in order to ensure that the road met all the environmental requirements arising from the fact of crossing the Los Alcornocales Nature Reserve.

As a result of these efforts, the A-381 motorway received an award from the International Road Federation (IRF) for its environmental excellence.

Some €100 million were invested in the environmental aspects of this 88 km long road. The layout was adjusted in order to prevent land slippage, adapting it to the terrain in terms of both area and elevation, the roadway was permeabilised by means of structures up to levels above the technical thresholds for economic optimisation, and a long series of viaducts and imitation tunnels were built to ensure optimum integration into the scenery.

## **The urban landscape**

Normally when we mention landscape we imagine an open space with specific characteristics which give rise to feelings inherent in the contemplation of the said space. Rivers, mountains, open countryside: all these constitute a set of attributes creating a scenic quality which calls forth certain emotions.

Infrastructures have traditionally provided access to specific places from which these landscapes can be contemplated, otherwise they would have

remained the exclusive preserve of a very few individuals. However, there are other landscapes which were actually produced, in whole or in part, by the infrastructures themselves, for good or ill.

Some specific elements of our road infrastructures can have a considerable positive or negative impact *per se* on the landscape. A good example of one such element is the urban bridge. Such bridges fit into a landscape which we find familiar, indeed banal, and in which many of us have spent long periods of our lives. The urban landscape forms part of our memories; some of its features are irreplaceable, others dispensable, but it never leaves us indifferent.

Many bridges identify cities as exclusive monuments, ultimately becoming the main symbol of the cities, the local, and identity. It is difficult to start from scratch and gain admittance to the select circle of urban monuments, and even harder to do so simply, without unnecessary extra expense, just what is needed, with an eye for functionality, environmental integration and respect for nature, which is sometimes the most difficult part. If we add the aspects of citizen participation and acceptance of the built heritage, the ultimate aim will have been achieved. If not, time will tell, since successive generations will maintain or remove the built items. A clear example of this is the functional engineering of the 1960s, which has been replaced by new rehabilitated areas, with the outstanding examples of Cuatro Caminos and Atocha in Madrid.

Constructions in towns and cities are included in this category, and sometimes even drive on the process.

The Department of Public Works of the Governing Council of the Andalusian Autonomous Community, realising the importance of such urban developments, has put a great deal of effort into the design and functionality of specific constructions of this type. We might mention the following examples: Andalusia Bridge in Cordova, Palma del Río Bridge, Montoro Bridge, Puerto de Santamaría Bridge, Ubrique Bridge, Espera Bridge, Pago de Enmedio Viaduct, La Rinconada Seville, Footbridge in Punta Umbría. Huelva, Huelva Bridge – Punta Umbría.

### **El Puente del Dragón (Dragon Bridge)**

Lastly, we might mention an amenity which was constructed in the urban environment, in a sensitive landscape, and which has transformed its

environment and created landscape, townscape, dream and fantasy. This work was the result of citizen participation, has had a major social impact and has received various awards for its originality, design, finishing and environmental integration. We are talking about the Puente del Dragón in Alcalá de Guadaíra.

The combination of ideas, citizen participation, the audacity shown by the designer and promoter, and the acceptance of the work by the whole city, were the main factors in the success of this venture.

This 123 metre-long bridge is in four sections, the two end ones measuring 18.5 m each and the two central ones 43 m.

The specificity and high landscape value of the natural surroundings necessitated a special effort when the new bridge was being designed and defined. Care was required to prevent the structure from blocking views of the Alcalá castle monuments, dating from the Almohad era, which are located near the bridge.

The main, genuinely unique, feature of this structure is that it was built of reinforced concrete completely *in situ*, in the shape of a dragon, with a spectacular colouring achieved by covering the whole structure (including the walls and other adjoining urban elements) with mosaics of coloured tiles using the *trencadis* technique.

The change to the landscape and the public acceptance of this construction, which was not achieved without prior debate, make it a reference point for urban action.

This achievement was awarded the prize for the best civil engineering project in the Andalusian Autonomous Community by the Association of Andalusian Consultancies (ASICA) in 2007.

At the 4th Andalusian Roads Conference (2007) it was the subject of the report selected as the best communication of the Conference.

Lastly, it received an Honourable Mention during the 4th Award ceremony for the National Aqueduct Prize in Segovia in 2009.

## **Summary of papers submitted to the Workshop**

**Mr Diego FERNANDEZ BELMONTE**

*Centre of Studies Landscape and Territory of Andalusia, Spain*

This paper presents a rapport based on the communications submitted to the Workshop on “Landscape Criteria for Infrastructure Design”, belonging to the series of workshops promoted by the Council of Europe for the implementation of the European Landscape Convention.

### **Introduction**

Energy and transport infrastructures have a strong impact on the territory that hosts them. This impact certainly affects the objective values of the traversed areas, either natural or cultural, but it also modifies the way in which people perceive them, which is the landscape.

Following the increasing awareness of society on these undesirable side effects of infrastructures, public authorities have enforced specific regulations and developed recommendations aimed at limiting them through the different steps of the infrastructure life: planning, design, construction, operation and dismantling. Private sector has generally gone after, adapting to the new framework, applying its determinations and accumulating increasing experience and knowledge.

The contributions presented to the Workshop are a good sample of the current initiatives undertaken in Spain by public and private stakeholders in order to assess and address the negative effects of infrastructures on landscape.

### **Provision of regulations, guidelines and recommendations**

This first block of practices is representative of the growing attention that the public sector is devoting to infrastructure design through the provision of regulations, guidelines and recommendations aimed at facilitating the consideration of environmental and landscape issues in their jurisdictions.

An increasing effort is being undertaken by regional governments in the field of road infrastructures in order to produce specific design guides able to improve their integration in the landscape. These actions are either focused on specific road types or on transversal design aspects.

An example of the first type is provided by the Environment Department of the Catalan Government, which has recently produced the *Technical Recommendations for the Sustainable Design of Mountain Roads*<sup>7</sup>. It is a text that complements and develops the general design criteria already established by the Public Works Department, adjusting them to the geomorphology, environmental and scenic environment traversed by those roads with a low design speed that cross mountain areas.

The objective of the guide is threefold: to define a specific road type in mountain areas as a mean to coordinate actions on the infrastructures, their surrounding environment and the society that receives them; to reconcile the performance of existing technical rules with environmental legislation; and to introduce design elements able to drive changes in the attitude of users towards the traversed environment.

Among its conclusions, a particular attention is directed to the trades off existing between design speed and environmental impact, pointing out the convenience of assuming lower comfort standards (i.e. design speed) in exchange of reduced impacts.

In other infrastructure fields, however, public administrations have not provided yet clear design guidelines for the consideration of landscape. This situation mainly arises with regard to relatively new types of infrastructure (as those connected to renewable energies) and to detailed locations.

Martín García<sup>8</sup> provides a valuable example of this situation through the analysis of the landscape integration of solar farms in Andalusia.

His contribution points out that these infrastructures of renewable energy production are being implemented without any planning legislation governing the minimum conditions to ensure their proper integration into the territory. The causes for this are to be found in the undefined general principles enounced in national and regional legislation, as well as in the absence of any specific regulation in local urban plans (as when they were formulated and approved the new infrastructures were not foreseeable).

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7. Planas, M. and Puig, M. (2010), *Technical Recommendations for the Sustainable Design of Mountain Roads*.

8. Martín García, J. (2010), *Local Proposals for Landscape Integration of Solar Farms*.

While the local urban plans evolve in order to include the landscape integration of solar farms, the author proposes that, as a transitional measure, the municipalities adopt ordinances that establish minimum requirements to ensure the appropriate integration of these infrastructures into the landscape. Such ordinances should regulate matters as the obligation to carry landscape impact assessments, the definition of protection rules or the determination of measures for the better design and implementation of solar farms and their auxiliary facilities.

### **Evolution of infrastructure design processes**

A second group of actions is related to the improvement of infrastructure design processes within the private sector. Consultancy firms are gradually adapting and tuning their management and production schemes so as to include environmental variables in the infrastructure design processes and, with them, landscape.

Pérez Sarabia provides an example of such a tendency through the description of the environmental project management implemented by the civil engineering company IDom technologies, aimed at introducing environmental parameters at every stage of the infrastructure life (conception, design, implementation, operation, and disposal)<sup>9</sup>. The whole process builds on the early detection and analysis of environmental impacts so to minimise their effect as the project definition advances.

In the case of landscape, the project management is oriented towards the definition from the beginning of a clear landscape strategy able to bring together the functional and environmental requirements of the project and able to provide consistency through all the definition steps. As other technical parameters intervening in the design of the infrastructure, environment and landscape are monitored through the three basic project management variables: scope, time and cost.

However, infrastructure design processes are still subjected to specific constraints when it comes to reality. As noted by Conde de Vega et al., the environmental integration of infrastructure projects, including the adequacy

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9. Pérez Sarabia, A. (2010), *Project Environmental Management: the Case of Landscape*.



of landscaping and restoration actions may be limited by a set of problems that occur throughout the project life<sup>10</sup>.

In particular the authors identified a number of factors contributing to a successful inclusion of landscape criteria in the design process: the participation of environmental engineers from the beginning of the project; the environmental awareness of the stakeholders involved in it; the existence of highly detailed specifications as regards the environmental aspects to be considered; the active collaboration and participation of public administrations and agencies through the whole definition process; the availability of time and funds to carry appropriate studies; and, finally, the adequate development of monitoring plans.

### **Generation of good practices in infrastructure projects**

A third block of practices is connected to the treatment of landscape restoration in specific infrastructure projects. They are mainly related to the design and construction of linear infrastructures, field where the existing experience and knowledge are improving the treatment of landscape.

Planchadell provides an insight into two projects involving the transformation of urban landscape through the burying of railway infrastructures<sup>11</sup>. The projects, located in Valencia, foresee the burial of the Metro Valencia line 1 in the urban area of Burjassot and Godella and the burial at Ribaraja of the platform of the former line Valencia – Llíria in order to enable the extension of the Metro Valencia line 5.

In both cases the burial of infrastructures will eliminate the current barrier effect and retrieve a public space previously separated. The new configuration is used by the projects as a lever to promote a far-reaching transformation of the urban landscape. Such transformation involves the revitalisation of the marginal spaces generated by the presence of the surface infrastructure,

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10. Conde de Vega, A., Domínguez Ruiz, B.; Gómez de la Peña, A.; Rodríguez López, M.; Sánchez Campos, F. and Pérez Edrosa, J.C. (2010), *Specific Problems in the Application of Restoration Projects in Civil Works, The Case of Transport Infrastructures*.

11. Planchadell, G. (2010), *Transformation of Urban Landscape through the Burying of Railway Infrastructures. The cases of Riba-Roja de Túria and Burjassot y Godella (Valencia)*.

the definition of new public spaces for pedestrians and sustainable transport modes, the rationalisation of the street grid, improvements in the quality of urbanisation and the elimination of previous mental barriers.

The projects seek as well to respect the singularity of each location: in Burjassot and Godella through the preservation of the rich architecture of its buildings; in the case of Riba-roja de Turia, through a design that conserves the natural unevenness of the terrain.

Bonet presents the study methodology carried out in order to assess and select the best solution, in terms of landscape integration, among the planned alternatives for the by-pass of road CV-50 at the village of Tavernes (València)<sup>12</sup>.

As a first step, the author assessed the feasibility of the alternatives through an evaluation matrix that included visibility, barrier effect, visual intrusion, artificiality, fragmentation and loss of vegetation. The poor results of the initial alternatives led to the definition of a new route for the bypass, as well as to the improvement of its landscape integration. This second step, undertaken with the support of landscape integration handbooks and guidelines, brought together the analysis of the context, the road layout, the road section and its singular elements (as intersections).

Through this process, the design team was finally able to propose a bypass alternative characterised by the works of replanting and landscape restoration, the inclusion of paths for pedestrians and cyclists and the creation of new parks near the river Vaca.

Asenjo and Franco present two recent examples of technical decisions in which landscape was taken into account in the design of road projects promoted by the Junta de Andalucía through the agency GIASA<sup>13</sup>.

The first project consisted of the upgrading of road A-344 to a wider section and a higher design speed between the village of Rute and road N-331. The project identified the opportunity to highlight the value of the countryside landscape dominated by the presence of olive trees, which was done through the construction of a rest area that also acts as a viewpoint. This solution also

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12. Bonet, M. (2010), Proposal for the Deviation and Integration of Road CV-50 at Kilometre Marker 6+450 to its Passage Through Tavernes de Valldigna.

13. Asenjo, A. J. and Franco, V. (2010), *Technical decisions conditioned by landscape in infrastructures promoted by the Junta of Andalusia*.

allowed using the existing road section, which was abandoned, as access and parking, as well as a location for ancillary facilities during the works.

The second project consisted in the improvement of the A-483 itinerary between the road A-49 and Matalascañas through the expansion of capacity in a first section between the A-49 and El Rocío, the construction of a bypass for this village and the improvement of road safety between El Rocío and Matalascañas. In the latter section the design team took into account the unique value of its location, near to the Doñana National Park, and decided to adopt a simple isostatic bridge in order to cross the stream of La Rocina. Such a decision allowed a better integration of the bridge into the landscape and improved its permeability with respect to other, more spectacular, solutions.

### **Steps towards the implementation of improved methodological frameworks**

Finally, relevant contributions are appearing in the form of theoretical developments aimed at clarifying the relationship between landscape, society and transport infrastructures. These works are necessary steps towards the definition of comprehensive methodological frameworks able to guide the application of the European Landscape Convention when planning, designing and executing transport infrastructures.

An example is provided by Gómez Villariño, who recognises the technical difficulty in treating the subjective perception of landscape in the decision-making processes that drive the planning of transport infrastructure, as well as in the projects that implement those plans<sup>14</sup>. Then, he presents a methodology able to integrate the subjective aspects of landscape in the formulation of plans and feasibility studies of transport infrastructure.

The methodology presented is structured in three blocks, which are developed sequentially: 1) the analysis of the *primary elements of perception*, classified in structural elements, complementary elements and singular elements (e.g. form, texture, human action, etc.); 2) the analysis of the *elaborated elements of perception* – i.e. variables that provide an interpretation of the primary elements of perception and thus contribute to the diagnostic (e.g. landscape base, intervisibility, etc.); and 3) the analysis of *perception elements for decision* – i.e. those elements reflecting the final result of the perception

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14. Gómez Villarino, A. (2010), Model Design for the Consideration of Landscape in the Planning of Transport Infrastructures.

process that allow their easy insertion into the plan or project considered (e.g. fragility of landscape, bearing capacity, etc.).

The author concludes, in view of the results obtained through this methodology in several professional works, that incorporating the subjective aspect of landscape in interventions with a strong impact on it, as it is the case of transport infrastructures, is a guarantee for the coherence and common sense of the final result.

Finally, Valorani presents the Italian experience in defining a new methodology able to treat contemporarily the design of the infrastructure and its integration into the landscape<sup>15</sup>. The aim is to synergistically address the development of a motorway project and the sensitive issues related to landscaping and to territory in the urban area of Rome.

Valorani describes a research methodology that gives main importance to the study of territory identity. The study of landscape is based on interdisciplinary readings and has the aim to encourage the emergence of an enhanced perception of the territory in “insider”, but also in “outsider”, observers. This objective is pursued by offering to the observer/actor a broad interdisciplinary framework of knowledge easily accessible. The knowledge framework will be developed addressing the widest possible range of topics relevant to the project under consideration. The methodology is organised on the principal topics usually adopted in studies on territory and environment (e.g. features of morphology, environmental heritage, historical heritage, etc.).

Since this research was recently launched, it is too early yet to evaluate the results and drive any conclusions from it. Nevertheless, the consistency and scope of the proposed methodology give hope for a detailed consideration of landscape issues through the whole design process.

### **The path forward**

The review of the different contributions presented to the workshop, shows the increasing concern on the negative effects that infrastructures may have on landscape. Furthermore, this concern seems to be widespread and shared

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15. Valorani, C. (2010), “*From motorway concept toward an alternative landscape*”. *By-pass for the “Grande Raccordo Anulare – Rome*”. *Landscape study and preliminary joint design of motorway and its landscaping*.

by all the stakeholders involved in the infrastructure planning and design processes: public administrations, private sector and academia.

However, this coincidence of views has not led yet to a systematised and formal approach for the inclusion of landscape in the different phases of planning and design, at least in Spain. As a result, the interventions undertaken by the different actors in order to add the “landscape variable” to their plans, projects and works may seem scattered and disconnected from each other.

The causes for this seem to be many, but three of them arise from the contributions presented.

First, the current framework for infrastructure planning and design finds difficulties in bringing the concept of “landscape”, as defined by the European Landscape Convention, down to operational terms. In some cases the legal framework remains ambiguous with respect to landscape, allowing discretionary behaviour of the actors. In other cases, particularly in the field of transport infrastructures, the analysis and treatment of landscape has gone hand in hand with the assessment and mitigation of environmental impacts and has not deserved a specific process.

Second, the transversal nature of landscape makes that the interventions of different public administrations are still done from a partial perspective – the one of the given department faced to the particular problem (e.g. environment, road, spatial planning, etc.). This fact may hinder the formulation of “landscape policies” in the sense of the European Landscape Convention and remarks the importance of both internal and external coordination mechanisms when it comes to integrate landscape in the infrastructure planning and design processes.

Finally, there is the technical difficulty in treating the subjective perception of the landscape in the decision-making processes that drive the planning and design of infrastructures.

Nevertheless, the review showed as well the interest of existing research towards the improvement of methodological frameworks. Their achievements will certainly allow in the future the definition of common procedures and a better inclusion of landscape in the more operational steps of infrastructure planning and design.





## **WORKSHOP 4 / ATELIER 4**

### **Infrastructures for the landscape and its restoration**

### **Infrastructures pour le paysage et sa restauration**

#### **Chairs / Présidents**

*Mrs Linarejos CRUZ PEREZ, Institute for Culture, Ministry of Culture of Spain, Member of the Steering Committee for Cultural Heritage and Landscape (CDPATEP) of the Council of Europe*

*Mr Graham FAIRCLOUGH, European Association of Archaeologists (EEA)*

## **Vías verdes: Greenways on abandoned railways in Spain**

**Mrs Carmen AYCART**

*Director of the Spanish Railways Foundation, European Greenways  
on behalf of the Ministry of Public Works, Spain*

### **Spain's railway heritage in disuse and Greenways: new life for railways**

During the last decades of the twentieth century, the Spanish railway system entered a steady decline, closing a significant number of lines. In 1993 the Spanish Railways Foundation (SRF) elaborated an Inventory of Disused Railway Lines. These railway lines were found to have a total length of 7 600 kilometres and included an impressive heritage of engineering structures and buildings as follows: 954 railway stations, 501 tunnels and 1 070 bridges and viaducts.

It therefore seemed clear that to reuse this valuable railway heritage by giving it a new role that was different to its original one, and one that would benefit society, was the most convincing and effective argument to avoid its further deterioration from the passing of time and the effects of nature.

### **The creation of the Greenways Programme**



Throughout 1993 reparations were being made for the launching of the Greenways Programme, which was part of the 1993-2007 Master Plan for Infrastructure of the then Ministry for Public Works, Transport and Environment. From then on this programme has continued to develop and has enjoyed the support of the Ministry of Environmental, Rural and Marine Affairs (MARM) from the moment it was set up. The development of the programme has always been carried out in close collaboration with Railways operators and National Infrastructure Managers (ADIF, FEVE) the Spanish autonomous regions, regional governments and town councils. From 1993,



the Spanish Railways Foundation has carried out the role of coordinating the programme, promoting it and making people aware of its existence.

In short, the aim of the Greenways Programme is to turn the disused railway lines into routes for non-motorised traffic that provide links between villages, open spaces and places of historic and artistic interest thereby bringing people closer to such things in a sustainable way.

### **The basic principles of the Greenways Programme**

The design and implementation of the Greenways promote and make use of the specific nature of the railways upon which the Greenways are based and this is something that distinguishes them from country footpaths or cycle routes: a great level of accessibility for people of all abilities and easiness in use due to the undemanding itineraries.

One very important aspect of the Spanish Greenways Programme that makes it an example to other countries is the fact that it has a national implementation plan, which means that each Greenway acquires the same homogeneous image. Having a national implementation plan has the added advantage of being able to create one quality product which can be promoted at an individual level and still have the same positive effect on routes right across the country.

The Programme's logotype draws upon the various aspects that were involved in its design, and sign-posting on the Greenways is always accompanied by a unique and general logotype.



The system of sign-posting was created expressly for the Greenways and constitutes one of the basic instruments that are used to guarantee a high level of security and excellent provision of information.

One of the aims of the Greenways Programme is that the development of these routes for the practice of eco-tourism, helps reactivate the regions they pass through both socially and economically, and encourages investment in infrastructure for tourism and growth of local employment. In order to achieve this it is necessary to offer complementary services in addition to Greenways such as accommodation, restaurants, cycle hire, information

centres to learn about environmental and ethnographical issues, shops selling locally-produced and hand-crafted items. These services will, whenever possible, be housed in the original track-side railway buildings and these buildings are being restored for this very purpose.

The restoration of the old stations for the housing of these new services has ensured the conservation of a valuable architectural heritage, and, at the same time, has brought many stations and wayside stations back into daily life giving them the social and economic importance they once had in towns and villages for decades.

It is a proven fact that the success of a Greenway is determined by the degree of participation and general consensus among all the different sectors that contribute towards its design, creation, finance, management, and, of course, its enjoyment.

### **Greenways move forward at a good pace**

Greenways are already a tangible reality for people and are growing at a good rate. In total there are more than 90 Greenways that cover a total distance of 1 800 kilometres and an investment of over 100 million Euros has been required for the necessary improvement work. It is worth pointing out that this figure does not include the substantial investments that were made for the development of services, equipment for eco-tourism, sports equipment and restoration of stations, etc.

The map reproduced shows the routes that were improved so as to meet the Greenways standards by the end of 2009. It also shows the railway lines where work to bring them up to a standard suitable for non-motorised uses has not yet taken place but is nonetheless passable both for cyclists and pedestrians.



## **Communication, dissemination and promotion**

The Spanish Railways Foundation plays a major role in providing information and technical advice on the development of the Greenways initiatives to the Government, to the press and to interested groups of people.

The Foundation's web site [www.viasverdes.com](http://www.viasverdes.com) provides abundant up-to-date information on the aims and progress of the programme, activities, announcements, news, publications and contains links to sites from other countries. Furthermore, a monthly electronic bulletin is sent out free of charge to over 16 800 subscribers.

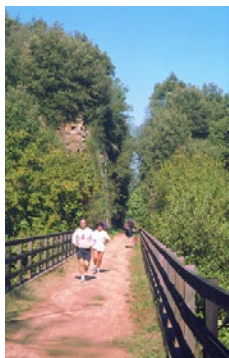
There has been an impressive level of interest and support shown by both the newspaper press and magazines that specialise in a diverse range of subjects. These subjects include environmental information, tourism, cycling and outdoor sports, engineering, heritage, groups for reduced-mobility people, groups for children, groups for the elderly, railway enthusiasts clubs, etc. Greenways have also come to feature prominently on the radio and have permanent slots on some widely broadcast programmes. However, 2005 could mark the definitive launch of Greenways because Spain's public television channel broadcasted a series of programmes on Greenways. The broadcasting of this series of 18 half hour episodes constitutes, without doubt, a milestone in the campaign to make people more aware of Greenways, as it has been broadcasted many times since 2005.

An important celebration is the National Greenways Day, which first started in 1999 and is celebrated on the second Sunday in May. On this day, walks, communal lunches and all kinds of festive activities are organised at numerous Greenways routes. Thousands of people participate in these events thus ensuring media coverage.

## **The international dimension to the Greenways**

In 1998, the European Greenways Association (EGWA) was formed in Namur, Belgium, which was headed by the SRF from then to 2004. In 2009 the administrative seat has been transferred to Madrid; also since that date, the SRF holds the general Secretariat of EGWA. The role of this Association is to promote the creation and coordination of greenways and encourage the exchange of information between the different bodies that carry out these initiatives in Europe. The Association is also involved in making potential users aware of these greenways, [www.aevv-egwa.org](http://www.aevv-egwa.org).

*Examples of Greenways*





## **The programme of landscape roads in Andalusia**

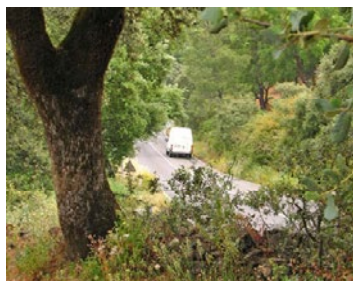
**Mr Jesus RODRIGUEZ RODRIGUEZ**

*Head of Research, Centre of Studies Landscape and Territory of Andalucía, Spain*

### **Roads for the landscape of Andalusia**

In a region as vast and diverse as Andalusia a long time will be needed to complete a road network which can display all its full richness of landscapes, yet, as it is said, “all long journeys begin with a first step”.

A network of landscape roads provides the possibility to enjoy the experience of travelling through a territory at low speed, mainly in a wheeled vehicle, but also on horseback or walking. The availability of cars in Spanish current society makes landscape roads a recreational option of great interest for families, groups of friends, senior tours or school visits.



*Figure 1: The HU-8105 road (left) and the A-366 road (right) in their landscapes*

Landscape roads can be considered equipments which make land values visible and which are useful for its development. A road infrastructure which is adapted to contemplate landscapes under good safety and comfort conditions strengthens the attractiveness of a rural area, together with its heritage and the full set of its recreational offers.

### **The catalogue of landscape roads**

A complete survey of Andalusian landscapes and roads was carried out by the Centre for landscape and territory studies of Andalusia using the detailed and selective advice provided by road authorities and technicians. This study produced a first selection of road sections which were to become landscape roads. Itineraries were chosen according to the following criteria:

- landscape quality;
- all regional landscape types should be represented;
- low traffic intensity (below 2 000 average vehicles per day);
- the existence of alternative itineraries for everyday routine journeys.
- this selection produced a first draft map of landscape roads.



Figure 2: First selection of landscape roads



Figure 3: Final selection of landscape roads



Later on, considerations on management priorities such as financing possibilities, coordination between different authorities, landscape representation and regional distribution were taken into account to make a more precise selection. This was the basis for the first catalogue of landscape roads of Andalusia.

A short term development scheme will follow this first catalogue in the near future. Nevertheless, further road sections could be added to the original catalogue to complete the availability of full Andalusian landscape richness and diversity. All selected itineraries were surveyed following a consistent approach which is based on the following aspects:

- basic references;
- landscape character assessment?
- visibility conditions;

Diagnosis and development proposals.

Although this catalogue is just a first proposal, it contains a great diversity of landscapes and territories as some of the following examples show:

- landscape roads in Sierra (mountainous?) environments;



- landscape roads in the agrarian countryside (Guadalquivir flood plains);
- landscape roads in the seaside (Mediterranean and Atlantic shores).

This proposal will be carried out within the implementation context of the PISTAS (Infrastructure Plan for Transport Sustainability in Andalusia) from 2010 onwards. The project will be in compliance with the new Statute of Andalusia (2/2007 Organic Act) and its 28th and 33rd articles which establish that Andalusian people have the right to enjoy their landscape *“in conditions of equity, undertaking a responsible use of the landscape to prevent its degradation and preserving it for future generations”*.



Figure 5: Publication of Landscape roads in Andalusia. Study for cataloguing

## **Roads in mountain landscapes, restoration and recovery: the case of Andorra**

### **Mrs Anna MOLES**

*Representative of Andorra for the European Landscape Convention,  
Ministry of Spatial Planning and Environment of Andorra*

*With contributions from:*

### **Mrs Natalia ROVIRA, Mrs Anna CLAVERIA and Ms Ferran MOLI**

*Department of the Environment*

### **Mr Ramon SERRA and Mr Josep ESCALER**

*Department of Spatial Planning*

### **Mr Víctor MARTINEZ and Mr Christophe ROUANET**

*Ambiotec*

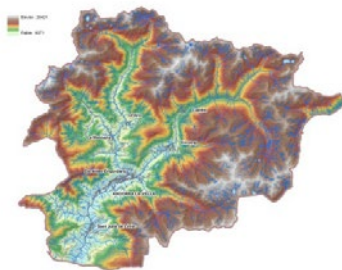
### **Mrs Olga BAS and Mrs Clara PLADEVALL**

*'Ecosistemas'*

## **Introduction**

### *Geographical and historical context*

Andorra is a small country of 468 km<sup>2</sup> situated between France and Spain and a typical Pyrenean territory with rugged relief features, formed through the action of glaciers and rivers. The average altitude is 2 000 m, the highest point being 2 942 m and the lowest 838 m.



*Figure 1: Relief map of Andorra and main geographical features*

The territory is divided into three main valleys forming a Y (Valira de Oriente, Valira del Norte and Gran Valira), with a large number of side valleys. The

main urban areas are to be found on the valley floors and are interconnected by three main arteries leading to ski resorts or to the border with France in the Pas de la Casa.

Over less than 50 years, Andorra's economy has undergone considerable changes. This country, which, until the 1950s, was essentially rural and had scarcely 5 000 inhabitants, has become a modern state with over 80 000 inhabitants. Its development is largely the result of ski and shopping tourism. Its special political status, the beauty of its landscape and the possibilities which its mountains offer for snow tourism has attracted numerous visitors and new investment. This brought about an acceleration of economic and urban development and major changes in the country's landscape.

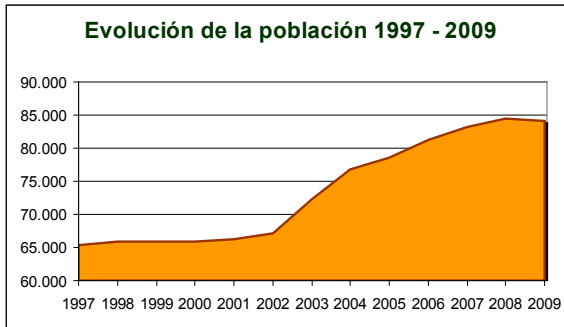


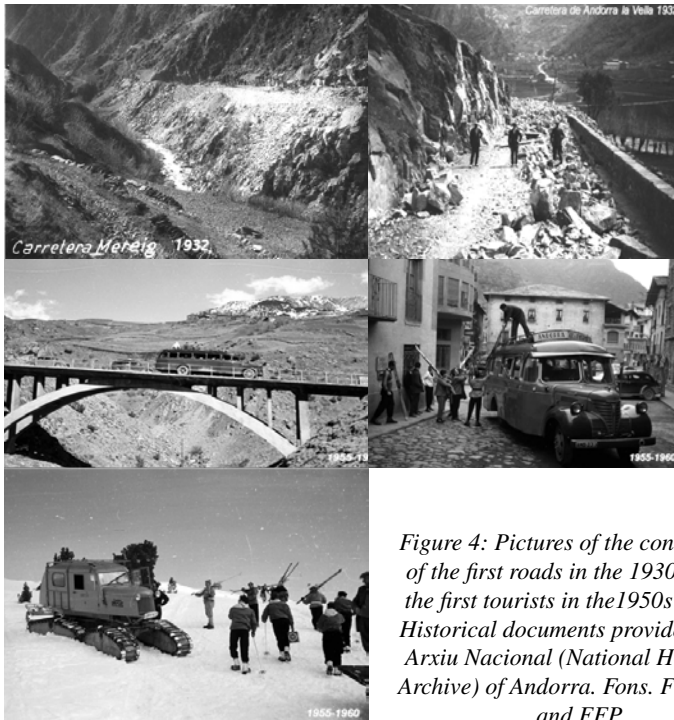
Figure 2: Demographic development from 1997 to 2009



Figure 3: The special political status of Andorra, the beauty of its landscape and the potential offered by its mountains for snow tourism have triggered an acceleration of economic and urban development and led to major changes in the country's landscape (Photographs: Department of the Environment/Sergi Riba Masas, Anna Moles Mariné and Igor Natxitube)



The construction of the first main arteries did a great deal to foster the development of tourism and of the Andorran economy (1914: main highway from La Seu d'Urgell (Spain) to Andorra, 1933: main highway from Andorra la Vella to Pas de la Casa (border with France)).

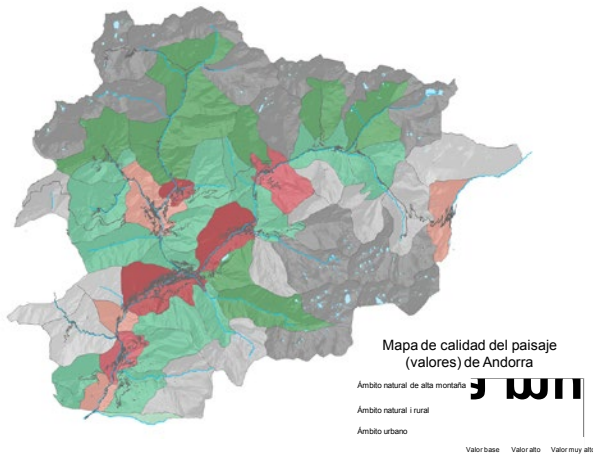


*Figure 4: Pictures of the construction of the first roads in the 1930s and of the first tourists in the 1950s and 60s Historical documents provided by the Arxiu Nacional (National Historical Archive) of Andorra. Fons. FL, FEDA and FFP*

## Map of Andorran landscape values

Between 2006 and 2009 the Government of Andorra entrusted the Department of Landscape Management and Development of Barcelona University, under the leadership of Antonio Gómez Ortis and María del Tura Bovet Pla, with the task of drawing up the Andorran Landscape Units Map and the Andorran Landscapes Catalogue. The latter includes a diagnosis of tourism potential, a prognosis map (evolution of the landscape given the factors influencing it), a landscape quality map (values), and a number of recommendations for the management and improvement of landscape. When the landscape quality map was drawn up account was taken of public opinions, which were gathered by means of an Internet survey and discussion groups. This map shows that natural mountainous landscapes and natural and rural landscapes are assigned a high, if not a very high, value. On the other hand, two thirds of urban landscapes are not assigned a high value (*Figure 5*), <http://www.mediambient.ad/paisatge/>.

It is therefore necessary to ensure that road infrastructures forming a link between urban areas fit into the landscape they cross as far as possible and respect or contribute to the high or very high values of natural and rural landscapes. If this is not possible, such infrastructure should, at least, provide an added value.



*Figure 5: Andorran landscape quality map (values)*

## Development of tourism and impact on traffic

The growth in the Andorran tourist industry between 1999 and 2004 was spectacular (*Figure 6*), peaking at a record annual figure of over 11.5 million visitors and 4.5 million vehicles crossing the country's borders. The average daily vehicle intensities were so high that traffic jams were frequent and the roads were often congested. The most difficult situations were to be found in the urban areas of Sant Julià de Lòria and, above all, in Andorra la Vella and Escaldes-Engordany.

From 2005 there was a notable drop in tourism, with 10% less in 2008.



*Figure 6: On the left: the average daily vehicle intensities prior to the approval of the National Road Infrastructure Plan; on the right: the trend in the number of visitors between 1999 and 2008 (Plan nacional sectorial de infraestructuras viarias PNSIV)*

## National Road Infrastructure Plan

The PNSIV was approved in May 2003 and produced on a 1/1000 scale in May 2005.

The national road routes had to be included in the drafting of the local urban development plans that were being prepared pursuant to the general spatial and town planning law of 29 December 2000 (*Lley general d'ordenació del territori y urbanisme, del 29 de desembre del 2000*).

At the time this plan was drawn up, there had been over 11 million visitors to Andorra every year since 2001, resulting in major traffic jams. For the purposes of the plan, annual growth in traffic was estimated at 3%, which led to the planning and design of roads capable of absorbing the influx of visitors and peaks in traffic.

Local authority requirements also had to be taken into consideration so as to co-ordinate local town planning and the PNSIV.



*Figure 7: Stages of the PNSIV: tunnels are shown as lines of white dots; the circles indicate the three projects described below.*

The physical, natural and urban features of Andorra mean that there are very few possibilities with regard to the layout of large-scale road infrastructure. There is very little flat land and as the floor of the valleys can be used for urban construction its economic value is very high.

In the PNSIV priority is given to tunnels and viaducts because they have a lesser impact on the landscape (*Figure 7*). However, the material extracted from the tunnels has to be deposited on other plots of land and integrated into the landscape.

Under the relevant legislation, environmental and landscape impact assessments carried out during the preparation of projects must include a study of the alternatives [*Reglament relatiu a treballs o activitats que modifiquin l'estat actual del terreny, del 25 de Juliol del 2001 (Regulation concerning excavation work or activities altering the current state of the territory, 25 July 2001)*]. In the case of road infrastructure, it is not possible to study alternative routes. The final routes were approved in the PNSIV and incorporated into local town-planning. However, the same legislation concerning environmental impact assessments stipulates that, in addition to studying a project's environmental impact, it is necessary to establish a programme for monitoring the environmental impact and a detailed project for the environmental and landscape restoration of areas damaged by the construction of the infrastructure.

Three projects which stand out on account of their uniqueness and the special attention given to environmental and landscape restoration are described below: the landscape project on the site of the St Julià de Lòria bypass in the south of Andorra, the planned restoration work on the C.G.2 tunnel (to the south of Encamp) within the protection radius of the Radio Andorra

building, a listed building of cultural interest, and the canalisation of the Valira d'Orient river at the eastern entrance to the los dos Valiras tunnel to the north of Escaldes-Engordany.

### **The Sant Julià de Lòria bypass**

The Sant Julià de Lòria bypass is a combination of a road tunnel and an open road crossing an area of rock and ancient agricultural land dating back to the 16th century.

The purpose of this construction is to divert traffic from the Spanish-Andorran border so that it does not pass through the centre of Sant Julià de Lòria, while giving vehicles the possibility of access to Sant Julià halfway down this road, something on which the municipal council insisted.

The specific features of the road are as follows:

- three lanes, mixed road types (tunnel and open road);
- cyclopean walls at the base clad with stone and topped with concrete;



*Figure 8: Route of the Sant Julià de Lòria bypass*



- segmental walls made of concrete blocks, anchored for support on soils with a low bearing capacity (approximately 17m), rock-covered banks;
- stone walls.

Connected by bridges to the centre of Sant Julià de Lòria.

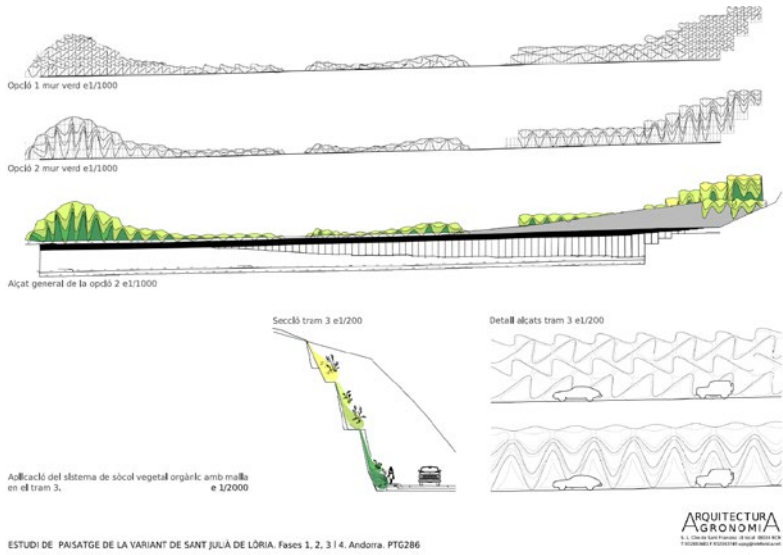
The anchored segmental walls have a substantial visual impact and are difficult to integrate into the landscape. The figures below show a photomontage of the project at the southern entrance to the *Túnel de la Tapia* and a photograph of a wall of this type and of similar dimensions, which gives an idea of the size and the difficulty of integrating them.



*Figure 9: On the left the photomontage of the final appearance of the south entrance to the Túnel de la Tapia; on the right a segmental wall of similar dimensions built in another part of Andorra*

Given that its landscape impact was criticised, despite the planned restoration of the vegetation, at the request of the Department of the Environment, the Ministry of Spatial Planning, commissioned a landscaping project aimed at producing a very distinctive construction.

The landscaping project in question (*Figure 10*) proposes marking the entrance to the mountain tunnels by building a number of artificial concrete mouths with the shape of a bevelled half cylinder. These are wider on the outside so that the sound insulation panels can be integrated into their structure. The slopes and the segmental walls are camouflaged by a system of three-ply mesh bags, held in place by steel boards and filled with soil in which native species are planted.



ESTUDI DE PAISATGE DE LA VARIANT DE SANT JULIÀ DE LÒRIA. Fases 1, 2, 3 i 4. Andorra. PTG286

*Figure 10: Project for the landscape adaptation of the Sant Julià de Lòria bypass*

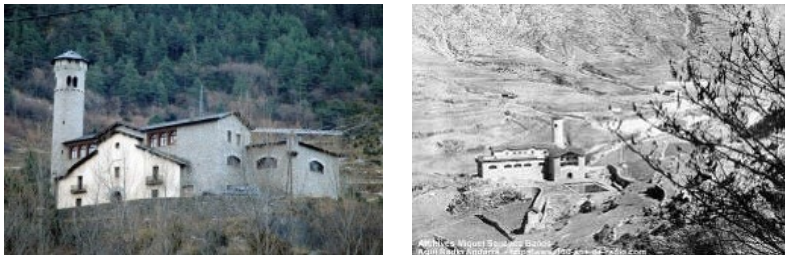


*Figure 11: Photographs of the area during the construction*

## **Túnel de la carretera general 2 (C.G. 2.) (tunnel forming part of National Road 2)**

The C.G.2. passes very close to a listed building of cultural interest: the Radio Andorra building, which was built in 1938 and is representative of the granite architecture of the 1930s-40s.

The Radio Andorra building stands out from the typical Andorran granite architecture on account of its syncretism and because it undeniably bears witness to the history of radio broadcasting in Andorra. The building's design uses architectural forms inspired by Andorra's religious and traditional buildings and traditional Catalan architecture. Radio Andorra was the only private French radio station to broadcast freely across Europe and North Africa during the Second World War.



*Figure 12: Radio Andorra building: on the left a recent close-up view of the building; on the right an archive photo showing the rural landscape encircling the building (Miquel Sanchez Baños Aquí Radio Andorra: <http://www.100-ans-de-radio.com>)*

The purpose of the planned tunnel is to reduce the number of accidents that take place on a stretch of road forming a large bend.

As the terrain through which the tunnel is to pass is unstable, it is necessary to excavate a trench in which the tunnel, made up of concrete voussoirs, will be installed. The earth that has been removed will then be replaced over the tunnel to re-establish the original appearance. The stone walls and the terraces in the area will be rebuilt using the original stone.

On the orthophotograph of the area (*Figure 13*) the Radio Andorra building and the bend in the road that is to be bypassed are visible; on this we have superimposed the proposed construction, in red the trench excavation and

in yellow the site of the tunnel. As you can see the route of the construction passes very close to the listed building.



*Figure 13: Orthophotograph of the Radio Andorra area. The agricultural terraces which form the background to the building are visible in the south-east; these will be restored in a similar form*

The landscape chapter of the environmental impact study includes a number of photomontages of the finished work and the restoration of the surrounding area showing how it will be integrated into the landscape.

The following photographs (*Figure 14*) show the initial stage of the work and a photomontage of the final stage of the two entrances. An excavated area in a lighter colour of rock remains at the north entrance. Initially there were no plans to treat this area but given the visual impact, it has been decided to treat the rock with green or ecological gunit so that there is a visual continuity with the planted wall on the left and the mountain above.

The restoration project describes in detail the work that needs to be done. The plans below (*Figure 15*) show the ground plan and the profile of the restoration planned for the south entrance. This includes the replacement of the agricultural terraces by means of the reconstruction of the stone walls and

the planting of native species of trees and bushes, of which an inventory was made during the initial stage of the environmental impact study.



Figure 14: North entrance, initial stage on the left and final stage on the right



Figure 15: South entrance, initial stage

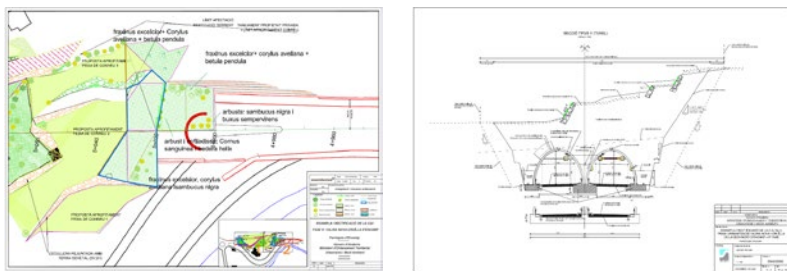


Figure 16: Ground plan and profiles of the proposed restoration of the south entrance of the tunnel, showing the walls to be rebuilt and the areas to be replanted with species identified during the initial stage of the environmental impact assessment



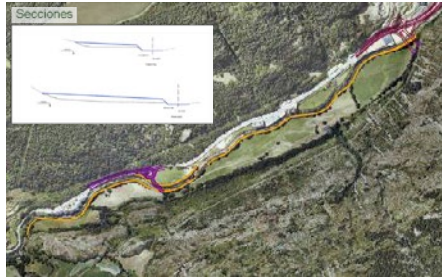
*Figure 17: Works at the northern and southern entrances; beyond the building one can see the stone-walled terraces that characterise the landscape forming the background to the historical building*

### **Los dos Valiras tunnel**

The “Túnel dels dos Valires” is intended to link Encamp to la Massana and to make it unnecessary for vehicles travelling between these urban areas to drive through Escaldes-Engordany town centre (*Figure 7*).

The project provides for the canalisation of the Valira d’Orient river at the eastern entrance of the tunnel. Most of the material extracted during the excavation of the tunnel (570,000 m<sup>3</sup>) will be placed on adjoining plots of land and used to protect the terrain from possible flooding (*Figure 18*).

The tunnel comprises two twin-track tubes with a central evacuation tunnel. The entrances are linked to the existing road network by viaducts and roundabouts.



*Figure 18: Orthophotograph of the area concerned by the project; the mouths of the two parallel tubes are visible, as are the roundabouts forming the junction with the existing road. The canalised area is shown in orange and behind this the area where the excavated stones and earth are to be deposited. The sections show how the material is positioned*



*Figure 19: Photograph of the area in 2000. The project affects the pastureland and riverside vegetation, which merely consists of narrow strips but comprises a great diversity of species*

The canalisation of the river was carried out by constructing a stepped stone wall of varying height, leaving intact the trees that are in a healthy condition, with sloped accesses to the river (Figure 20, 21 and 22). On the lower half of the eastern entrance to the tunnel, a reinforced wall has been installed and covered with seeded soil (Figure 22).

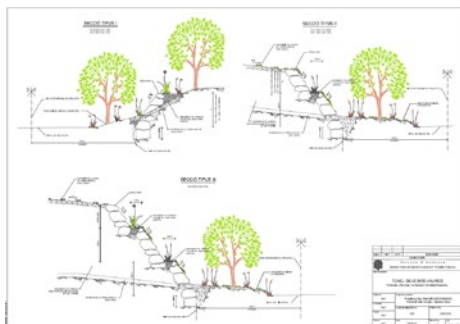


Figure 20: Typology of the stepped stone wall and restoration of the vegetation

The first phase of this work consisted in cutting down the trees in an unhealthy state and removing all the topsoil and collecting it in an area set aside for this purpose (Figure 21). This soil will later be put back into the fields so that it can be used for farming purposes as in the past.

During the drafting work on the environmental impact study a species of parasitic plant, which grows on the roots of ash trees (*Lathraea clandestina*) was catalogued; this plant is registered on Andorra's red list of flora<sup>16</sup> as an endangered species, with the result that the area where it grows – fortunately near the riverbed – has been protected and all forms of intervention and collection in this area are prohibited (Figure 21).

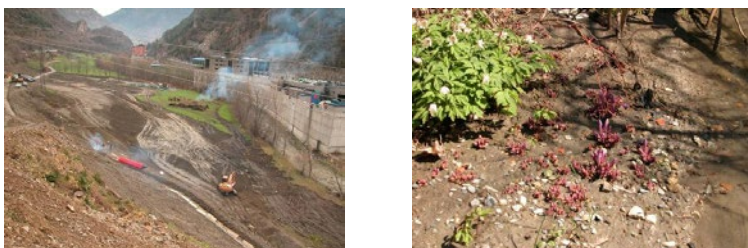


Figure 21: On the left, the removal of the topsoil; on the right *Lathraea clandestina*, an endangered species

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16. Carrillo, E. et al, (2008). *Check-list i Llista vermella de la flora d'Andorra*. Centre d'estudis de la neu i la muntanya (CENMA) de l'Institut d'Estudis Andorrans (IEA), Ministeri d'Ordenament Territorial, Urbanisme i Medi Ambient, Departament de Medi Ambient.





Figure 22: Top left-hand photograph: reinforced earth wall; other photographs: stone wall.



Figure 23: Details of the stone wall

Once work on the canalisation walls had been completed, some 1 800 metres of riverbank were replanted. This restoration was carried out by collecting material from the banks in the area and keeping it in a nursery set up for this purpose within the construction zone (*Figures 24 and 25*)



*Figure 24: Nursery in which 3 species of bushes and nine species of trees are being reproduced with material extracted exclusively from the area, and from the banks of other Andorran rivers*



*Figure 25: Plantations and hydro-seeding*

Once the construction and restoration work had been completed, the canalisation fit into the natural, rural environment in a very acceptable manner. It is aesthetically pleasing and certainly better than other examples of canalisation projects in Andorra, for example the canalisation of the Gran Valira river in the area to the south of Andorra la Vella, which has not been carried out but is still at the planning stage (*Figure 26*).



*Figure 26: On the left, the canalisation in the area of the dos Valiras Tunnel; on the right the canalisation project for Andorra la Vella*

## **Conclusion**

The monitoring of the construction and restoration work carried out by the Department of the Environment leads to the conclusion that, in general, the restoration projects proposed in the environmental impact studies, forming part of the construction project, are being implemented in a satisfactory manner.

However, the main problem encountered is that the landscape integration aspect of the projects was studied not during the preparatory stages but after their completion, leaving very little leeway as regards workable proposals for landscape integration.

Given that the number of visitors to Andorra has fallen and in view of the scope of the National Road Infrastructure Plan, it would seem logical that this plan be reviewed on the basis of a sustainability study and a study of the effects on the landscape, and that some of the road routes be reconsidered.

As concerns future prospects for the landscape of Andorra, we would like to highlight three areas of work of the Ministry of the Environment and Agriculture, among others.

Firstly, after drawing up the Andorran Landscape Units Map and the Andorran Landscapes Catalogue, the Ministry is now working on a document laying down objectives and proposals at national level.

At the same time, the Ministry is working on the approval procedure for the draft law on the strategic environmental assessment of plans and programmes, which recognises the importance of landscape preservation and management and defines them in the same terms as the European Landscape Convention. Moreover, this law makes it compulsory to include landscape integration studies in the assessment of both the sustainability and the environmental impact of projects.

Last but not least, work is underway to finalise approval of Andorra's ratification to the European Landscape Convention.

## La chaussée romaine Boulogne-Bavay-Tongres-Cologne : près de 20 siècles de cheminement européen

Mme Marie-Jeanne GHENNE

Archéologue, Attachée aux Relations internationales pour l'archéologie  
Service public de Wallonie- DGO4-Département du Patrimoine

Dans le cadre de cette rencontre et vu le thème abordé, il nous a semblé intéressant d'offrir l'exemple d'un tracé (Fig 1) antique particulier qui a percé le paysage du nord-ouest de l'Europe depuis près de 2000 ans et qui s'est maintenu jusqu'à nos jours<sup>17</sup>. (Fig. 2)

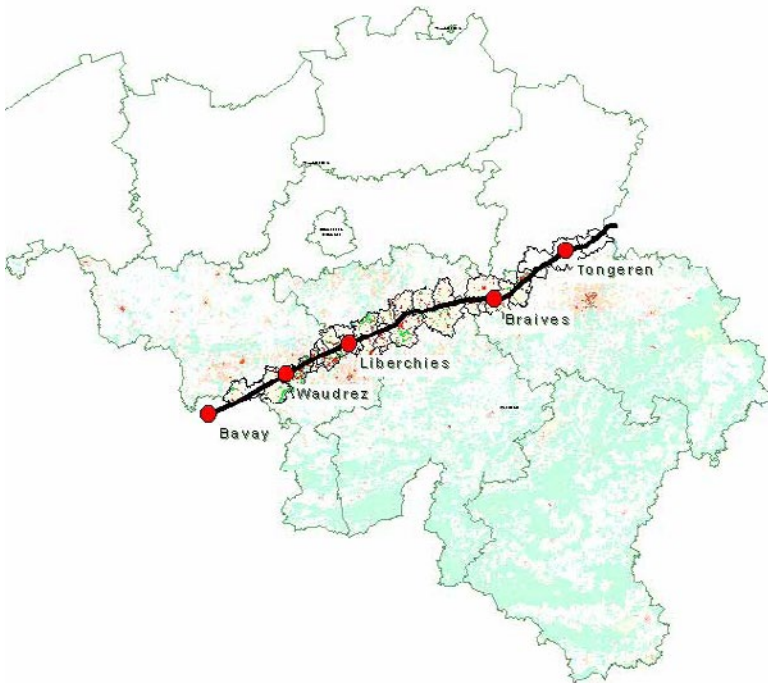


Fig. 1 : Tracé de la voie romaine Boulogne-Bavay-Cologne  
M.-H. Corbiau © SPW

17. Nous remercions M.-H. Corbiau, professeur à l'Université de Namur, pour ses conseils judicieux.



*Fig. 2 : Voie romaine Boulogne-Bavay-Cologne serpentant le paysage wallon  
Photo Guy Focant © SPW*

Il constitue un héritage.

Si ce tracé possède son histoire, une technique de construction particulière, il constitue actuellement un enjeu, non pas tant au niveau de sa protection mais bien au niveau de sa gestion, de sa mise en valeur mais aussi au niveau des aménagements paysagers qui pourront l'accompagner à l'avenir. La difficulté réside dans le fait que le défi dépasse parfois les compétences locales, régionales et même nationales car la route traverse quatre pays. C'est pourquoi les objectifs doivent être internationaux.

Il ne s'agit pas d'une analyse exhaustive du réseau routier romain en Gaule mais de mesurer exclusivement l'impact d'un tracé antique dans le paysage, en tant qu'infrastructure, et sa pérennité jusqu'à nos jours. Passé, Présent, Futur.

Le tracé le plus étendu pour la région concernée est celui qui relie Boulogne à Cologne. Il est particulièrement bien conservé sur le territoire wallon où il s'étend sur 125 km selon un axe sud-ouest-nord-est, de Quévy (Hainaut) à Oreye (Liège) et il traverse quatre des cinq provinces de la Wallonie.

Dans le cadre d'une bonne administration territoriale cette route fut commencée sous la direction du gouverneur romain Agrippa en 17 avant J.-C. et repose vraisemblablement en partie sur des tronçons de l'époque gauloise. Elle était destinée à relier l'Océan au Rhin. Boulogne était un port d'embarquement et Cologne constituait la frontière de l'empire avec les royaumes germaniques libres.

L'existence de la chaussée est attestée dès l'Antiquité par la carte de Peutinger et l'itinéraire d'Antonin.

Au départ, les objectifs militaires et administratifs de la route devinrent progressivement, jusqu'à la fin du III<sup>e</sup> siècle de notre ère, plus commerciaux. En revanche, durant les deux derniers siècles de l'Empire (Bas-Empire), l'utilisation militaire de la route s'imposera à nouveau.

Le programme des arpenteurs romains portait sur le choix d'un itinéraire le plus direct possible. Ils ont été parfois confrontés à des obstacles comme des plaines marécageuses, des socles rocheux ou un passage de cours d'eau. Ainsi, de Bavay jusqu'au nord de Gembloux, la voie offre un tracé rectiligne (75 km), sur la ligne de partage des eaux des bassins de la Meuse et de l'Escaut. Par la suite elle devient plus sinueuse épousant les lignes de crête du plateau hesbignon.

Les principes de construction des routes romaines sont les mêmes pour l'Empire mais ils peuvent varier en fonction de la topographie et des matériaux locaux. Les objectifs majeurs étant de maintenir la stabilité et le drainage (dos d'âne et fossés longitudinaux). La largeur de la route peut varier mais elle atteint au minimum 5.40 m. Des fossés, limites d'emprise, sont installés et le terrain naturel recherché (argile limoneuse, schiste ou calcaire). La construction de la route est réalisée par strates. Une assiette intermédiaire est réalisée avec des matériaux locaux : des cailloutis, parfois du grès ou du silex voire même des scories métallurgiques. La couverture définitive (surface de circulation) est rarement conservée dans nos régions (probablement des dalles à proximité des agglomérations et pierrailles dans la campagne). L'investigation archéologique nous montre que la voie est régulièrement entretenue et qu'elle subissait des réfections.

Dès la seconde partie du règne d'Auguste, nous sommes en temps de paix, la voie est jalonnée d'agglomérations routières construites *ex nihilo* et qui appartiennent au programme d'infrastructure mis en place. On peut citer les sites de Givry, Waudrez, Liberchies, Baudecet, Tavieres et Braives (Fig. 3) ainsi que des relais (*mansiones* et *mutationes*). Ces occupations sont attestées pour la période tardive par la carte de Peutinger et par l'itinéraire d'Antonin mais aussi par les fouilles archéologiques.

Les nécropoles, situées en dehors des agglomérations et des villes, s'installent parfois le long de la voie, c'est le cas de certains tumuli qui sont des tombes prestigieuses attribuées à des personnages importants. Ces tumuli sont intéressants car ils constituent encore signe fort dans notre paysage actuel. (Fig. 4)

Dès le milieu du III<sup>e</sup> siècle de notre ère, après les invasions jusqu'au déclin de l'empire, on observe le recul des bourgades routières et parfois leur abandon, générés par une vie économique en déclin. Elles changent parfois de statut. Entre Bavay et Tongres particulièrement, à cette période, la route fait partie d'un réseau défensif de l'Empire ; elle se militarise. Son parcours est alors protégé par des fortins qui servent de dispositifs de contrôle.

Après la chute de l'Empire, dès la fin du V<sup>e</sup> siècle au haut Moyen-âge, les fortins mis en place au Bas-Empire sont détruits ou évacués. La route, elle, perdure et se transmet dans la tradition par le biais d'une légende, celle de la reine d'Austrasie au VI<sup>e</sup> siècle. La voie est très souvent dénommée et ce, jusqu'à nos jours « chaussée Brunehaut ». (Fig. 5)





*Fig. 3 : Voie romaine Boulogne-Bavay-Cologne traversant l'agglomération de Liberchies (Pont-à-Celles – province de Hainaut)  
Photo Guy Focant © SPW*



*Fig. 4 : Tumulus le long de la voie romaine Boulogne-Bavay-Cologne  
Photo Guy Focant © SPW*



*Fig. 5 : Chaussée Brunehaut (voie romaine Boulogne-Bavay-Cologne)  
Photo Guy Focant © SPW*

Au Moyen-âge l'origine romaine est oubliée mais elle sert encore de limite et reste fréquentée en raison de la facilité de déplacement qu'elle offre vu son caractère rectiligne. Les agglomérations routières à caractère civil se déplacent.

La toponymie atteste d'un souvenir confus au plan historique. On la connaît sous le nom de chaussée Brunehaut, rue Haute Chaussée, Chaussée Romaine, rue de la Chaussée Romaine, Chemin du Vicus, village de Grand Axhe et Petit Axhe et les lieux-dits liés aux tumuli : Tombe de l'Empereur, Al'Tombe, A la Tomballe... Aux époques moderne et contemporaine, l'artère servira d'axe de pénétration à de nombreuses troupes envahissantes jusqu'en 1940.

Sa valeur patrimoniale ne se limite pas à un monument archéologique et aux sites antiques qui l'entourent mais repose sur aussi la notion d'héritage à long terme, à très grande échelle. La voie constitue un témoignage humain qui a marqué durablement le paysage, mais aussi le découpage territorial. En outre, la route participe aussi au dynamisme économique et social de la région, comme en témoignent des implantations industrielles du XIX<sup>e</sup> siècle. (Fig. 6)



*Fig. 6 : Habitations de l'ère industrielles construites le long de la voie romaine  
Photo Guy Focant © SPW*

Cependant, aucune unité paysagère ne la caractérise ; au contraire, et c'est là son originalité qui entraîne l'attrait d'une réappropriation culturelle, parfois religieuse (Fig. 7) et touristique. Le tracé est repris actuellement par des routes nationales, régionales, communales, des rues ou de simples voiries agricoles. (Fig. 8 et 9)

Son entretien et son maintien procèdent d'une gestion territoriale garantissant certes l'avenir de cette facette patrimoniale mais se distinguant parfois de l'approche archéologique. La voie a aussi constitué un trait de référence aux éléments d'occupation diachroniques qui se sont implantées dans le paysage. C'est probablement pour cette raison qu'elle nous est parvenue jusqu'à nous.

Bien que l'intérêt porté à la route remonte à plus d'une centaine d'années, celui-ci s'est accru depuis une dizaine d'années. L'intérêt se dégage peu à peu du milieu purement académique. Le public intéressé se diversifie et le Service public de Wallonie, garant de sa pérennité, se doit de la gérer. Cette gestion du tracé de la route se présente sous différents aspects : la protection, le paysage, les aménagements des abords, la mise en valeur, le tourisme...



*Fig. 7 : Potale installée le long de la voie romaine (Eghezée, Tavièrs)  
Photo Guy Focant © SPW*



*Fig. 8 : Voie romaine Boulogne-Bavay-Cologne, rue.  
Photo Guy Focant © SPW*



*Fig. 9 : Voie romaine Boulogne-Bavay-Cologne, chemin agricole.  
Photo Guy Focant © SPW*

Comme on le sait une protection intégrale par le biais d'un classement<sup>18</sup> est illusoire et l'ensemble du tracé ne la mérite pas d'emblée car certains tronçons sont d'une qualité inégale. Seuls les sites antiques majeurs ont été classés, notamment les tumuli (comme monument et comme site), et parfois même inscrits au patrimoine exceptionnel. D'autres sites à définir pourraient également être protégés de cette manière.

La totalité du tracé est repris à l'inventaire des sites archéologiques du Service public de Wallonie avec une zone tampon de 50 m de part et d'autre. Cette mesure permet un contrôle opérationnel au niveau de la délivrance du permis d'urbanisme.

A cela s'ajoute la cartographie des sites principaux repris au plan de secteur<sup>19</sup>. Mais cette protection peut évoluer (abrogation de certaines parties) d'une part et la mise à jour ne se fait pas au fil des découvertes d'autre part.

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18. On entend par classement en Wallonie, la forme majeure de protection. Il est officialisé par un arrêté ministériel sur base de prescriptions strictes et d'un périmètre défini.

19. En Wallonie le plan de secteur est un plan d'occupation du sol. Il a force de loi.

Outre cette protection légale et relativement ponctuelle, l'aspect paysager n'est pas nécessairement couvert. Le paysage court, comme ailleurs, le risque d'être malmené.

A ce propos, la Conférence permanente du développement territorial (C.P.D.T.) a épinglé de manière judicieuse à la fois les enjeux et les objectifs paysagers<sup>20</sup>. Il est fait mention de l'intérêt de l'intégrer dans une vision européenne de mise en valeur du réseau des voies antiques. De prendre en compte la qualité visuelle dans une stratégie globale de visualisation historique, géographique et paysagère. Des pistes d'action sont lancées :

- réglementaires : prendre en compte la voie romaine dans des plans d'aménagement, notamment en prévoyant des zones *non aedificandi* ;
- opérationnelles : signalisation ;
- de sensibilisation ;
- de concertation.

De 2007-2009, un reportage photographique de grande qualité a fait l'objet d'une exposition itinérante en Belgique et en France<sup>21</sup>.

En 2009, également on notera la sortie d'un livre et qui est un recueil de plusieurs regards sur la chaussée<sup>22</sup>.

Un projet Feder (Convergence et compétitivité), orienté vers le tourisme, est actuellement en cours en Wallonie sur l'initiative de l'association Musées et Société en Wallonie.

Progressivement, la route est donc reconnue non exclusivement en terme d'objet archéologique mais aussi comme patrimoine culturel global drainant des intérêts plus vastes (les dialectes locaux, les paysages, les légendes...).

Cette reconnaissance se justifie en raison de son authenticité, de sa particularité visant à relier deux frontières de l'Empire, de sa pérennité, de sa lancée dans

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20. Atlas des paysages de Wallonie. Les plateaux brabançon et hesbignon. 2009, t. 2, pp. 170-171.

21. La voie romaine Bavay-Tongres. 145 km d'héritage, G. Focant, photographe au Service public de Wallonie (SPW).

22. La chaussée romaine de Bavay à Tongres (Coord. G. Bavay et B. Mercx) !, Mons, 2009.

le paysage et surtout de son caractère culturel évolutif, elle apparaît comme un témoignage humain puissant.

### **Orientations bibliographiques**

M.H. CORBIAU, 1997. *La chaussée romaine Bavay-Tongres*, un patrimoine monumental remarquable dans *Le patrimoine archéologique de Wallonie*, pp. 274-276.

M.H. CORBIAU, 2006. L'organisation routière du nord de la gaule dans *La Belgique romaine*, *Dossiers de l'archéologie*, n° 315.

R. BRULET, 2009. *Les romains en Wallonie*, Bruxelles.

## **Landscape design of bicycle and pedestrian traffic lanes in Finland**

**Ms Laura SOOSALU**

*Landscape Architect, Destia Ltd., Planning Services, Landscape Design*

### **Basis – Finnish landscape, nature and culture**

Finland consists of a large variety of different Landscape provinces and types; from the southern coast to the fells of the northern Lapland and from the flat uplift areas of the western coast to the diversely shaped terrain in the eastern part of the country. The visual landscape of Finland; the shape and relief of the terrain, vegetation, waters, impact of culture etc., are very diverse.

The relief of surface of Finland is mostly low country, less than 200 meters below the sea level. In the “arm” in the north-western part of Lapland there can be seen the remains of ancient fold mountains, the current upper fells. They rise about 1200-1300 meters above the sea level in nearly uninhabited areas close to the border of Norway and Sweden. The tops of the mountains are bare and the slopes of the fells are covered with dwarf birch trees. The relative altitude difference can still be significant in other parts of Finland, like in the Northern Karelian fells in the eastern part of the country.



Finland is also known as the country of a thousand lakes. Most of the lakes are situated in the middle and eastern parts of Finland; the largest one is Saimaa, 4,400 km<sup>2</sup>. The major part of Finns escapes every weekend from cities to their lakeside summer cottages. About 70% of Finland is covered by forests, belonging to the boreal forest belt. The wood species of forests are mostly spruce, pine and birch, at the southern coast, the “oak belt”, also oaks, elms and common lindens. 26% of Finland’s area is marshland (including forest), mainly in the northern part of the country. Lakes and forests, swimming,



fishing, picking berries and wild mushrooms, have always been a significant source of recreation for Finnish people.

The cultural history was based first on hunting, fishing and collecting. Later, around 2500 BC agriculture became a more important way to earn one's living. The early inhabitants settled down on the river and lakesides which provided an easy way to move, and provided the most fertile soil to cultivate. The largest cultivated areas are located in the southern and south western parts of Finland where they also have a significant influence on the visual landscape and cultural heritage, farmhouses and mansions.

### **From villages to cities, development of land usage**

Landscape is one of the foundations of national identity and culture. The features of Landscape provinces have influence on people and culture, the fertility of the ground, and the woods and the bodies of water.

In the early 1900's Finland was a sparsely populated country, the majority of the 2.6 million people lived in the countryside. The most common way to travel was by horse and carriage. The village roads were covered with gravel and were often in bad shape. There was no need for special lanes for the pedestrians and bicyclists.

The time after World War II was a busy time of reconstruction and rapid industrial development in Finland. The population grew fast both in the sparsely populated areas, villages and cities. The amount of the cars began to increase although they were still rare in the countryside.

The decades from 1960's to 1970's were the time of urbanisation and new ideas of city planning and zoning. The countryside began to empty while the concrete suburbs were built especially in the southern part of Finland. The pedestrians and motorists were segregated to different lanes. Forming of the space and architecture was simplified and linear, like the pedestrian lanes. Traffic safety, or lack of it, began to become an issue.

The time between 1980's to 1990's was the time of fast economical growth. The idea was to build new residential areas more with people in mind, that were compact, low and with intimate space, on a human scale. The style of design became more informal and soft. Variant colours and materials were used. Landscape planning followed also the design style.

The 2000's was the beginning of an environmental awakening also in Finland. The growing awareness of global changes in climate, evident changes in our own environment, flooding and other unpredictable weather phenomena forced to pay attention to design and technical planning.

In spite of urbanisation, Finland is still a sparsely populated country. In practise this means long distances and challenges to provide everyone safe and comfortable ways to move.



### **Use of pedestrian and bicycle ways**

Pedestrian and bicycle lanes are used in Finland for school and work trips and exercise; Nordic walking, running, roller-skating and sometimes even for skiing. The bond with nature is very strong for Finnish people, outdoor activities are very popular.

The national exercise research 2005-2006 showed that the most used exercise places were:

- pedestrian and bicycle lanes;
- outdoor routes;
- public roads.

Almost half of the exercise takes place in pedestrian and bicycle lanes. Over 90% of Finns exercise (population 5.3 million). Among adults the most popular way to exercise is walking (about 1.8 million). Among children, from age 3-18, second after football comes cycling. More than half of the senior citizens, over 65 years, exercise and almost half of them daily. For all these reasons pedestrian and bicycle lanes are very important for national health, both physical and mental. They also provide a place for social life (*“Vapaalla”-research/ Kati Kiiskilä, Destia and University of Tampere*).

The Ministry of Transport and Communication's programme "Jaloin" promoted Pedestrian and Bicycle traffic in Finland (2001-2004). The goal was to put walking and cycling on par with other modes of transport in planning and decision-making. The most important method which was identified was the development of the community structure.

The importance of pedestrians and bicycle arrangements emphasises are the countryside where the distances are long and other physical activities are not so easily accessible. In regional planning ensuring the vitality of villages has been an important viewpoint. In the sparsely populated Finland there has been a clear need to develop new small-scale and inexpensive improvement methods. Traditional road construction methods are not suitable in valuable and fragile rural environments.

### *Seasons and climate*

The four seasons have always had a great impact on life in Finland, the cold, snowy and dark winter months and long, light summer nights. Spring and fall are the seasons of "rasputitsa", when the unpaved lanes can be muddy and the rains are heavy. As a consequence of winter and ground frost longitudinal cracks occur in the pavement. Maintenance is also challenging despite of the functional machinery, snow removal and prevention of ice. As a consequence of weather, cycling usually reduces significantly during winter months. Strengthening rains have brought new kind of problems and challenges to design. There have been major problems in northern Finland in low-lying riversides. New guidelines have been introduced in land-use and technical planning to avoid severe consequences.



### *Design aspects*

The example project "Saaristokatu" (2 pictures above, in the middle and right) is a unique street with a walking and cycling lane. The street was opened in 2008 after two and half years of construction.

4.5 km long landscape street combines “Saaristokaupunki”, a new part of the town to the city centre of Kuopio. The street touches small islands where there are several recreational stops, places to sit down and admire the spectacular view to lake “Kallavesi”. In the summer there is also a place for a barbecue and an ice cream stand. In the landscape design only the natural elements were used; natural stones, logs and hay and other original plants. The use of wooden walls links the history of area, the timber rafting. The two gate areas were built to keep the speed low. The blue lights are one of the design themes of the street.

The street has become extremely popular route for walking and cycling. In the winter time there is a route for skiers and skaters in Kallavesi.

The basis of the landscape design is to adapt the element, in this case the pedestrian and bicycle lane, to landscape, to its relief of surface, vegetation, built environment and visual landscape. The gradient and cross fall should be optimum, providing easy moving and fitting to the surrounding terrain. The visual features of Landscape province and culture, like type and structure of village, impact on design and road alignment, as well as the structure of Landscape, relation between open and closed space and nodal points where manmade and natural elements cross.

The lanes often follow parallel to the roads, which impacts the possibilities and variety in design. Levelling of geometry depends on the available space. Recommendable minimum width of the pedestrian lanes in Finland is 2.5 meters, sometimes as an exception 2.2 meters is allowed. One of the reasons for this is the width of the snowplough. According to the guidelines the target width is 3.5-4 meters, half of the lane for pedestrians, the other half for bicycles.

Safety and accessibility of the environment are essential viewpoints in design. As well as segregation of different forms of traffic, “shared space” has become a new method for the design. In a way this is a return to the past, time before separate walking and cycling lanes.

Every one of us is in some stage of life physically challenged; a slowly walking or cycling child, a mother pushing a baby carriage, an aged person walking with a walking stick or a person with a disability. We should have equal circumstances to move regardless of our age and physical ability. In technical guidelines there

are certain standards; the gradient of the pedestrian and bicycle lane should be 5% or less, with the exception of short distances with 8% acceptable. The surface of the lane should be smooth but not slippery.

Along with promoting walking and cycling, improving traffic safety has been an important goal in Finland. From 1990 when 250 pedestrians and cyclists died in traffic accidents, the death toll has been reduced to 70 deaths, which is a significant improvement. The design aspect of calming traffic and preserving the aesthetic environment can be combined in several ways. The pavement material can enhance the visual appearance of the environment and at the same time promote traffic safety. Vegetation, single or rows of trees, can guide pedestrians and cyclists optically. By improving structural, functional and environmental quality of the route we can develop Quality corridors for non vehicular traffic.

### *Materials*

Pavement is generally made of asphalt. In rural areas and parks gravel also is used. Granite stone pavement or granite stripes can be used especially in architecturally valuable environments, like old distinguished milieu or city centres. Granite curb stones are more practical than concrete where heavy maintenance machines, ploughs etc. are used. Pebble stones and boulders add aesthetic value to lanes with waterfront areas. Natural stone is a material, which fits to different milieus and endures time.

In design usually less is more. Continuous lack of money helps us to achieve this goal. Deliberate details please the eye and let other structures, buildings or landscape act the major part. The lane is the way to show the traveller the environment, varying spaces, views and experience. With exercise comes recreation and the observation of the environment. By the use of different materials the accessibility of the environment can also be improved.

### *Vegetation*

Vegetation; woods, trees, meadows and grasslands make our environment comfortable. They give shadow, weather shore and joy. Circumstances in Finland vary a lot; there are eight ornamental plant flourishing zones in Finland. The growing period ranges between four to six months from Lapland to the southern coast. The variety of plants is much larger in Southern Finland where frost and winds are not so tough. The plants must also endure ploughed snow.

In practise, existing vegetation is worth using especially in Finland, where the growing period is short compared to Central Europe. Benefits of natural landscaping have been studied; saving existing environmental characters and saving expenses in construction and maintenance. At the same time climate changes and its influence on design has to be considered. Vegetation is also a cultural heritage, like remarkable single trees or hedges in the open landscape.



## **Challenges and possibilities of the landscape design of walking and cycling lanes**

Walking and cycling have been promoted a lot in the past years in politics, strategies and guidelines. In practise the situation is a bit different. Need of new pedestrian and bicycle lanes, improving traffic safety, accessibility and the comfort of the environment is significant, but they compete for the same funding as large scale road projects.

Our rural areas should remain competitive places to live, although compacting the communities is the main goal. Circumstances for walking and cycling have to be equal for everyone.

Climate changes bring us new challenges and the speed of changes is partly unpredictable. At the same time it brings new ideas and opportunities to landscaping by enhancing the visual and functional elements and forms in our environment. Water management has become an essential field in design.

Recycled and innovative materials have been developed, both in the structure of roads and other structures related to roads, like outdoor furniture. Selecting

durable and reusable materials is economical, even that they might be more expensive, like natural stone compared to concrete.

Beauty and amenity of the environment inspires us to spend more time outdoors. By paying attention to the greenery, its blooming, the scents and shapes and colours, we can encourage people to choose walking or cycling instead of a motor vehicle.

Altogether, honouring the spirit of the place, in this case the landscape, nature and cultural heritage are the basis of a successful design.

## Summary of papers submitted to the Workshop

**Ms Elena Maria MUNOZ ESPINOSA**

*Lecturer, University of Castilla-La-Mancha, Spain*

### Introduction

For contributing to the aim of this event in assessing the needs arising ten years after the signing of European Landscape Convention and to improve its implementation and achieve efficient systematic assessment of European landscapes and their restoration, this paper is focused the fourth workshop about infrastructures for the landscape and its restoration.

As the programme of the congress resumes: “*Landscape requires specific infrastructures that draw society nearer to the landscape in a positive and efficient manner, improving its appreciation and favouring an approach that is more sensitive and aware of its values*”. So, if infrastructures have such important effects in the landscape and that influence over the population, its needed to observe deeply the processes both are involved into.

This workshop subsumes those papers relating to initiatives for understanding the infrastructures in their own landscape, in particular those directed at demonstrating their characteristics, values, perception and their reclaiming. Policies, plans, programmes, traditional civil works are included here. For that, the goal of this paper will be to explain all these particular instruments and elements as a part of the landscape they influence, they transformed, they use or they are planned for and to extract the main attributes of each one for their reclamation.

Here is presented a summary as an example of the communications submitted to the fourth Workshop:

*Table: Summary for the Workshop 4:  
Infrastructures for creating and reclaiming Landscapes*

<b>Communication</b>	<b>Authors</b>	<b>Organisations</b>
Road recovery in high value and historical landscapes. The path of Andalusia and the pass of Despeñaperros	Inmaculada Mohíno Sans Rita Ruiz Fernández José M <sup>a</sup> Coronado Tordesillas Fco. Javier Rodríguez Lásaro	University of Castilla - La Mancha



<b>Communication</b>	<b>Authors</b>	<b>Organisations</b>
The channel of the Lower Guadalquivir as a scenic route along the irrigation of the plains and marshes of the Guadalquivir	Antonio Ramírez Ramírez	Centre for Landscape and Territory Studies
Appreciation of the orchards and traditional irrigation landscape: Paisagua Network	Carlos Paños Adillo	Association for Rural Development in the Middle Guadalquivir
The landscape of the Alpujarra	Juan C. García de los Reyes Mathieu Lèbre	Private company
Integral protection of landscapes in Serbia	Biljana Filipovic Svetlana Nojkovic Dejana Lukic	Ministry of Environment and Landscape Planning, Institute for Nature Conservation of the Republic of Serbia
Hedges contribution to landscape quality in the Guadiamar River Basin (Seville, Spain)	Gonsalo de la Fuente de Val	Private company
A map for the treatment plant in Andalusian linear infrastructures	José Cazorla Sanchez Luis Aguilar Aguilar Emiliano Mellado Alvarez Braulio Asensio Romero	Road Administration of Andalusia. University of Pablo de Olavide

Six lines of work can be drawn to reflect major from communications:

- the linear route of travel of the transport infrastructures across the landscape, as perceptual routes;
- the particular relationship between bystanders and landscapes
- transients reflection about infrastructures they use and territory, linking both as a whole;
- some areas, events or specific elements that provide specificity to landscapes;
- ways of dealing and guidelines for interventions in landscape planning;
- guides or methodologies for operating in specific works strongly associated to civil works.

From above, the main idea that is common in the papers received is the idea of linearity and regularity against irregularity, what affects all infrastructures, whether or not these transport infrastructures.

When society plans the construction of an infrastructure, it is always considered the use of landscape resources. These resources could be natural and cultural and the “quantity” of use will depend of the type of infrastructure and the magnitude of it. But it will depend too of the type of landscape and their attributes and the state of conservation of them.

In recent years, with the signature of European Landscape Convention, we have made important strides in our relationship with the land on which we live.

But progress will be more definitive when those relationships will be based on a mature understanding of what was very well reflected in the document ratified by most states represented here. From the point of view of the landscape, a mature understanding of it is one that understands the natural and cultural processes in their true dimension: why does one process occur?; how does it develop?; what are the specific characteristics the processes have?; what is the temporal and spatial extension of the processes?; or in what state of development are all these processes?, are some of the questions we should ask when we recognise a particular landscape.

And infrastructure, from its search of functionality and service for the society can greatly help us in this process of social maturation.

It is true that infrastructures pose very harsh actions in the landscape but, if they are designed in a responsible manner, the infrastructure development will only make sense to respond to those demands to the human race for future growth.

As we are really behind in our work of landscape assessment, the study and appreciation of traditional civil works can help us to recover the lost time. Whether due to lack of resources, whether for a less greedy and more social aspirations, traditional engineering gives us very good examples of adult recognition and understanding of the landscape in the past.

In the opinion of the author, this is the way to restore and enhance the value of unique landscapes now forgotten or immersed in processes of annulment or demise.

## Summary

This part includes a brief summary of some communications for the Workshop 4, or how different authors think about the topic “Infrastructures for creating and reclaiming Landscapes”.

One of these papers that better put forward about how traditional civil works can contribute to the landscape assessment is the case of “Road recovery in high value and historical landscapes. The path of Andalusia and the pass of Despeñaperros. The authors argue that the extension of the idea of heritage to the territorial scale has guided them a new reflection that has derived in a new way of deal with both the future engineering projects and the consideration and assessment of the old public works.

On the one hand, the consideration of public works as a substantial part of the heritage technical and industrial production has led to articulate a unique debate on the heritage dimension of civil engineering. In addition, attention to the area’s history and the particular reading of the territory as a cultural environment in a continuous process of design, construction and reconfiguration, has raised the need to define lucidly heritage of engineering scale that is typical for the civil works.

Considering the context outlined before, the communication displays the results of an academic project to recover the historical itinerary designed and built by a French illustrated civil engineer, Carlos Lemaur, in Despeñaperros, in the last decades of the eighteenth century. It is also a methodological reflection on the problem of the recovery of historical road sections disengaged from the high-capacity network by building a new highway alternative.

The project involves the rehabilitation and re-functioning of the section of the gorge between the towns of *Venta de Cardenas* and *Santa Elena* for recreational driving, and the creation of a pedestrian and cycle route between the towns of *Almuradiel* and *Santa Elena*, thus giving continuity to the historic road.

The proposed actions are focused on creating a road section that ensures the coexistence between different users using traffic calming techniques and resolve problems with the motorway junction. Moreover, different sites for the location of viewpoints for the transients and other actions are proposed.



*Figure 1: Traffic signs designed for historical roads. Source: Original paper. Authors: Mohíno Sans, I.; Ruíz Fernández, R.; Coronado Tordesillas, J.M. and Rodríguez Lásaro, F.J. (2010)*

In this manner, the authors not only try to understand the path, the pass and the destination of the road. Moreover, they extract the essence of the civil work in relation with its particular landscape as the basis for future projects with the goal of previously assessing this particular site.

Another example is the case of “The channel of the Lower Guadalquivir as a scenic route along the irrigation of the plains and marshes of the Guadalquivir”. It can be said the objective for the author was the same for reclaiming the channel as a scenic route. But the author takes a different approach because the work and the landscape differ in their origin totally from the previous one.

The Channel of the Lower Guadalquivir, or the Channel of the Prisoners, was the product of a long process of political and irrigation schemes, from the Republican era and the Franco period, which resulted in a major territorial change that goes beyond simple irrigation of thousands of hectares. The setting for this stage in the history of colonised villages, the appearance of neighbourhoods inhabited by families of prisoners, new transport infrastructures or new land redistribution, where several of the particular processes presented by the scenic route of the Channel in the Lower Guadalquivir.

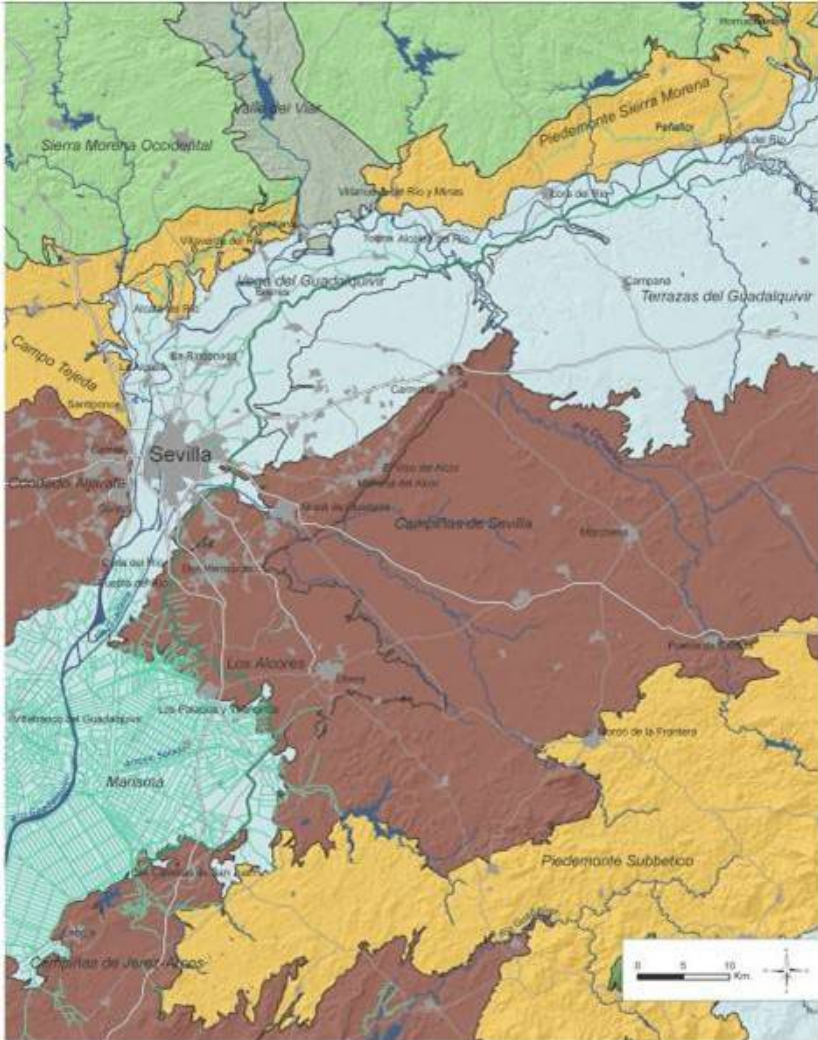


Figure 2: Location of the channel in the Lower Guadalquivir

Source: Original paper. Author: Ram\u00edrez Ram\u00edrez, A. (2010)

The author proposes a pedestrian route from where the transients can see through the tour of the Channel itself and the many alternatives offered by the dense network of secondary channels, the evolution of one of the landscapes most processed at a European level by the development of water and transport infrastructures.

The first goal in the development of this channel was the irrigation for the settlement of working population. Other processes as the development of new transport infrastructures, towns or land redistribution, were needs for the society in the past that have shaped the actual landscape from its particular conditions: climate, plain geomorphology, Middle Guadalquivir River hydrology and the social, political and economic moment in history when it was built.

Linked to the previous matter, the paper “Appreciation of the landscape garden and traditional irrigation: the Paisagua Network” raised a strategy for acting in those irrigated landscapes in Andalusia and their reclaiming.

The project is based in the traditional irrigation orchards, associated with some customs and centuries-old traditions and great ethnographic value. Moreover, it represents an important heritage feature as hydraulic and water wheels, mills, fountains, canals, dams, bridges or pools. Today many of these areas and elements have fallen into disuse and are at a very high risk of extinction due to low economic efficiency, lack of proper maintenance, or for being in conflict with other land uses.

With the goal of: “Protect, preserve, retrieve and disseminate the values of landscape garden and traditional irrigation” between 2007 and 2008 eight Rural Development Andalusian Groups (RDGs) conducted the project “Agricultural Landscapes Unique Water Linked: Gardens and Traditional Irrigation”, funded by the “Leader Plus Programme” of Andalusia.

This includes sites like “*Pagos de Huerta del Palma del Rio*” on the Genil River, where since the fifteenth century the orange is grown in the traditional style. Or the plains of the “*Altiplano de Granada*”, which retains the traditional structure of gardens with the boundaries between plots cultivated with fruit trees, olive trees and vines, while the interior is intended to vegetables, cereals and fodder.



Author: Paños C. (2010)

*Figure 3: Pago de Huerta del Rincón in Palma del Río. Source: Original paper.*

What it is most important of the previous paper is the expectation to develop a global action for irrigated landscapes in Spain. It could be similar to other existing works (as maps, lists, inventories, systematisations, etc of landscapes i.e.) with the contribution of the particularities of agricultural areas.

A particular initiative is the research project “The Landscape of the Alpujarra”. It combines the observation of transport infrastructure networks and traditional irrigation networks as main aspects that define the study area of the Alpujarra. As a resume:

- Ensure integration and landscape use of network infrastructures: ancient infrastructures, guidelines for future infrastructures;
- Maintenance of agricultural and natural systems: irrigation systems, terracing or cultural heritage elements;
- Towns such as landscape quality items: urban layout and traditional architecture or visual scenery design.

From the identification and cataloguing of network infrastructures, rural or agricultural areas and towns, results in a zoning for the establishment of landscape guidelines.

From Serbia comes a paper that makes a general review of the current protection and conservation of landscapes in this state: “Integral Protection of Landscapes in Serbia”. The concept applied in this case is the specific recognisable areas in which natural and social processes take place. It shall be based on a balanced and harmonious relationship between social needs, economic activities and the environment. In these days the authorities have initiated the protection of Serbian Landscapes with the process of ratification of the Landscape Convention and the enactment of new laws regulating this issue.

The authors propose several intense tourist areas which represent a combination of natural and cultural heritage to be preserved with a landscape planning strategy: Ovcar-Kablar Gorge, Pcinja Valley or Mokra Gora.

One of the more specific papers has been “Hedges contribution to landscape quality in the Guadiamar River Basin (Seville, Spain)” for the treatment of the hedges as an isolated element in the landscape.

According to the author, it is recognised that traditional agricultural landscapes have features which are not only productive but also territorial and environmental. This is appreciated as the use of hedges and stone walls, are practices that contribute to biodiversity and landscape features also provide aesthetic, cultural and identity.

What it is more important for him is that in Andalusia, one of the factors that justifies the investment in the restoration of hedgerows, mainly associated with roads, boundaries between crops and riparian vegetation is to improve the scenic quality of the agricultural environment.

In order to determine the input stage of the hedges in the Guadiamar River Basin (Seville) a collection of photographs of landscapes were presented to environmental technicians, who made an estimate of scenic quality based on only six visual attributes.

The results show that the experts were more interested in landscapes with more diverse landscape products of different vegetation units and the presence of hedges, and they were less interested in dry-farmed extensive crops and processed landscapes with little or no presence of hedges. The



author maintains the results suggest the importance of the criteria that tend to recover the landscape variety in the Guadiamar River.

In the future, it would be interesting if the study is completed with a more systematic and holistic study that involves other sectors of the population and other attributes for testing the perception and preferences of the population.

Finally, the paper “A map for the treatment plant in Andalusian linear infrastructures” raises that linear infrastructures have to been built according to criteria of functionality and security requirements in the design, which make them generate undesirable effects on the landscape. One of the most relevant effects is the territory fragmentation.

The authors focus their paper on the design and implementation tools specifically aimed to the soil treatment and plantations. This is a first step in responding to the need for varied climatic conditions of each site, soils, the adaptation of different plant species, their growth and longevity, planting season, resistance to drought and other reasons that will determine the success of different plantations.

What is more valuable is the idea that roads and railways can become a way of explaining the Andalusian landscapes, and their flora and vegetation by planning the appropriate plantations for each transport infrastructure. That would perform the possibility of a “Road and Railway Museum Network” without forgetting security transport infrastructure and drivers requirements.

## **Conclusions**

Summarising the review of the main ideas of the papers submitted for the Fourth Workshop, some general conclusions can be drawn:

- infrastructures have minimal technical parameters that must be observed in their design;
- the above makes them rigid when it comes to conceiving;
- to be effective they must fit on the one hand to service infrastructures objectives and on the other hand to the characteristics of the territory for which they are projected;
- it must be clear from the beginning, when we are planning;

- there are many ways to “make engineering” and infrastructures: transportation engineering, hydraulic engineering, urban planning...;
- you can take all the prior knowledge that is required for infrastructure projects to understand the territory and think the evolution of the landscapes we all want;
- ancient actions such as heritage help us to understand the territory, because many more modest technical and material projects were developed with the maximum advantage of resources for which they were projected;
- on reclaiming is not re-building isolated and unconnected elements in the landscape: a road, an irrigation system, a mill, etc, but the relationships between all of them, the civilisations they served and the natural processes shows a knowledge that could be lost if we do not take this into account;
- to recover knowledge about the area brings us the possibility of understanding the landscape that we perceive and its dynamics and future evolution.

It is possible that we have not yet thought of all the possible infrastructures that help us to understand landscapes. But this is the best beginning I think.

As previously mentioned, the attention to the area’s history and the particular reading of the territory as a natural and cultural environment in a continuous process of design, construction and reconfiguration, has raised the need to define the infrastructures as a heritage. Because the engineering scale knowledge level can provide us several of the essential processes that are alive in the landscapes.

# **ROUND TABLES / TABLES RONDES**

## **The European Landscape Convention as a base for sectoral policies on infrastructures La Convention européenne du paysage comme base des politiques sectorielles en matière d'infrastructures**

### **Chairs / Présidents**

*Mrs Daniela SANDRONI*

*Ministry for Cultural Heritage and Activities, Director of Landscape  
Quality and Preservation, Representative of Italy for the European  
Landscape Convention*

*Mr Enrico BUERGI*

*Chair of the First and Second Council of Europe Conferences  
of the European Landscape Convention*

**Mrs Daniela SANDRONI**

*Ministry for Cultural Heritage and Activities, Director of Landscape Quality and Preservation, Representative of Italy for the European Landscape Convention*

Over the last two days we have had a good journey in Turkey, in Greece, in the Czech Republic, in Andalusia, in Majorca, in Andorra, we have walked in “Vias Verdes” and in pedestrian landscapes, as well as with Mr Andersen and Ms Soosalu.

We have come from all over Italy, from Bologna to Cologne, and now, before this interesting round table I believe it is important to remind ourselves of three opinions about the relationship between landscapes and infrastructures:

- never forget that landscape is not without limits, the use of landscape implies laws, rules and limits;
- never forget that each infrastructure is for a particular landscape, not for a written report, not only someone’s idea;
- never forget that in the landscape there are people, social groups and also, in a lot of cases, ancient buildings, archaeological areas, cultural heritage, our cultural heritage, our cultural heritage for us and for our children.

In these two days we have used some very important words for landscape:

- difference/diversity (Professor Lassus);
- sustainability (Professor Mata);
- integration/interaction (Professor Luginbhül).

We have approached energy production and its conflicts and listened to Andreas Stalder and Professor Merida.

We have talked about mitigation and compensation, explaining that is very difficult to connect the transformation with social identity and cultural heritage.

But I believe that if only the economy wants to guide landscape, landscape could become the leader of a most uncertain future, leader of a strong rebellion. I hope, and I believe all of us hope, that this will not happen.

**Mr Felix BENITO**

*Professor of History of Towns, European University of Madrid, Spain*

The teaching of the history of a city is the starting point for an understanding of the close relationship between the city's historical development, the settlement pattern and its relationship with the landscape.

One of the most outstanding aspects when one studies urban development is the emergence of urban nuclei from the configuration of the territory itself. This may be seen at key points in history. It was only in periods of mass colonisation, in the classical Greek and Roman worlds or, later, in the Lower Middle Ages, or during European colonisation of the American continent, that the process whereby cities took shape was based on geometrical models and not on models arising from the actual configuration of the landscape.

The interdependence between the system of settlements and the configuration of the territory may be seen both in the overall settlement pattern and in the linking infrastructures.

The layout of the traditional urban nucleus is derived from the presence and configuration of the landscape, its relief, its climate, rivers and paths. Clearly, the infrastructures which organise and interlink these force lines derived from the territory are profoundly integrated with it. Irrigated valleys and paths are the two types of major infrastructure which interconnect and generate the urban system. Their profound integration with the territory is one of the most decisive expressions of the importance of the relationship between them.

The urban structure based on irrigated valleys is one of the most emphatic expressions of integration between function and territory. The river water performs multiple water supplies and, above all, irrigation functions. The whole system of dams and channels is geared to this. In addition to this supply function, the water performs an industrial function, powering all kinds of mills through the mechanical force produced by the water released from the dams.

What is highly emblematic of this territorial system is the strictness and precision of its spatial structure. The irrigation channels are the elements which carry the water to the irrigable land. They carry it as far as possible away from the river in order to increase as far as possible the irrigable area. The irrigation channels furthest from the river, and therefore highest in altitude, are

those which delimit the irrigable land, and therefore the valuable land, which must be preserved. They have functioned historically as demarcation lines for urban land and the fertile lower land requiring protection.

Within the area between the two outermost lines of irrigation channels, all the land is protected as fertile irrigated land. All other activities can be carried on outside that area. The paths through the valleys run parallel to the outer irrigation channels. All settlements are clustered around them, including both urban nuclei and isolated buildings. Urban nuclei frequently exhibit a clearly linear arrangement due to the parallel orientation of the irrigation channel and the difficulty of having paths running crosswise, since the topography of the valley sides has a constant, relatively steep slope.

When there is a significant need for burial land, which is very usual in countries where this pattern of urban settlement develops, the burial sites are situated on a strip of land parallel to the population centres and further away from the river.

The slopes of the valley define the transition to areas outside the irrigation system. Owing to the extraordinary possibilities of control offered by the topography, this line is the ideal place for the construction of watchtowers and fortresses.

What is interesting about this entire settlement system is that it demonstrates the wealth of urban possibilities offered by the territory and, consequently, the infrastructures generated by it. Here we see how many different functions water has – supply, irrigation and, occasionally, transport – and the importance of the industry, and hence the network of infrastructures, generated by this diversity of functions.

Other infrastructures of great historical and territorial importance are historic paths. The intimate understanding of the territory shown by these paths is fascinating to observe in the present day. Paths are always laid out along the easiest lines of the terrain, usually follow contour lines and seek out passes to cross from one valley to another.

An extremely interesting aspect from this point of view is the location of large cities close to major waterways. Occasionally, especially in northern Europe, the location of cities close to major rivers may be partly due to the opportunities they offer for river transport or communication. In southern

Europe and around the Mediterranean, however, the majority of rivers are usually non-navigable. This points to another key aspect in the location of cities: fording places on the river. These are places where the flow is weaker and the river can be crossed more easily. Bridges were built first of all in these places, followed by whole cities. Many of Spain's historically most important cities owed their urban development to the fact that they controlled a ford on a major river. Examples include Toledo, Saragosa and Cordoba itself.

On a wider scale, when Western Europe's urban network began to take shape, paths represented an extraordinary means of expansion, contact and communication. Starting from the 11th century, this took the form of pilgrimages. There was an extraordinary boom in the construction of sanctuaries, especially in the heart of western culture, in what is now France, centring on the Abbey of Cluny, the main cultural and power centre of the age.

There were the great pilgrimages to Rome, Santiago de Compostela and Jerusalem, the latter being linked to another of the great processes of dissemination in the Western Middle Ages, the crusades, in which the complexity of functions, wealth of content and territorial integration of these routes found their fullest expression. The original religious function of the pilgrimages was supplemented almost from the very beginning by others, such as a commercial function, a cultural function, fostering contact between people of different origins, or a political function, seeking power, trade or control relations. The landscape and heritage features of these landscapes are sometimes of the utmost value. It was not for nothing that the Santiago de Compostela pilgrim routes were declared World Heritage by UNESCO. The Spanish part was designated as such in 1993, followed by the French part in 1998.

Based on a brief but close contemporary look at these historic infrastructures, we may identify some of those offering the most comprehensive vision. We can actually divide them into two main groups. On the one hand, we have infrastructures combining a wide variety of functions, not only the original ones, but also many others – residential, industrial, commercial and so forth – which help to generate a comprehensive spatial and urban structure. Secondly, these infrastructures have become profoundly integrated with the territory, have understood it and interpreted it in detail, so that they have begun to form an indissoluble part of it, of the landscape in the full sense, as defined by the European Landscape Convention.

Recent times – the late 20th and early 21st centuries – have undoubtedly been marked by great progress in communication, both in terms of knowledge and interpersonal communication. Communication routes, and specifically those used for physical communication, operate over ever greater distances, connecting points located far apart. Communication by air is no doubt one of the keys to knowledge of contemporary culture, but the same desires and effects influence land connections, by road. Modern roads are not integrated with the territory. They go from one point to another, as quickly as possible. They have an urban goal, which they pursue across a countryside they do not serve and do not understand. They are not integrated with the countryside, but merely superimposed on it. They are undoubtedly an excellent reflection of the urban world's domination over the rural world and the territory.

When we look at modern roads, two things are clearly apparent. First, the fact that they perform a single function, that of linking geographical points as efficiently and quickly as possible, without providing other links. Secondly, their very tenuous relationship with the landscape. The extraordinary progress in engineering techniques geared to increasing the speed of traffic and ensuring its presence on the margins of the territory and the landscape has opened up a clear gulf between infrastructure and landscape.

The results we are now seeing is infrastructures which do not talk to the landscape but are superimposed on it and sometimes go so far as to impair or degrade it. Hence the great interest of all the projects we have heard about at this meeting in which efforts are currently being directed towards the creation of infrastructures that are better integrated with the surrounding landscape or at least reflect an understanding of it.

Obviously, looking to the future, we cannot deny outright the value and utility of major communication infrastructures, but we can create the necessary conditions for a fuller understanding of the phenomenon as a whole. We are not only talking about main roads, because we often hear about work carried out on secondary or minor roads to improve safety, but the work in question is actually making the roads straighter and therefore increasing their cruising speeds well above the maximum speed permitted under the highway code.

The goal for the future must be to increasingly conceive and design infrastructures which not only fulfil their original function but also contribute to their integration with the territory and the landscape and help to improve



their complex and varied functionality in the territory in which they are situated. Roads no longer blend with the landscape. They merely go from one place to another and do not talk to the landscape. This could be a major question for the future. Should roads only have an access function or should they perform other functions which paths traditionally had as linking elements of the territory?

## **Integral protection of landscapes in Serbia**

### **Mrs Biljana FILIPOVIC**

*Advisor for International Cooperation, Ministry of Environment and Spatial Planning, Serbia*

### **Ms Svetlana NOJKOVIC**

*Ministry of Environment and Landscape Planning, Serbia*

### **Ms Dejana LUKIC**

*Institute for Nature Conservation of the Republic of Serbia*

Continuing to work on the legal protection of landscapes, the Republic of Serbia is currently in the process of ratification of the Landscape Convention and adoption of new laws regulating this issue.

The process of integral protection of natural landscape and cultural heritage that started in mid last century continues through legal and planning documents.

Need for preservation and protection of natural and cultural heritage, knows no boundaries and therefore requires all authorities to implement the preservation of natural and created values through their normative and planned measures.

Protection, preservation, management and planned use of space, is mans necessity and demand, expressed through his relation to values.

This relationship provides the necessary harmony between man and his activities from one side and the preservation of heritage, from the other.

On the territory of Serbia through history, characteristics of national identity have been formed. Their tangible achievements in the autochthonous environment create the natural and cultural heritage of Serbia.

### **The way forward in the process of national legislation, concerning the preservation of landscapes**

Protection of landscapes, designated as recognisable areas in which natural and social processes take place is based on the principles of sustainable development. That means: balanced and harmonious relation to social needs, economic activity and environment.

The concept of sustainable development was adopted by the European Union in 1990 and in 1992 the United Nations confirmed the request and the need for it.

Developing countries, especially European Union countries, are giving priority to the environmental policies – natural and man-made values, the total space in which man lives and where settlements are located.

To achieve these goals and needs at the international level, Serbia undersigned the European Landscape Convention in September 2007. In the beginning of 2010 Serbia joined the process of ratification and started the harmonisation of legislation with its provisions.

Within the ratification of the European Landscape Convention, Serbia will join the countries that have demonstrated an understanding of the value of European cultural and natural heritage as the foundation of European identity and improve its relations with the Council of Europe, in areas relevant to the preservation of landscape diversity.

In the process of further developing the national legislation, new regulations have been enacted in the past two years. Legislation currently in preparation also aims to regulating the preservation of landscapes.

New Laws and Regulations which consider the relationship on preservation of landscapes in Serbia are:

- Laws on tourism;
- Laws on planning and construction;
- the draft law on forests and
- the draft law on wild animals and hunting.

Laws on planning and construction have been introduced as one of the basic principles in the planning area:

- a. the principle of the regulation and use of space and the principle of sustainable development through economic development and energy efficiency, particularly the revitalisation of the environment and architectural heritage, natural, cultural and historical values, public participation and the cooperation of state bodies, non governmental organisations and other stakeholders in spatial development;

- b. compliance with European standards and regulations in the field of planning and landscape design, in order to create the conditions for international cooperation and further involvement of the Republic of Serbia in the process of European integration.

This law also specifies that spatial planning is based on horizontal and vertical coordination, which involves connecting with neighbouring territories during the planning, in solving common features and interests, as well as networking and participation of all stakeholders in spatial development.

All spatial plans, especially the spatial plan for areas of special intended purpose, as a mandatory part contain a provision regarding the protection and preservation of natural, cultural, historic or environmental values, and in particular plans of special purpose.

The provisions of the new law on tourism, primarily from economic and developmental aspects, regulate the issue of conservation and landscape planning, in particular defining the tourist space as unique and indivisible integrity of natural and man-made resources and values of importance for tourism and development.

In a step forward, towards the implementation of the European Landscape Convention, Serbia created a number of new laws and regulations in the field of environment, that take into account terms such as “landscape”, “protected area”, “man-made landscape”, “natural landscape”, “sustainable tourism in landscapes of outstanding features”, etc.

The law on amendments to the law on environmental protection specifies, that the protection of the landscape includes planning and implementation of comprehensive measures in preventing unwanted changes, deterioration or destruction of nature-made landscapes, in order to preserve and maintain important features of landscapes, their diversity, uniqueness and aesthetic value and allow the traditional use of natural resources.

This system of law regulates the relationship between landscape planning and other plans and programs, inter-sectoral environmental protection and strategic planning and use of space, as well as drafting of strategy of spatial development in Serbia.

“Landscape”, as an important component of the human environment, as an expression of mutual cultural diversity and natural heritage, finds its foundation in the new law on the protection of nature.

Respecting the provisions of the European Landscape Convention, this law defines landscape as a space visually representing a specific combination of natural and man made values, typical for the region.

Planning and designing landscapes, as well as planning and the use of natural resources, must ensure the preservation of important landscape characteristics.

This law also determines the landscape of outstanding features, defined as an area of picturesque landscape, recognisable appearance and significant natural, aesthetic, cultural and historic values. Measures of protection of these areas are defined, and also the prohibited acts and activities that violate the primary natural and created values.

### **Examples of landscapes in Serbia with a sustainable model**

The protection and conservation of landscapes in Serbia, as specific recognisable areas in which natural and social processes take place, shall be based on the principles of sustainable development – the balanced and harmonious relationship between social needs, economic activities and the environment. Respecting these principles and considering the state of natural and cultural heritage, Serbia has initiated the protection of landscapes of recognisable parts of its territory.

Some landscapes of outstanding features in Serbia represent combination of natural and cultural heritage and landscapes with sustainable model (Ovcar-Kablar Gorge, Pcinja Valley and Mokra Gora...). Variety of natural resources and beautiful sceneries, create a good basis for the development of ecotourism in these landscapes.

Development of ecotourism can be seen as a tool for achieving sustainability of tourism development in Serbia and as an approach to repositioning Serbia as a tourist destination on international market and creating a favourable image of a country, with a richness of natural and cultural recourses.

The protection of these landscapes is conceptually based on the revitalisation of the allochthonous natural environment and the restoration of the monumental heritage and traditional values.

These landscapes become areas of intense tourist attraction, which require a planned use, landscape, geological and biological value, the monumental heritage and the traditional lifestyle. Well preserved nature and landscape,

is one of the fundamental advantages of these landscapes, why they are designated as “landscapes of outstanding features”.

The concept of sustainable landscape design has come to the forefront in the past few years, especially in special protected areas. This concept recognises that human civilisation is an integral part of the natural world and that nature must be preserved and perpetuated if the human community itself is to survive. Sustainable design articulates this idea through developments that exemplify the principles of conservation and conjunction of natural and cultural heritage, landscape and monasteries, infrastructure and impressive waterfalls, well preserved flora and attractive monumental complexes.

Infrastructures and transport in the valley of Mokra Gora, play an important role in representing sustainable landscapes.

Identifying opportunities and innovative approaches for the protection and sustainable development of landscapes are given in the best practice example of the landscape of outstanding features: Sargan-Mokra Gora.

The attractive complexes of autochthonous forests of the black pine on serpentine are particularly remarkable in comparison to the roads, natural landscapes and traditional living environments.

In the remote past, this area was positioned along an important travel route, on which the remains of an old Roman cobblestone road bear witness.

There was once a narrow gauge train, affectionately known as the Cira (Chira). It used to cut its path through astonishing landscapes of Serbia and Bosnia on its way from Belgrade to Sarajevo. The Cira did everything: it took holidaymakers, farmers, salesmen and school children, as well as mail, milk, livestock and other freight. Both travellers and people who lived by the railway line loved it and enjoyed it although it was slow and poured out steam and smoke. For children in villages along the line passing trains were a daily joy and they waved to them cheerfully. So for many generations this train became part of the sweet memories of childhood. Then in the mid-seventies the good old Cira was abandoned and banished as history.

In 1999, people decided to reconstruct the most attractive part of the former narrow gauge railway. They re-laid the tracks; they renovated or rebuilt all the railway stations of the Sargan Eight. This shows how the main infrastructure belt of the mountain is viewed within the sustainable landscape vision,

connecting the past with the sights and sounds of a old train whistle, that won our hearts long ago and remain with us for ever.

This railroad was built in 1921/1925 and is famous for its exceptional technical solution to overcome high gradient at a small distance.

A number of exhibits are placed along the railway old locomotives and railway wagons that are protected as monuments of technical culture. The fairy tale ethnic village “Wooden town” adds to the overall, aesthetic impression and sustainable architectural design bringing people closer to nature and landscape values.

Wooden town is a typical village settlement of this region from the 19th century. Not far from it, a modern skiing complex on the hill, at the foot of the mountain Tara was built, as a great example of how infrastructure can be incorporated into nature. The natural environment, unpolluted air, healthy village food, enables the visitors to reinvigorate both their body and soul. In 2005 this area was declared an area of exceptional beauty: “Šargan – Mokra Gora” and it has been under the protection of the state as the natural value of the Republic of Serbia of outstanding importance category I. It spreads onto 3 600 hectares of the gorge of Mokra Gora, Šargan and the slopes of Tara, with the established and marked boundaries. In 2009, instead of the name and area with outstanding features: “Šargan – Mokra Gora” a new, higher level of protection is introduced and the name hangs into “Park of nature Šargan – Mokra Gora”.

## **Conclusion**

One of the basic principles in landscape planning and reconstruction in these areas is the principle of regulation and use of space and the principle of sustainable development: through economic development and energy efficiency, revitalisation of the environment and architectural heritage, natural, cultural and historical values.

Priorities for the following years include: integration between planning, designing, matching scales of scales in time and place with users, researches and policy makers to enhance interaction and sustainable development.

As a multidisciplinary approach to the treatment of landscapes and monuments situated in them, integrative protection imposes a number of problems which are very often encountered by local and regional authorities, protection

specialists, town planners and others. A contribution to solving of this issue, as well as the answers to many questions can be provided by experts from various research institutes, faculties, and institutes for the protection of monuments and nature, local and regional authorities and many others thanks to their practical and scientific experience.

Future planned activities that aim to promote the integral protection of landscapes, nature, sustainable tourism and sustainable transport will be achieved in planned projects and activities in the following period.

There is still a lot work to be done and a lot of challenges to overcome.



**Mr Giorgio PIZZIOLLO**

*Professor at the University of Architecture of Florence, Italy,  
Scientific Director of the Atelier Paesaggio Mediterraneo*

The idea of relationship in the European Landscape Convention is basic, not only at the environmental level, but also at interpersonal communications and at procedural network levels.

In this perspective mobility assumes a specific importance and can become an essential instrument for the implementation of the Convention.

However the infrastructures represent only one of the manifold aspects of the mobility. In this sense the question is no longer how to introduce correct and sustainable infrastructures into landscape but is instead to conceive the landscape itself as a whole relational structure.

As example we can consider the historic European routes – like *via Francigena* or *S. Jago routes* – which have played a double role: as a structure to ‘observe’ territories and landscapes and, at the same time, as a structure to build landscapes and townscapes themselves – see Siena and its environments along the Via Francigena.

In contemporary conditions this double phenomenon has been developed both in positive evolutionary cases and in problematic troubling cases. In fact these phenomena become more and more complex when they are related to the perception of landscape, which is changing for the continuous transformations of the mobility and of the infrastructures.

To tackle these problems we could assume the above mentioned idea which can define the landscape as “relational structures for a new complex inter exchange based on the circulation, interaction and socio-cultural learning” just with mobility itself.

This new point of view can be very useful to interpret the contemporary condition but also to open new sectoral mobility policies. To that end it is necessary to set adequate-operative and mental instruments.

In this sense a first work hypothesis can be developed going from the idea of mobility to the idea of accessibility. The difference between these two ideas is clear: the first idea means a movement from a given place to another

destination, the second means to create the conditions to perceive, appreciate and approach an environmental living context.

**Consequently the process to reach this aim has to be intrinsically conscious, participative and sustainable, according to the principles of the Convention.**

This is a very aesthetic – ethic approach which requests a very change both at the political – cultural level and at the project level. The last one concerns technologies, economies and socio-cultural processes, all focused on participative life environment actions.

Many study cases and appropriate solutions have been showed in this Meeting. Nevertheless in many countries, particularly in Italy, the landscape is not yet taken into consideration either as infrastructure or as a basic mobility reference. For this reason the idea of accessibility is still extraneous for the current infrastructural procedures.

Then it appears very urgent that this landscape approach be successful at European level.

In this way it could be possible to reach a very renaissance of bio-regions and a real revitalisation of metropolitan – urban areas.

**An example of difference between technical mobility and social accessibility**

*The case of Firenze Novella*

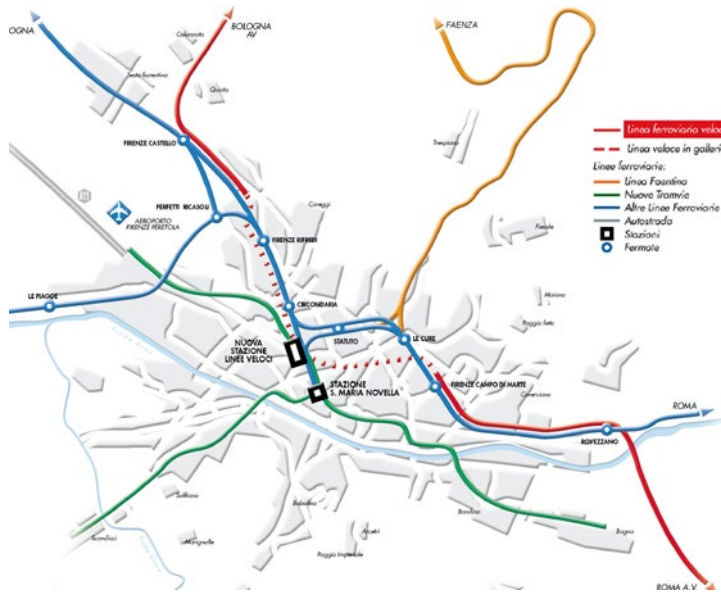
An integrated proposal for the Central Station in Florence, an alternative to the public project for the fast train railway lines<sup>23</sup>.

The condition:

- A hard technological mechanical solution to realise the fast train railway line prepared by the official political powers strongly opposed by the citizens.

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23. The Working research and technical consultants Group: Roberto Budini Gattai, Antonio Fiorentino, Giorgio Pissolo, Giovanni Vannucchi, Teresa Crespellani, Alberto Siparo, Tisiano Cardosi, Vincenzo Abrusso, Rita Micarelli.



### *The underground Eurostar railway and station*

The reaction:

- university professors and researchers, experts, technical consultants and social groups demonstrated the dangerous effects of this project on the whole urban /metropolitan territory and its population under multiple points of view: geological, technical, social, economical, artistic and cultural, all referred to the condition of Florentine territory, its historic artistic patrimony, already included in the UNESCO list.

The question:

- Beyond the protests, is it possible to go towards an alternative sustainable project, in contrast to this absurd public solution?

The alternative proposal has been produced taking into consideration the idea of mobility as a significant social value, as a modality to guarantee a complex network of public transports completely accessible for multiple different kinds of users (persons, workers, scholar groups, and aged people), needs and social activities.

Only in this way would be realisable an integrated territorial infrastructure for mobility conceived as a whole social common at disposal of the civil society.

Accessibility versus mobility, free easy circulation instead of troubles and spatial – temporal obstacles are the foundation principles of the proposal of Firenze Novella.

In this way this project could be concretely realised.

The difference between these two ideas is clear:

- the first idea means a mechanical movement from a given place to another destination without any consideration of the citizens and their civil desires, and of their landscape;
- the second means to create the conditions to perceive, appreciate and approach in a new manner the environmental – urban and metropolitan living context which constitutes the Florence area.

The alternative project has been carefully verified by scientific experts through all necessary specific disciplines, not only to value the separate impacts produced by the infrastructure on the subsoil, the buildings, the public funding, the social life etc., but also through suitable participative procedures.

Consequently this alternative proposal has been developed in an intrinsically conscious, participative and sustainable manner, according to the principles of the European Convention.

*The basic ideas of the alternative project “Firenze Novella”*



The sustainable surface solution of the railway infrastructure across the urban area is based on:

- the re-utilisation and re-valorisation of the whole railway infrastructural patrimony, included the avant-garde rationalist buildings, surrounding the urban railway;
- the creation of a new urban integrated infrastructure for the whole public mobility (Eurostar trains, regional trains, local transport);
- the promotion of an integrated complementary network of slow itineraries (foot – bike green paths) connected to green public areas and public interest service places;
- free and continuous social circulation, reciprocal exchange between different networks of itineraries (historic town, green areas, metropolitan towns and territory, national and international destinations);
- short time needed for the realisation of this alternative solution;
- affordable costs and public obligations.

On the contrary the subway infrastructure across the Florentine urban area could cause:

- hydro-geological impacts;
- structural risks for a wide urban area and its existent buildings;
- technical-economic stresses building yards everywhere along the subway line during its execution (seven/ten years);
- very expensive public obligations;
- hyperbolic repercussions on the civil life in Florence and its surroundings;
- jeopardy of civil and social life.

The alternative project has been conceived not only as a different thematic approach to the mobility but as an aesthetic – ethic approach to the wider questions of the civil life in land cityscape.

This approach requests a very change at any level: political, cultural and social, while at the same time influences technologies, economies and socio-cultural processes, all focused on participative life environment actions.



## Florence: the integrated railway system

By the sustainable surface solution of the railway infrastructure also a new mobility cityscape could be generated as an appropriated modality to answer the intricate problem questions of the contemporary exasperated condition, also in Florence.

In this sense the interdisciplinary scientific social group has been working during the last year keeping in mind the ethic aesthetic importance – above mentioned – of the sustainable solution both on the landscape and urban point of view, taking into consideration the specific international role of Florence and its extraordinary historical complexity.

For this reason we were able to propose a whole solution as an alternative realisation of a new station. The three-pole Firenze Novella Station conceived a new relational railway infrastructure where the three functions (Eurostar, national, international trains, public regional transport, local metropolitan trains) meet and interrelate by a suitable valorisation of the pre-existent railway structures and the new integrated spatial organisation.

The existent Florence Santa Maria Novella Station, the restored ancient sheds and the new architectural structures could be reciprocally interrelated as a

whole wider railway landscape, whose components would be dedicated to a multifunctional service urban area.

In this area technical functionality, free mobility, civil value and aesthetic appeal could be positively balanced and appreciated by all kinds of users as a new throbbing heart of the city.







# **GENERAL CONCLUSIONS / CONCLUSIONES GENERALES**

*Mr Ignacio ESPAÑOL ECHANIZ,  
Lecturer in Landscape and Civil Engineering,  
Polytechnic University of Madrid*

**General conclusions of the Ninth Council of Europe Meeting of the Workshops for the implementation of the European Landscape Convention and Third International Congress on Landscape and infrastructures “*Landscape and infrastructures for society*” Cordoba, Spain, 15-16 april 2010**

*General conclusions delivered by Mr Ignacio ESPAÑOL ECHANIZ, Lecturer in Landscape and Civil Engineering, Polytechnic University of Madrid*

The 9th Council of Europe Meeting of the Workshops for the Implementation of the European Landscape Convention carried out in Cordoba on 15th and 16th April 2010 proposed an interesting and fruitful review of the roles of infrastructures of transport – of human beings, freight and energy and landscape – in relation to society. The conclusions derived from the workshops can be grouped in three big concept areas as follows:

- extensive and varied contributions which register the existing relationship between landscape and transport and energy infrastructures in its different angles;
- conclusions related to how landscape is dealt with by infrastructure policies;
- generic conclusions relating to how sectoral policies can assume European Landscape Convention principles which can be extrapolated from the infrastructure policies case.

The main contributions of these three big concept areas are summarised in the following paragraphs.

**I. Relationship between infrastructures and landscape**

*(A) Infrastructures, landscape and society*

1. Transport and energy infrastructures can be considered the backbone of the landscape since they serve certain activity areas which are favoured in a specific fashion. In this sense, it is important to stress that infrastructures are an essential part of each specific development model.

2. Different types of infrastructures favour different types of development and therefore different landscapes. Infrastructure policy must thus be conceived starting from the development policy to which it belongs and consequently from its landscape policy.

3. Landscape policies must therefore influence infrastructure policies, providing them with an adequate integrating sense to expand the traditional view on the infrastructure as an isolated element in the environment to embrace its true dimension in the overall context.

*(B) Referential models for landscape and infrastructures*

4. Sustainability being a desirable quality of environmental, social and economic systems, is the most solid referential model for landscape policies and, as a consequence, for transport and energy infrastructures.

5. Landscape policy must integrate transport and energy infrastructures as another element of the system, as exhibited in the different landscape normative and management documents presented in the workshops.

6. Nevertheless, the way to deal with infrastructures, their function, definition and conditions is effectively not yet clearly established in the practice.

*(C) Presence of infrastructures in the landscape*

7. Beyond their functional aspects, transport and energy infrastructures enjoy a singular aesthetic quality which requires a specific landscape treatment.

8. Its aesthetic quality is related to:

- The service they provide to the community and how infrastructures are perceived within the landscape.
- Its capacity to influence the relationship between observer and environment, a capacity which is especially relevant in transport infrastructures.
- The way infrastructures show their functionality and how they materialise the expectations of the communities who demand them.

9. The special relationship existing between the aesthetics of infrastructures and the landscape that hosts them, do not always receive the attention it deserves, facing many problems of lack of consistency and criteria.

*(D) Infrastructures for the landscape*

10. There are a group of community infrastructures which specifically target appreciation of the landscape and its restoration. The list is long and varied: scenic walks and outlooks, scenic roads, art installations in the landscape, visitors' centres of varied content, archaeological parks, open air museums and others.

11. These infrastructures connect people with their landscape and its functional and aesthetic figures as well as with its cultural and natural values, using landscape's double emotional and cognitive ability as an intellectual expression resource.

12. Landscape recovery interventions use the landscape's own resources such as the vitality of its cultural and biophysical processes and the capacity of evocation and suggestion, reactivating its resources enabling their viability and highlighting its values.

**II. Infrastructure policies assume a landscape point of view**

13. Including landscape in transport and energy infrastructure policies requires a review of the traditional approach that these policies have applied to infrastructure capacity and level of service as the exclusive or preferred criteria for their design and planning.

14. Other services provided by infrastructures are those related to integration within the system they serve and to the maintenance of its natural, cultural and landscape values, services that must be considered for design and planning in a balanced way.

15. Some aspects which must be considered by infrastructure policy are:

- Sustainability principles must be included in infrastructure planning and design;
- The relationship between people served by the infrastructure and the landscape must be taken into account;
- The social dimension of the provided service must be balanced against the traditional view on functionality;
- Multifunctionality must be sorted out against the idea of the provision of one exclusive function.

### **III. European Landscape Convention principles assumed by other sectoral policies**

16. Other sectoral policies foreseen within the European Landscape Convention's principles must, as is the case for infrastructure policies, assume a review of their traditional paradigms including new and comprehensive concepts.

17. The renewal of sectoral policies must be based on the consideration of landscape values and how these values relate with such sectoral policies.

18. Sustainability, multifunctionality and service to the community are seemingly positive criteria to ease integration of the landscape into sectoral policies.

**Conclusions générales de la Neuvième Réunion du Conseil de l'Europe des Ateliers pour la mise en œuvre de la Convention européenne du paysage et Troisième Congrès international sur le paysage et les infrastructures « *Paysage et infrastructures pour la société* » Cordoue, Espagne, 15-16 avril 2010**

*Conclusions générales prononcées par M. Ignacio ESPAÑOL ECHANIZ, Professeur de Génie civil et Paysages, Université polytechnique de Madrid*

La 9<sup>e</sup> réunion du Conseil de l'Europe des Ateliers pour la mise en œuvre de la Convention européenne du paysage organisée à Cordoue les 15 et 16 avril 2010 a permis de réaliser un bilan intéressant et fructueux du rôle des infrastructures – de transport des hommes, des marchandises et de l'énergie – et du paysage pour la société. Les conclusions de ces activités concernent trois grands domaines :

- des contributions complètes et variées qui soulignent les différents aspects de la relation qui existe entre le paysage et les infrastructures de transports et d'énergie ;
- des conclusions sur le traitement du paysage dans les politiques des infrastructures ;
- des conclusions générales sur la manière dont les politiques sectorielles peuvent intégrer les éléments de la Convention européenne du paysage qui peuvent concerner le domaine des politiques des infrastructures.

Les principales contributions de ces trois grands domaines sont résumées ci-après.

**I. Relation entre les infrastructures et le paysage**

*(A) Infrastructures, paysage et société.*

1. Les infrastructures de transport et d'énergie peuvent être envisagées comme le système nerveux du paysage parce qu'elles rendent des services à certains secteurs d'activité qu'elles favorisent d'une manière concrète. De ce point de vue, il importe d'envisager les infrastructures comme des éléments essentiels d'un certain modèle de développement.

2. Différents types d'infrastructure favorisent différents types de développement et, par conséquent, des paysages différents. Il faut donc élaborer la politique des infrastructures à partir de celle du développement dans laquelle elle s'inscrit et, par extension, à partir de la politique du paysage.

3. Les politiques du paysage doivent par conséquent influencer les politiques des infrastructures en y associant la notion d'intégration, élargissant ainsi la conception traditionnelle des infrastructures, qu'ils envisagent comme des éléments isolés de l'environnement pour leur donner leur véritable dimension par rapport à leur contexte.

*(B) Modèles de référence pour les paysages et les infrastructures*

4. La durabilité, qui est une qualité désirable dans le domaine social, de l'économie et de l'environnement, constitue la référence la plus solide en matière de politiques du paysage et, par extension, pour les infrastructures de transports et d'énergie qui le traversent.

5. La politique du paysage doit intégrer les infrastructures de transport et d'énergie comme un paramètre complémentaire, tout comme le suggèrent les différents documents normatifs et directeurs publiés sur le paysage.

6. Malgré tout, la manière de traiter les infrastructures, leur objet, leur définition et leurs conditions n'est pas encore clairement définie dans les politiques du paysage.

*(C) La présence d'infrastructures dans le paysage*

7. Au-delà de leur aspect fonctionnel, les infrastructures de transports et d'énergie ont une valeur esthétique qui leur est propre, et qui appelle un traitement spécifique du point de vue du paysage.

8. Leur valeur esthétique est liée :

- aux services qu'ils rendent à la collectivité, qui les perçoit de ce point de vue dans le paysage ;
- à leur aptitude à servir d'intermédiaire dans la relation qui existe entre l'observateur et son environnement, aptitude qui est particulièrement marquée dans le cas des infrastructures de transport ;
- à la manière dont elles démontrent leur utilité et répondent aux aspirations des collectivités qui les demandent.

9. La relation particulière qui existe entre l'esthétique d'une infrastructure et le contexte du paysage qui l'accueille ne bénéficie pas toujours de l'attention qu'elle mérite, ce qui engendre de multiples problèmes de classification et de critères.

*(D) Des infrastructures pour le paysage*

10. Il existe une série d'infrastructures collectives qui servent spécifiquement à la contemplation et à la mise en valeur du paysage. Les rapports avec le paysage sont très variés : itinéraires paysagers et points de vue, routes touristiques, interventions artistiques dans le paysage, centres d'interprétation de divers éléments qui s'y trouvent, parcs archéologiques et musées en plein air, etc.

11. Ces infrastructures tissent des liens entre le citoyen et le paysage avec ses valeurs esthétiques, culturelles et naturelles, par un recours au double pouvoir qu'exerce sur les émotions et sur la raison le paysage envisagé comme moyen d'expression intellectuelle.

12. Les initiatives de restauration du paysage exploitent les atouts spécifiques de celui-ci, comme la vitalité de ses processus biophysiques et culturels et la capacité d'évocation et de suggestion, afin de leur rendre leur vitalité et de les mettre en valeur.

## **II. Tenir compte du paysage dans les politiques des infrastructures**

13. L'intégration du paysage dans les politiques relatives aux infrastructures de transports et d'énergie exige de s'écarter de l'approche traditionnellement adoptée dans la définition de ces politiques. Cette approche considèrerait la capacité et les services rendus par les infrastructures comme les seuls critères à prendre en compte pour leur conception et leur planification.

14. Dans la conception des infrastructures, il convient de prendre en compte de manière équilibrée d'autres services rendus, qui sont liés à l'intégration au système qu'elles servent, ainsi que la préservation des valeurs naturelles, culturelles et paysagères.

15. Les paramètres suivants doivent être pris en considération dans les politiques des infrastructures :

- la durabilité de l'aménagement et de la conception des infrastructures ;
- la relation qui existe entre les citoyens desservis par ces infrastructures et le paysage ;



- la dimension sociale des services rendus, par opposition à une vision simpliste de leur utilité ;
- l'analyse des fonctions multiples de l'ouvrage par opposition à l'approche traditionnelle qui n'envisage qu'une fonction unique.

### **III. Les principes de la Convention du paysage traduits dans d'autres politiques sectorielles**

16. Les autres politiques sectorielles qui prévoient de mettre en œuvre les principes de la Convention européenne du paysage doivent, comme dans le cas des politiques des infrastructures, revoir leurs conceptions traditionnelles, et y intégrer des notions nouvelles et intégratrices.

17. Le renouvellement des politiques sectorielles doit s'appuyer sur une prise en compte des atouts du paysage et de la manière dont ces atouts s'articulent avec la politique sectorielle envisagée.

18. La durabilité, la polyvalence et les services aux citoyens sont autant de critères positifs, susceptibles de favoriser l'intégration du paysage dans les politiques sectorielles.



# **CLOSING SESSION / SESSION DE CLÔTURE**

## **Closing speeches / Discours de clôture**

*Mr Jean-François SEGUIN, President of the Council of Europe Conference on the European Landscape Convention*

*Mrs Maguelonne DÉJEANT-PONS, Executive Secretary of the European Landscape Convention*

*Mr Eugenio DOMINGUEZ VILCHES, Director of the Public Agency for Infrastructures of Andalusia, Department of Public Works and Housing, Junta of Andalusia*

## **Allocution de clôture**

### **Maguelonne DEJEANT-PONS**

*Chef de la Division du paysage, du patrimoine culturel  
et de l'aménagement du territoire du Conseil de l'Europe*

Je souhaiterais, en cette fin des 9<sup>e</sup> Réunion du Conseil de l'Europe des Ateliers pour la mise en œuvre de la Convention européenne du paysage sur le thème « *Paysage et infrastructures pour la société* », organisée conjointement avec le 3<sup>e</sup> Congrès international « *Paysage et infrastructures* », remercier à nouveau tout particulièrement le Gouvernement espagnol : les trois ministères concernés qui ont accepté de coopérer à la préparation de cet événement – le Ministère des Travaux publics, le Ministère de la Culture et le Ministère de l'Environnement et du milieu rural et marin –, ainsi la *Junta de Andalucía* et son Département des Travaux publics et du Logement, et le Centre d'étude du paysage et du territoire d'Andalousie.

J'adresse aussi un très grand merci aux intervenants pour la qualité de leurs présentations.

Je souhaiterais aussi formuler quelques réflexions sur :

- le titre de la réunion ;
- les thèmes traités ;
- la portée des travaux réalisés.

Le titre de la réunion : devions-nous parler de « paysage, d'infrastructures et de société » ou « d'infrastructures, de paysage et de société » ou de « société, de paysage et d'infrastructures » ou encore de « société, d'infrastructures et de paysages ». Toutes les combinaisons sont en fait possibles mais la finalité est bien la société. La prise en compte des interactions et synergies entre infrastructures et paysage ont pour objet d'améliorer la vie et qualité de vie des individus et des sociétés. Organisation intergouvernementale des droits de l'homme, le Conseil de l'Europe s'attache à promouvoir un mieux-être des sociétés fondé sur la prise en compte des valeurs environnementales, culturelles, sociales et économiques.

Le champ d'action : j'ai conscience que nous n'avons pas épuisé les thèmes que soulève l'intitulé de cette réunion. Chacune des infrastructures, de transport ou à autre usage et son interaction avec le paysage, mériterait

pourrait à elle seule, faire l'objet d'une réunion. Il conviendrait ainsi de traiter des chemins de fer, des tramways, des voies d'eau navigables et d'autres types d'infrastructures.

Quelle est pour finir, la portée de nos travaux ? Il convient comme l'a mentionné Jeppe Aagaard Andersen, de « changer la manière dont les gens pensent ». Le Conseil de l'Europe a dans le cadre des travaux de l'aménagement du territoire, organisé un Symposium international intitulé « Pour une nouvelle culture du territoire ». Il s'agit bien de promouvoir, ce que les « Principes directeurs pour le développement territorial durable du Continent européen » de la CEMAT appellent, la « dimension territoriale des droits de l'homme ».

Plusieurs événements seront prochainement organisés et je souhaiterais vous donner rendez-vous pour ces occasions.

*L'éruption du volcan islandais Eyjafjöll survenue pendant la réunion a empêché plusieurs participants de rentrer chez eux comme ils l'avaient initialement souhaité. Bernard Lassus m'a confié à son retour « les distances ont repris leur valeur ». Cette pensée profonde renforce les conclusions de la réunion : le paysage doit faire partie de la réflexion sur les fonctions et qualités des infrastructures en relation avec l'espace de vie des sociétés.*



## **ADDITIONAL CONTRIBUTIONS / CONTRIBUTIONS ADDITIONNELLES**

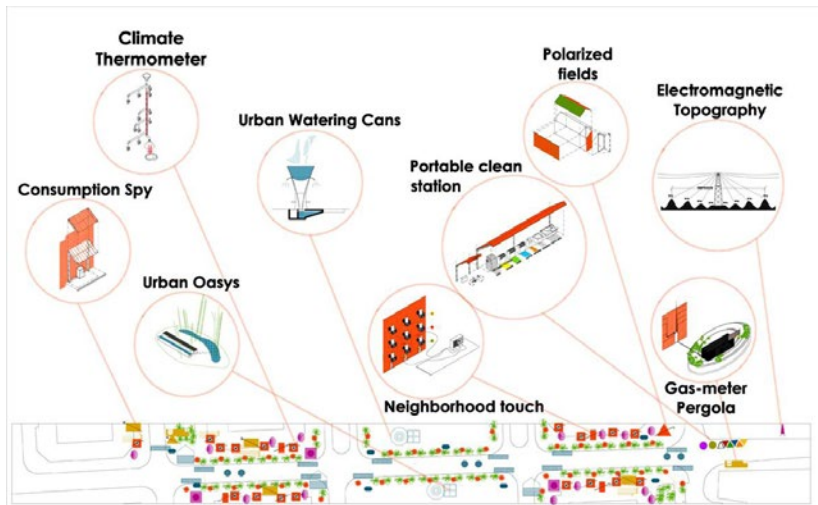
## **Benquerencia: invisible city**

**Ms Bárbara PONS GINER**

*Head of Territorial Planning, Ministry of Planning and Housing,  
Government of Castilla - La Mancha*

**Mr Manuel PÉREZ ROMERO**

*Architect, Spain*



*Figure 1: Actions planned to make energy use and consumption visible in Benquerencia housing estate*

This article presents the intervention project in the area of Santa Maria de Benquerencia in Toledo (Spain) dealt with as an energy landscape: reusing and making the consumption and the energy production visible in the urban environment.

This project was developed by Manuel Péres Romero, Eleonora Guidotti, and Carlos Arroyo for the Government of Castilla - La Mancha, Ministry of Planning and Housing, General Management of Territorial Planning.

This intervention project is part of an overall landscape management strategy for the area prepared by the same team.



## 1. Strategy

The project title “*Benquerencia: invisible city*” makes reference to an article of Bruno Latour and Emilie Hermant of 1998, “*Paris ville invisible*”.

Perhaps, the urban phenomenon is the one that produces and consumes the most amount of energy.

The proposal aims to create a touristic route across the energy landscape in the area of Santa Maria de Benquerencia in Toledo. The main issues of the project are to:

- make visible the energy and its consumption;
- reuse the remaining energy;
- produce an extra friendly energy.



*Figure 2: Energy touristic route*

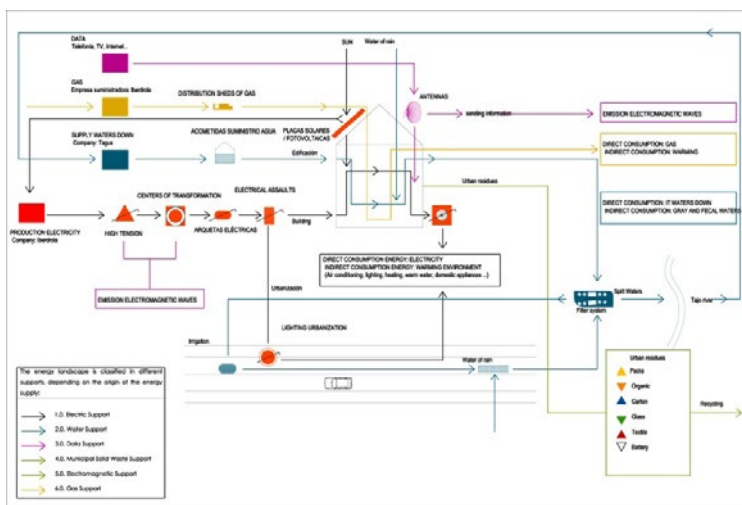


Figure 3: The energy landscape: the supports

## 2. Supports

The energy landscape is classified in different supports, depending on the origin of the energy supply:

- 1.0. electric support;
- 2.0. water support;
- 3.0. data support;
- 4.0. municipal solid waste support;
- 5.0. electromagnetic support;
- 6.0. gas support.

The touristic route proposes an “ideal” pathway across these different supports. This energy landscape is the potential space for the proposal.

## 3. Micro-projects

Each energy support is a potential area for improvement; a space where we can apply the main strategies of the project. The energy route will make a link between all the micro-projects and each support:

**Climate thermometer** (*Electric support*)

The project set up around the air conditioning machines located on the exterior facades of the housing state.

*Objective:* Reuse the expelled hot air from the air conditioning machines and make this consumption visible.

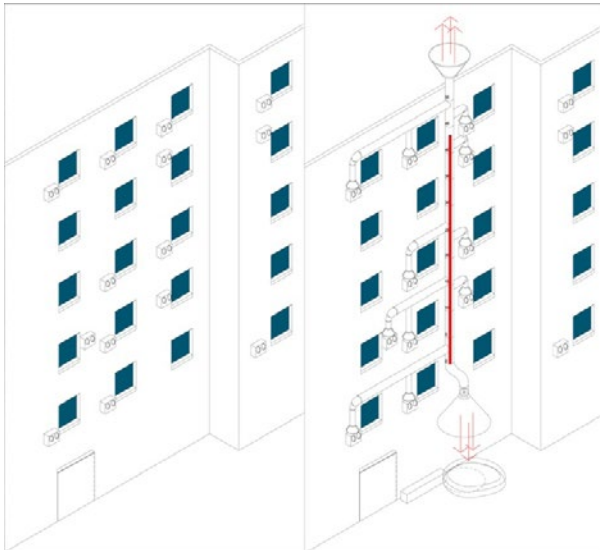


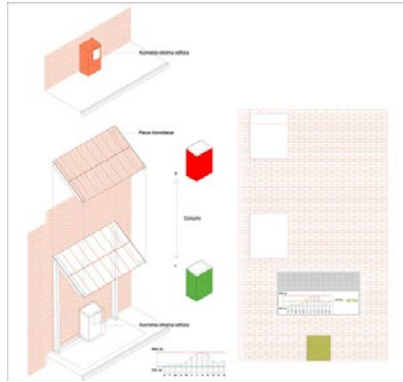
Figure 4: Climate Thermometer

**Consumption spy** (*Electric support*)

The project is set up close to the electric current intakes of the housing.

*Objective:* Make visible the actual energy consumption of the building, and at the same time, the energy consumption of the last 5 years.

With an extra energy contribution (solar panels) we can illuminate the current intakes gradually, depending on the energy consumption of the building.

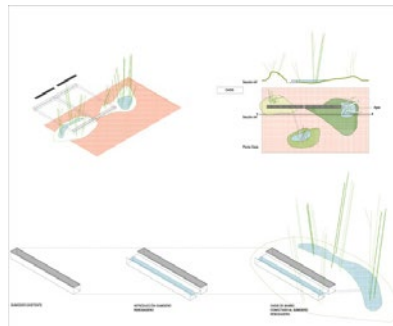


*Figure 5: Consumption Spy*

### **Urban oasis (Water support)**

The project is set up close to the rain water catch basins, located in the public space of the housing state.

*Objective:* Reuse of the recuperated rain water to make a micro-climate with nebulised water to create small urban oasis.



*Figure 6: Urban oasis*

### **Urban Watering Cans (Water support)**

The project is set up close to the conduct pits used to water the gardens of the public space.

*Objective:* Micro-climates of nebulised rain water from a big watering can. It can also be used for watering the gardens.

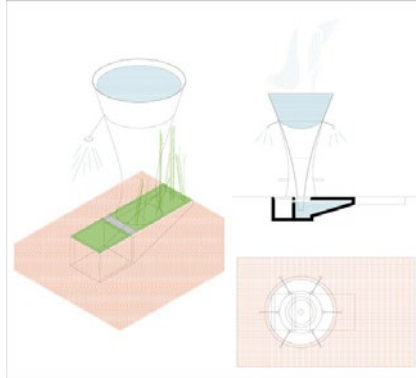


Figure 7: Urban watering cans

### Neighbourhood touch (Data support)

The project is fitted up close to the individual antennas located in the housing facades.

*Objective:* Improve the social interaction through the close touch, opposed to the remote touch of the data.

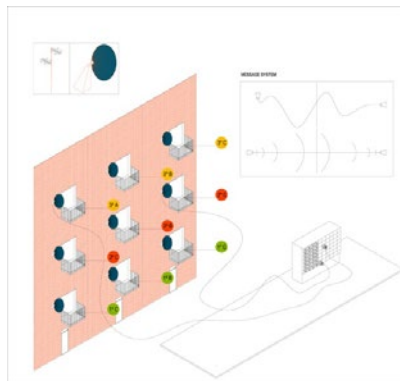


Figure 8: Neighbourhood touch

**Portable refuge station** (*Municipal solid waste support*)

The project is located close to the municipal refuse dump.

*Objective:* Rehabilitate these areas with, for example, a solar bicycle station. They will be used to tour the energy itinerary.

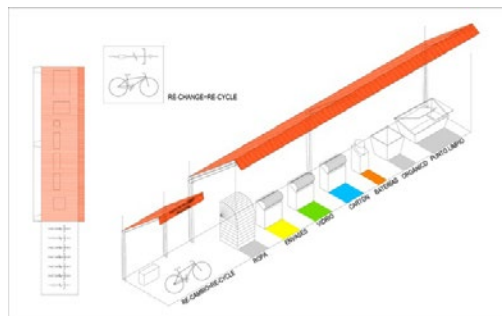


Figure 9: Portable refuge Station

**Polarised fields** (*Electromagnetic support*)

The project is set up close to the electric substation.

*Objective:* Create a Faraday Cage that will protect the environment against the electromagnetic waves, and install a meter to make them visible.

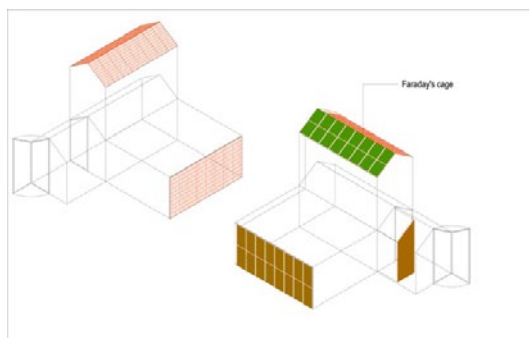


Figure 10: Faraday's Cage

### Electromagnetic topography (Electromagnetic support)

The project is located near to the high voltage pylon.

*Objective:* Create a new topography that will make the intensity of the electromagnetic waves visible.

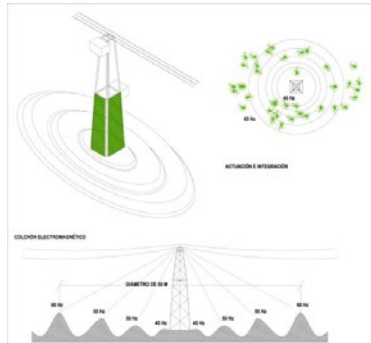


Figure 11: Electromagnetic Topography

### Gas-meter Pergola (Gas support)

The project is located near to the gas meters of the buildings.

*Objective:* Make the consumption and the gas supply visible.

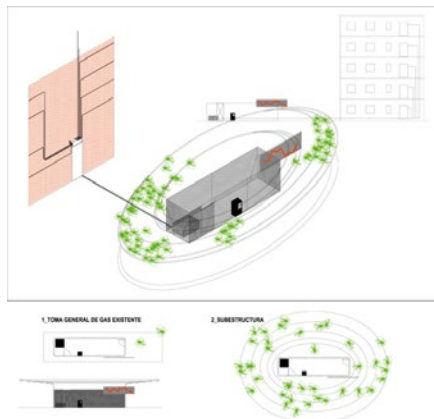
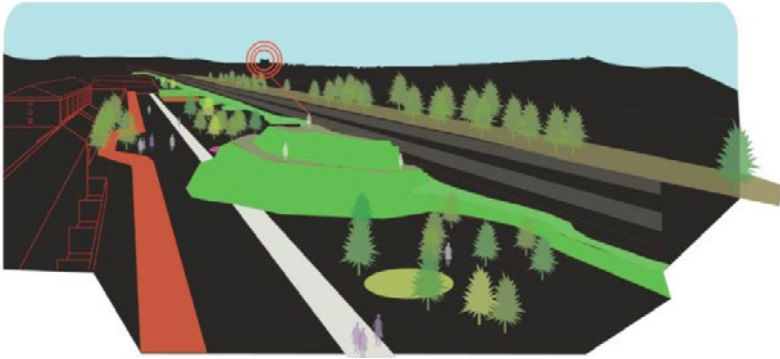


Figure 12: Gas-meter Pergola



*Figure 13: Different functions and landscape resources at the living border of Santa María de Benquerencia Estate*



## **Living border**

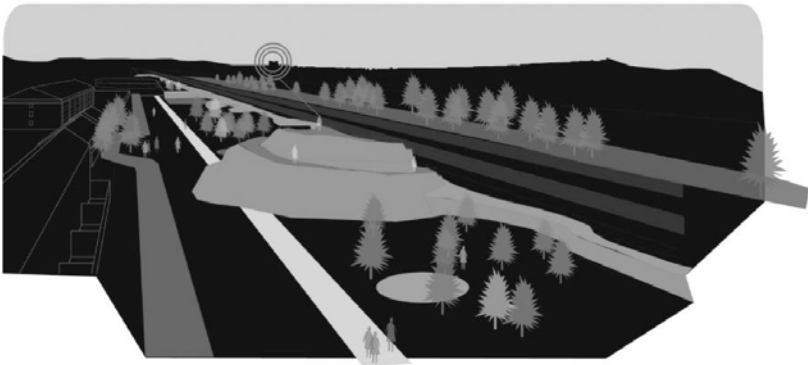
### **Ms Bárbara PONS GINER**

*Head of Territorial Planning, Ministry of Planning and Housing,  
Government of Castilla - La Mancha*

### **Ms Eleonora GUIDOTTI**

*Architect, Spain*

This article presents the intervention Project in the border of the N-400 highway by the Santa María de Benquerencia Estate in Toledo (Spain) in relation with the adjacent residential zone. This project was developed by Eleonora Guidotti, Carlos Arroyo, Manuel Péres Romero for the Government of Castilla - La Mancha, Ministry of Planning and Housing, General Management of Territorial Planning. This intervention project is part of an overall landscape management strategy for the area prepared by the same team.



### **The living border: 4.8 hectares**

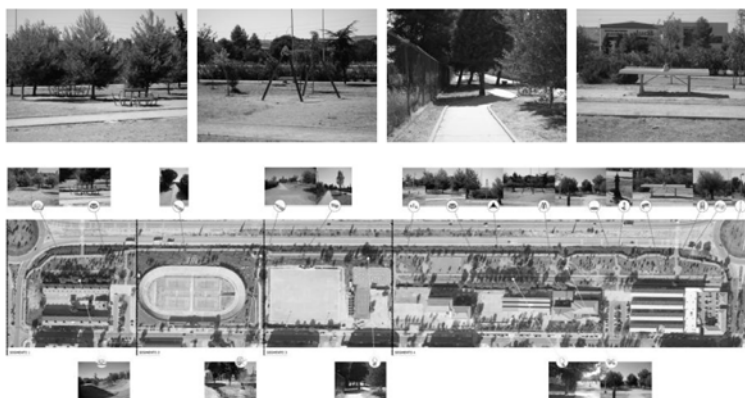
The area of didactic sports, technological and residential facilities in Santa M. B. located between street Río Valdemaría and the N-400 has a number of green areas among the facilities, but they have a wasteland feel, as if leftover between building sites. They are little used and in poor condition, hidden, unsafe and polluted.

Although the effort to reclaim specific points (mini parks with skating and lightning, bicycle lanes, etc.) exists, the physical and perceptual trials show that the objective hasn't been achieved and that instead of being an area

of recreation, relaxation and contact with nature, it ends up being an area awaiting new recovery programs.

To ease the research work we hypothetically divided the green area in 4 segments of analysis which differ in width, the relationship with the national highway, sport facilities, urban furniture, situations, and different vegetation.

We have carefully compiled all the furniture elements that can be found in the green area: cast iron benches, concrete benches, gymnastics circuit, picnic tables, ping-pong tables, swings, street lamps, sources, games bicycle lanes and round about.



We also described the situations that shape the existing.

### *Situation 1 - wall*

In this situation there are three elements that we retain: the walk/bicycle lane, the row of trees on the roadside and the wall of the school as a backdrop. Especially the shadow from the leafy trees over the footpath has a great value because it creates a shaded area and provides coolness in summer. The wall that closes the school grounds serves an element of expression. This situation remains.

### *Situation 2 – respect for the existing*

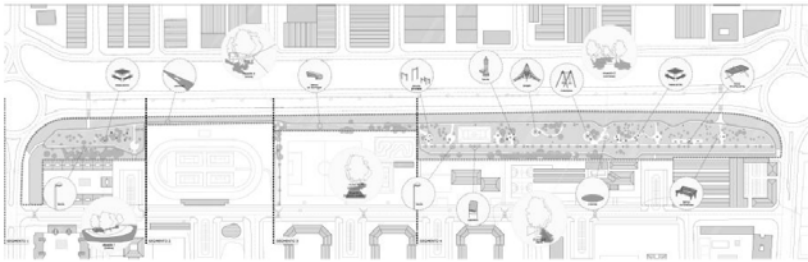
As a remarkable situation, there is a point where both footpath and the bicycle lane change their route to preserve a group of leafy trees on their path. This situation remains.

### *Situation 3 - shade*

There are squares in the interior of the analysed zone. The leafy trees clustered around these little squares provide a microclimate ideal for relaxing and sun protection. These situations are preserved and not altered.

### *Situation 4 - slope*

This situation is unique within the entire analysis area due to its topography somewhat more pronounced than in the rest of the enclosure. The existence of some leafy trees, more or less clustered, and the presence of tables and benches make this area a pleasant place to meet. We call it the picnic-forest. It is preserved just as it was found.



We have identified the 4th segment as the green space where the largest number of activities and situations currently take place and as the ideal place for the most substantial intervention to define the essence of the overall proposal and to give identity to the animated border.

(Segment 4: strip about 40m wide. Young vegetation exists within the beds giving little shade. There are also more densely wooded areas near the front of the school. The bicycle lane goes around the area like a circuit. The main pedestrian path is parallel to the bicycle lane. There are small squares within the flowerbeds connecting the side roads.

You see the front of the children's school and the separation wall as a graffiti mural. This is also the front wall of the neighbouring shop (Lidl). Drinking fountains and bins. Several ping-pong tables. Concrete benches along the walking path and benches on the little squares. Lamps on main streets. Interior streets. Sports fields. Equipment for gymnastics. Swings. Bicycle lane. It lends itself more easily to accept other proposals).

## **Proposal**

The proposal we think appropriate to revitalise the area has the following objectives: safe and comfort for the occupant; implementation of sports equipment; enhancement of the existing rural character and improved visual and spatial perception.

To achieve such conditions we propose a mud wall that goes along the three sides of the adjacent perimeter with the Av. Del Rio Estenilla, the N-400 and the Av. Del Rio Guadarrama.

The wall we identify as ‘Animated Border’ has a maximum height of 3m and a minimum of 2m and a thickness that varies depending on the activities it will house within itself, or by its side, or on top of it. (Minimum width 2m reaching up to 15m).

We define it as a hyper-equipped border performing different functions:

- as an acoustic barrier;
- as a ‘fear remover’ for the proximity of the N-400;
- as a mysterious and attractive sculpture for the visitor on the highway;
- as an element housing various facilities;
- as a gazebo.

It is made of compacted soil, so it offers a surface for spontaneous vegetation and wild flowers, changing in colour and image with the seasons.

***The animated border*** is a hyper equipped border that provides different activities in function of its thickness, its section or the space around it. Therefore we’ve used a nomenclature that identifies such situations:

### *Slope-wall*

The animated border transforms into a slope-wall to offer a lowering point to go to level 0. It also offers a nice slope with resting places.



### *Wall equipment with chiringuitos*

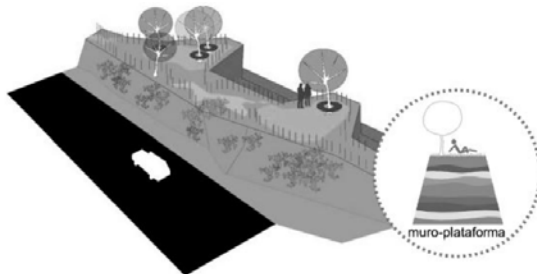
The wall is equipped with catering services that come out like embedded objects. Additional services are considered next to the activities both spontaneous and like those designed to enjoy the park. These services, called ‘Chiringuitos’ (a kind of bar) are places for social exchange, and also oasis-like shelter for the tougher climate moments of Castilla La Mancha.



### *Wall-elevated platform*

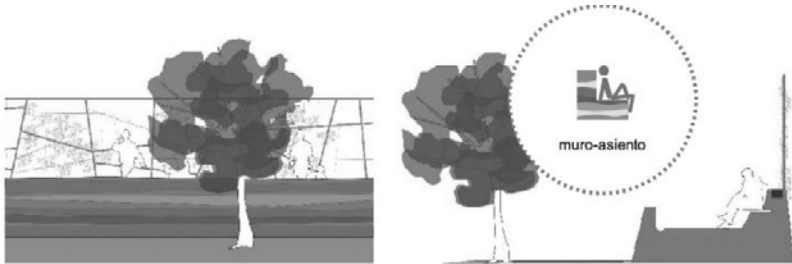
The wall rises to give the people passing by a place to enjoy the view over the area, the N-400 and the park with its various activities. The platform is about 4 meters above the bicycle lane that runs through the park from point to point.

It is a passageway from one end to the other and a place to stay at the same time, with circular seating, added with the trees, offering moments of rest. At this point the wall shapes itself with nooks and creates spaces to place sports equipment; the walls of the raised platform offer open air rooms for the athletic residents.



### *Wall-seat*

At the point in the park where the open green area does not conceal the presence of the transient and the cyclists, the wall offers an escape. The bike remains undaunted in its travel while the people passing by continue their path over the wall. It begins with a moderate slope and reaches four feet high to form a raised platform. Along this path, the wall of a lattice and green plants has a double function: on the side of the park they provide visual, physical protection to the N-400. To the highway they are an element of aesthetic delight.



### *Wall-mountain*

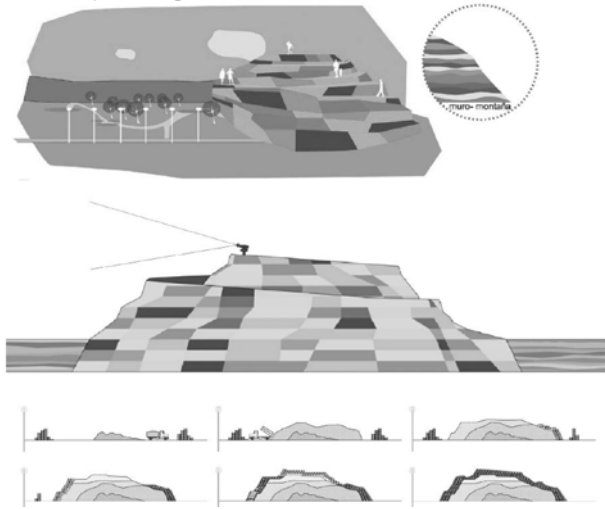
The border moves up and down, creating nooks, with flowers turning into a mountain.

It is a mound of earth established on walls made out of car tires arranged in a specific geometry to form a mountain, creating a natural profile. The slopes of the mountain have crevices where vegetation takes hold, and emphasising the mountain's profile with different textures.

From this point it is a privilege for residents, workers, visitors to enjoy a superb and unique view of historic Toledo, relating to the territory and landscape in which they belong.

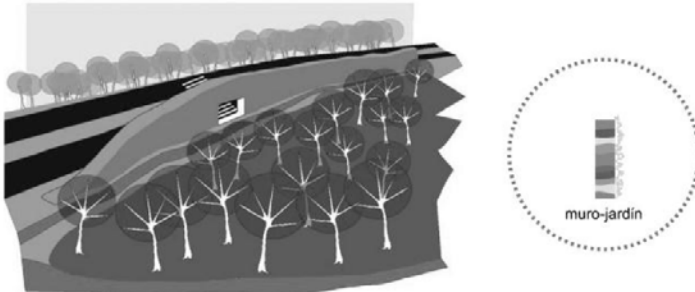
From a system of land retention on a basis of car-tires, a new topography is generated as a natural profile. This experimented system, besides providing a new landscape and a benchmark which contemplate the skyline of Toledo, fits the requirements of the CTE sheltering inside the discharge of waste from nearby buildings. Thus, the mountain is built by stacking the tires on the ground and generating the desired shape. The interior of this geometry is

filled with inert debris to convenient height. At this point the tires completely cover the mountains crossed by steel bars to stiffen the structure and stapled together. Above them, a layer of coconut fibre to control erosion and on it, a plant substrate layer with vegetation.



### *Wall-lattice*

In front of a mixed forest of pine and olive trees, with a seemingly random arrangement of wooden picnic tables that may be used also for card games or meeting points for the young and old of the neighbourhood, the wall rises with aromatic garden herbs. At this point in the park, the olfactive invasion is the only element to interact with the wall elevation.



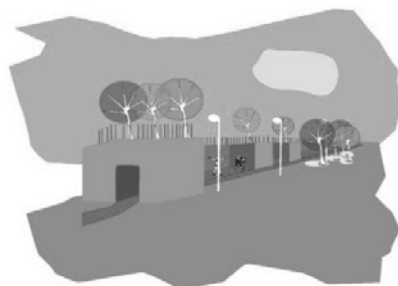
### *Wall-cliff*

Next to an artificial beach the wall is decorated with coloured support elements providing a climbing wall for the visitors of the park.



### *Wall-equipment sports*

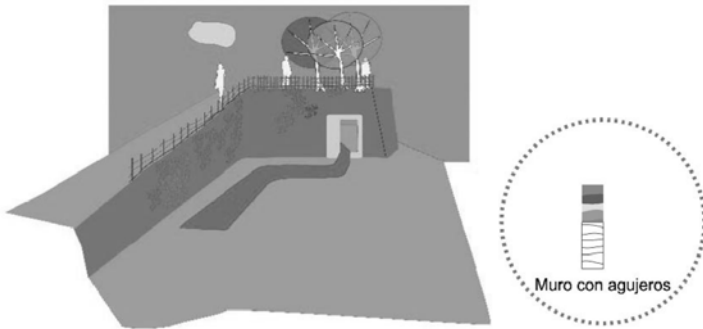
At the point where the platform rises 4m above the bicycle path, there are protected sports facilities, located between the recesses created by the vertical movement of the wall. This way the walls of the raised platform create outdoor rooms.



### *Wall-holes*

The wall gets broad and narrow, it invades, winds, and also opens up not to obstruct the activities overlapping, intersecting and coexist with them in the surface of the park.





### Wall-tank

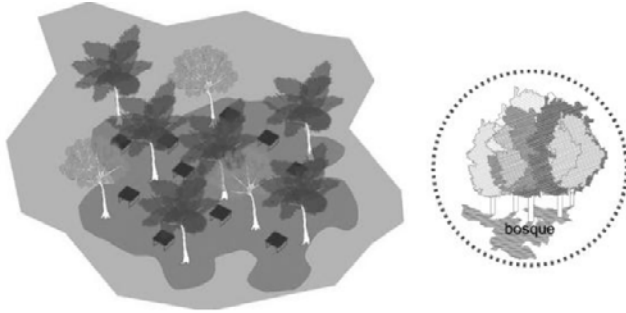
Where the bars, catering facilities are embedded inside the wall, a tank for rainwater supplies them, like also the activities related to the presence of water.



The animated border also intends to be a protection with respect to the road, allowing sports and social activities and general entertainment with a greater degree of safety and comfort. In the proposal, besides maintaining the existing situations, we introduce other situations that offer greater welfare conditions in order to revive the experience and stay in the green area of the estate.

### Situation – forest

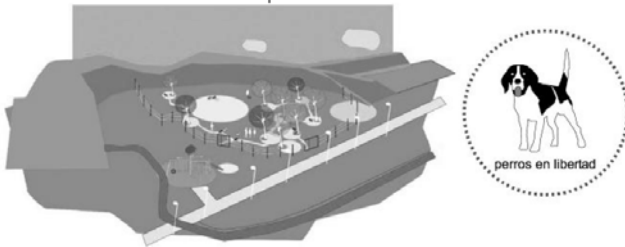
Throughout the park there are clusters of trees which create shaded places where to shelter against climatic variations typical for Castilla La Mancha, to enjoy a game of cards, to have a picnic, to lie down and take a nap.



*Situation – a dog’s freedom*

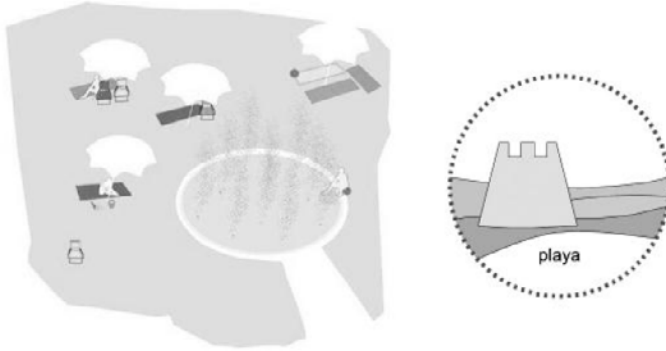
In a park with a mix of various activities looking for compatible systems of use it is essential to consider issues such as safety and comfort for its users. Therefore, analysing the available green space and observing the activities taking place with the live actors, we propose to identify a specific location, ready and suitable for dogs.

We decided to enclose a part with a permeable fence to the rest of the park, exclusive for dogs to enjoy complete freedom and autonomy without affecting the other activities in the park.



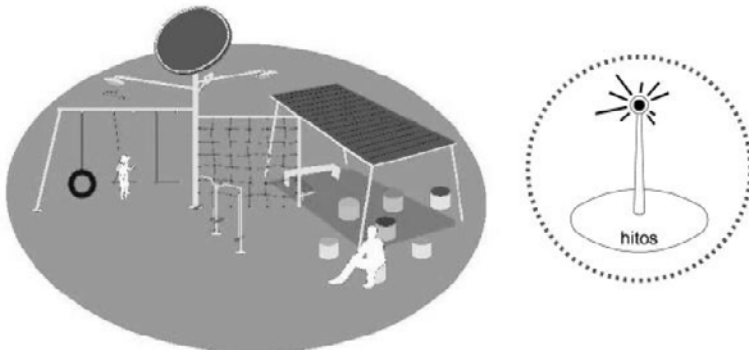
*Situation – beach*

The size of the park allows considering and proposing different qualities of spaces characterised by different textures and activities. The beach, like the forest of the climbing wall or ice rink, is one of them. Located next to a cliff and an installation from which cool waters flows down to refresh in summer, the beach, for some, offers a preview of the holiday landscape, an outlet, a break from work.



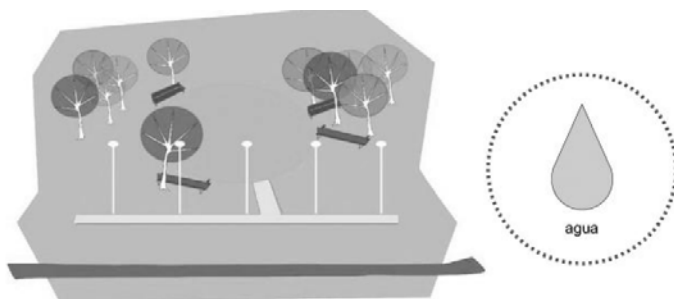
*Situation – landmarks*

In three points of the park we have placed elements that implement a milestone/ landmark summarising a “modus operandi” of the proposed project. Search for energy saving, recycling facilities and infrastructure, maximum results with minimal resources, creative solutions and low cost. The milestone/ landmark is a metal structure including different elements: 1. A photovoltaic street lighting, 2. An instant shade pergola and 3. Games for children (swings, slides) mixed with sports equipment for adults.



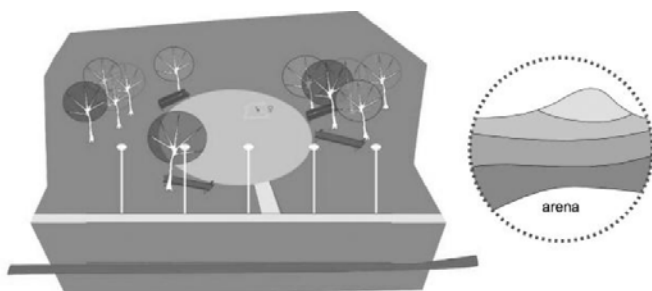
*Situation – water*

The park offers wet places, such as waterfalls, which provide a visual and material event and also play the role of cooling the atmosphere during intense summers of La Mancha.



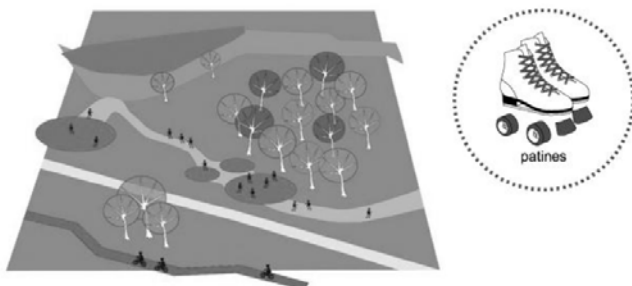
*Situation – arena*

The park has sandy places in the park where parents and grandparents get together while children, for example, make sand castles.



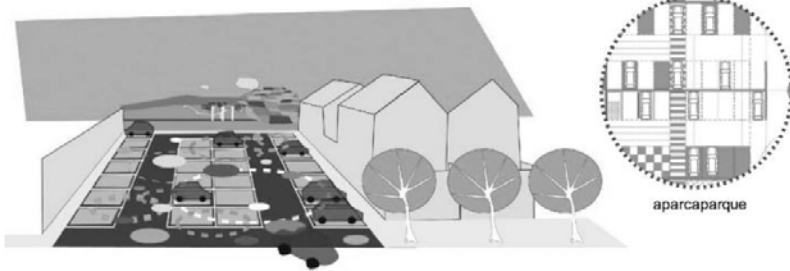
*Situation – skate*

At the bottom of the mountain we convert an existing path into a colourful skating ramp that attracts attention.



### *Situation – park*

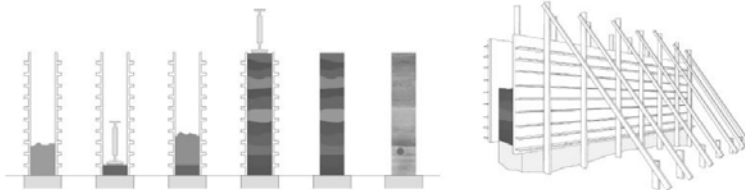
The streets surrounding the park have an oversized parking area that never runs dry. It transmits a desolate and lifeless image. This vision led to consider allocating the park entrance parking and provide different activities to invite users to colonise spontaneously.



### **Building materials and green textures**

#### *Earth construction*

Moist soil: a mixture of sand, gravel, clay and cement. The framework is built and filled with a layer of moist soil, which is then compressed. Add the next layer of moist soil, add together and compress the layers of moist soil. The frame is removed, leaving a rammed earth wall.



### *Benefits*

- 45-60 cm or more thick exterior walls;
- 10% of Portland cement compared to a brick wall (less Portland = less emissions);
- 2000 psi (13.79 MPa) compressive strength of test cylinder after 17 days;
- R33 sound-proofing value;
- Acts a thousand years or more with no maintenance;
- What you see is what you get (without plaster, paint, siding or brick);
- Compatible with standard colouring oxides;
- Completely non-toxic materials;
- Sealants are not necessary;
- Fireproof, rodent and insect proof and testing of earthquake (ductility better than concrete).

Earth from land clearing has been used for the implementation of the rammed earth wall, the hallmark of the project. The formwork used for the implementation enables reuse, because the execution is done in tranches.

### *Cultivated walls*

Geotextiles with permeable fabric, which have the ability to separate, filter, reinforce, protect or drain. Geotextile fabrics come in three basic forms:

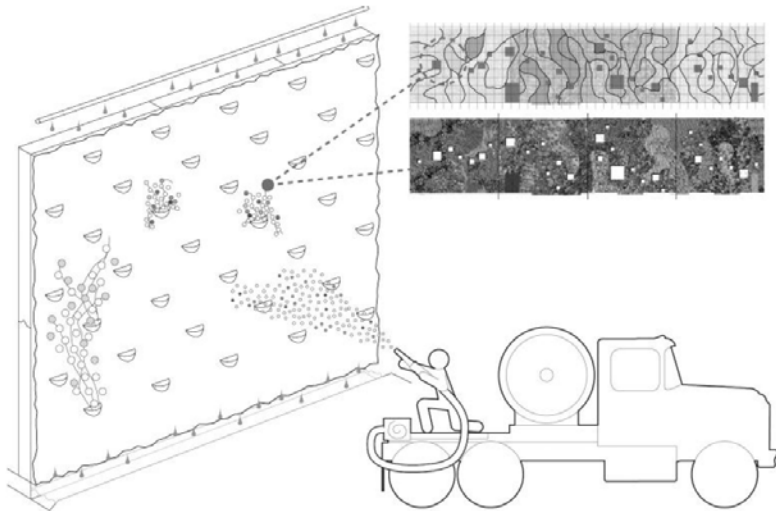
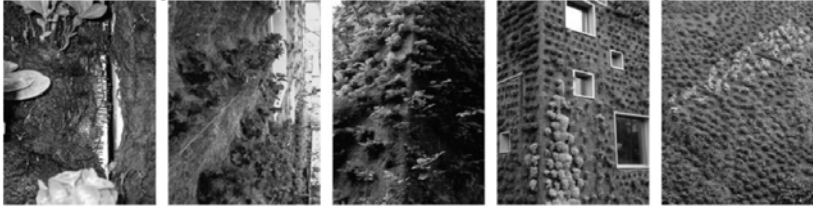
- textile fabric (looks like jute);
- perforated (looks like felt);
- heat bonded (looks like felt) / heat bonded.

As the use of geotextile has expanded, composites have been introduced and products such as geogrids and geomeshes have been developed.

### *Protected seeds*

Process of projecting seeds by means of a jet of water to which a product is usually added and possibly fixing a substrate.

The Harmonia 57 is a building that could compare to a living organism in terms of its operation, as it consists of an interesting cycle that allows the incorporation of a substantial vegetation cover on the vertical surfaces of the building.

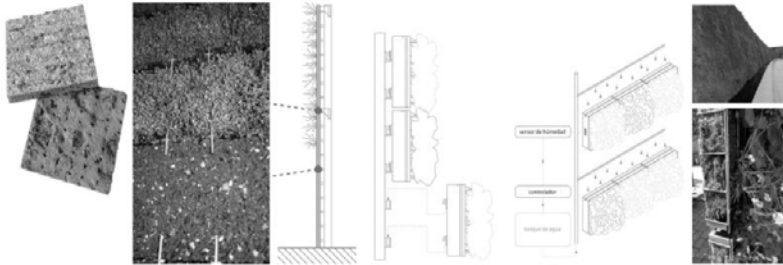


### *Plant modular panels*

You can use a recycled capillary substrate to bring to life any structure or surface:

- for horizontal or vertical surfaces;
- for roofs, walls and buildings, free standing or suspended;
- lightweight, strong and structurally stable;

- system wall mounted steel frame:
  - can be mounted on various waterproofs under layers;
  - can be removed to check the structure behind vertical irrigation drip system;
  - You can use reclaimed water;
  - You can recuperate drain water and leave it in the system;
  - Humidity sensors turn the water on only when necessary.



*Figure: A view of Benquerencia Industrial Estate from the high-speed train, with “spotlight” intervention*



## Passing trains

### **Ms Bárbara PONS GINER**

*Head of Territorial Planning, Ministry of Planning and Housing,  
Government of Castilla - La Mancha*

### **Mr Carlos ARROYO SAPATERO**

*Architect*

This article presents the intervention project in the Industrial Estate area of Santa Maria de Benquerencia in Toledo (Spain) dealt with as a productive landscape, and as perceived from the Madrid-Toledo high speed train *Alta Velocidad Española (AVE)*.

This project was developed by Carlos Arroyo, Eleonora Guidotti, and Manuel Péres Romero for the Government of Castilla - La Mancha, Ministry of Planning and Housing, General Management of Territorial Planning.

This intervention project is part of an overall landscape management strategy for the area prepared by the same team.

### **The site: approaching Toledo**

The European Landscape Convention begins its Article 1 with a definition of “Landscape”:

*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.*

The perception by people, the existence of someone who observes from a point, is also the key to the classic definition of landscape.

In this proposal we are dealing with a very specific way to perceive a particular landscape: the section of high speed train AVE track that runs along the industrial area of Santa Maria de Benquerencia in its approach to the world heritage city of Toledo. From the windows of the AVE you see a shooting landscape of industrial buildings and their back yards, currently offering poor vision of junk, carelessness and general dereliction, an inadequate anticipation to travellers approaching a rich and well preserved World Heritage Site.

We propose two catalogues of interventions whose common denominator is simplicity. It is a collection of targeted, light interventions, requiring minimal investment.



*Figure 2: A view of Benquerencia Industrial Estate from the high-speed train, before intervention*

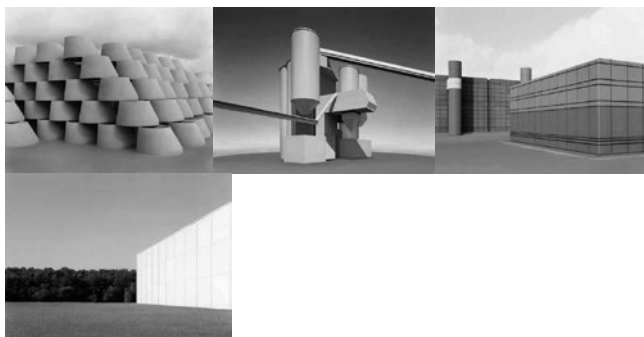
### **Productive landscapes**

We do not wish to hide the industrial and economic activity of the Estate. As with the fields and orchards, whose beauty is in the care, precision and attention with which they are worked upon, also the industrial landscape can be beautiful, if treated with the same care, precision and attention.

Proper maintenance, anti-rust paint, careful storage of materials in the work yards, does not only build the beautiful scenery that we seek, but contribute to the economic activity itself, ensuring the durability of equipment, and the effectiveness of management.

### **Artists: Josef Shuls**

We want to keep in mind the work of artists who have worked with the image of industrial landscapes, especially the graphic work by artist Josef Schuls, a reference for our interventions. We want to make sure that the reality will be as close as possible to the beauty of the images he created.



*Figure 3: Images of artwork by Josef Shuls*

## **Two catalogues**

Our proposals are collected in two catalogues:

- Catalogue of good practice;
- Catalogue of interventions.

### *Catalogue of good practice*

We have video-taped the route of the AVE and then we have analysed it frame by frame, observing each and every corner.

Some points are close to that beauty which is our reference in the work of Josef Schulz. These points we have endorsed as good practice.

On the other hand, other points are far removed from that care, precision and attention we seek, and these have also been identified as bad practice.

Then, we proposed how to transform those examples of bad practice by applying the criteria of good practice.



*Figure 4: Captions of the videotape*

### *Catalogue of interventions*

In the second catalogue we propose new interventions, not referenced to existing practices, aiming towards a unified perception of this landscape, emphasising

the higher moments of heroism, with particular attention to the elements related to sustainability, especially Renewable Energy and Water Treatment.

## **Interventions**

### *Pink*

All metal elements that are visible from the train shall be painted in a distinctive colour. We propose fuchsia pink. This intervention has three major strengths: it relates to the catalogue of best practice by requiring proper maintenance of these elements; it provides an identity to the industrial zone with targeted interventions and limited budget; it reinforces the strobe effect of the AVE, pulsating a succession of splashes of the same colour, which remains on the retina when passing at high speed.



*Figure 5: Metal elements painted pink.*

### *Renewable energy*

The new renewable energy collectors to be implanted shall have an iconic character. They will be placed ensuring its visibility and building a heroic image. As an example, we propose to replicate a photovoltaic solar panel swivel that already exists in the estate, placing similar panels elsewhere. Naturally, the

metallic elements will also respond to the intervention “pink”, and the whole may well be subject to the intervention “spotlight”.



*Figure 6: A photovoltaic solar panel swivel, painted pink*

### *Inflatable*

All commercial signs will be inflatable. This ordinance would be equivalent to those governing sign posting in historic areas, but instead of forcing an older image (iron forging, scrolls) it requires a light image, mutable and contemporary.

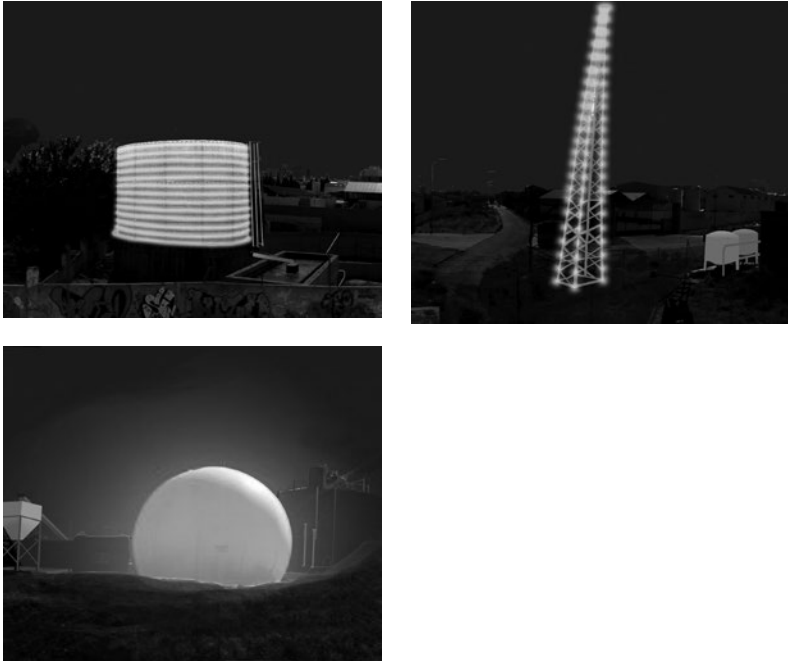


*Figure 7: The inflatable signs*

### *Spotlight*

Taking advantage of low-peak hours of consumption of renewable energy, which coincide with trains approaching in dusk and twilight, we propose a light intervention with spotlights, limited in time to the passage of AVE and controlled by presence sensors.

Thus, the iconic elements, especially those related to water purification and renewable energy production, become a visual reference to the passage of the first and last trains of the day.



*Figure 8: Spotlight interventions*

## **Landscape restoration of a river Arga meander in Navarra, Spain**

**Mr Fernando MAGDALENO MAS**

*Area of Environmental Engineering, CEDEX, Ministry of Public Works*

**Mr Roberto MARTÍNEZ**

*Ministry of the Environment and Rural and Marine Affairs*

### **Background**

The ecological and landscape restoration of the river Arga meanders is being fulfilled by the Government of Navarra, with the collaboration of other water agents, and the technical assistance of CEDEX, a research and development organism dependent on the Spanish ministries of Public Works and Environment and Rural and Marine Affairs.

In 2008, thanks to an agreement between the Government of Navarra, the public society “*Gestión Ambiental, Viveros y Repoblaciones de Navarra*” - (GAVRN) and the Councils of Mendigorria and Mañeru, one of the largest non-active meanders of the Arga river system was spotted as preferential for hydrological, ecological and landscape restoration. In 2009, the process of restoration was initiated with a specific agreement with CEDEX for the design and planning of the restoration actions, in the framework of the European Union Project Interreg IIIa GIRE for the “Integral Management of European Rivers (IMER)”. The implementation of the project was directly assumed by the Department of Rural Development and Environment of the Government of Navarra.

### **Study area characterisation**

The Arga River is a tributary of the Aragón River, one of the main channels in North East Spain. It is entirely integrated in the Ebro basin, and it flows along the region of Navarra. The middle reach of the Arga River is characterised for being a low-gradient, free-meandering channel inside a wide floodplain. Its average annual volume in its confluence with the Aragón River reaches 1.450 hm<sup>3</sup>. In the study area, the Arga River is a natural (thus changing) limit between the towns of Mendigorria and Mañeru (Figure 1).



Figure 1: Situation of the study area (red-coloured zone) in NE Spain

The ecological values of the Arga river system will be summarised afterwards, but there are also cultural, historical and recreational values in the study area that should be highlighted. The Way of St. James crosses the town of Mañeru, and keeps very close to the project area. Also in the proximities of this area other remarkable historical sites may be found. The roman city of Andelos, surrounded by an astonishing hydraulic complex (double reservoir and conductions) is only 2 km far from the project area. The Artajona walls and the medieval bridge of Puente La Reina are, at the time, sound sites that conform a unique network of environmental and cultural values along the shire (Figure 2).

The non-active meander occupies ca. 22 ha, and was disconnected some decades ago, due to the natural river dynamics, but also as a consequence of the incision of the Arga main channel, after the channelisation of its lower reach in the 60's and 70's. For years, the meander has been occupied by agricultural and forest land uses, of scarce efficiency. Despite its long-lasting disconnection, the paleo-channels of the meander keep important environmental values, associate to the riparian forests (composed of willows, poplars, ash woods and elms), and to the fauna habitats. Protected and high-sensitive fauna species, such as the European mink, and different birds of prey use temporally this area.



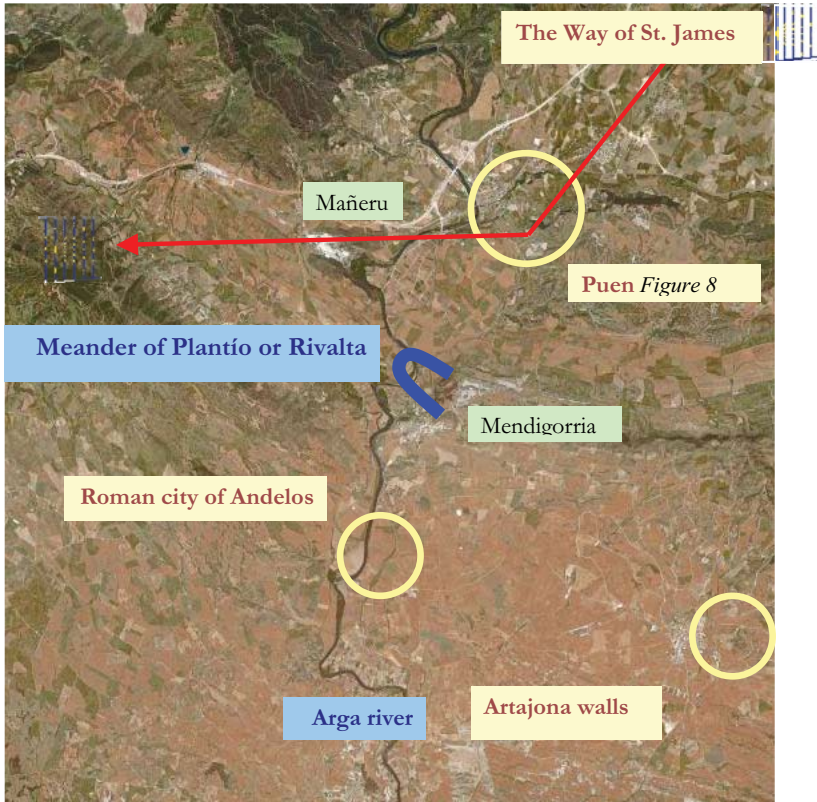
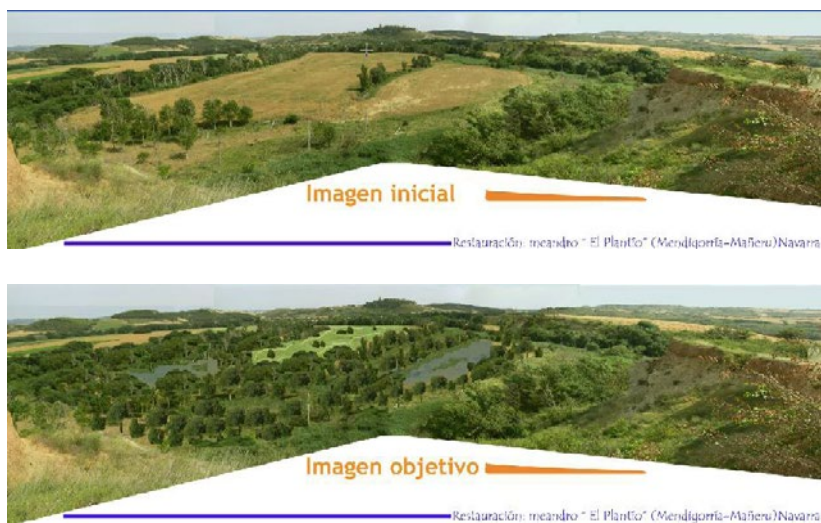


Figure 2: Network of ecological and historical values in the study area

### Project targets

The main target of the Project is the ecological and landscape restoration and protection of flood-prone areas in the mid-lower reach of Arga River (Figure3). This would be conducted through (i) the recuperation of the longitudinal connectivity of the river system, (ii) the increase of the lateral connectivity of the river channel and further connection with its floodplain and (iii) the improvement of the vertical connectivity of the river channel with the environment.



*Figure 3: Pre- and post-restoration reference images in the project area*

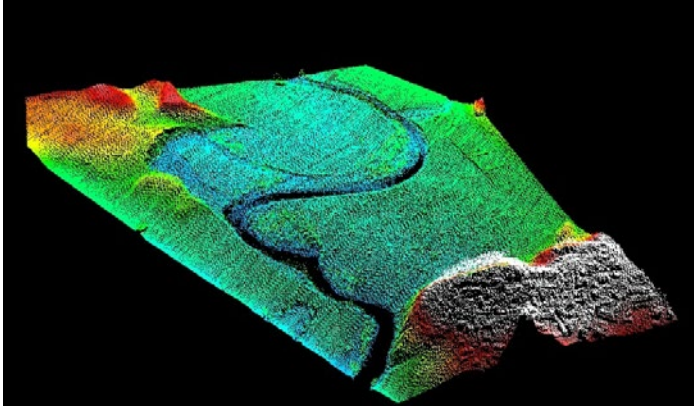
The specific targets of the project are those listed below:

- ecological and landscape restoration of one of the largest non-active Arga River meanders;
- conservation and habitats improvement for protected species (European mink, birds of prey);
- improvement of riparian forests as biodiversity corridors and fauna and flora refuges;
- hydrologic reconnection of Arga River with the non-active meander;
- planning and improvement of public use in the river environment;
- diffusion of social, cultural and environmental values of the interaction between the river system and the towns along the river.

### **Restoration process**

The restoration process was initiated with the development of diverse hydrogeomorphological, ecological and landscape analyses of the study area.

Some of these were fulfilled with LiDAR data, specifically captured for this project (Figure 4).



*Figure 4: Digital terrain model and digital surface model from LiDAR data*

After the base analyses, and facing the planning of strategic guidelines, a previous participatory process was conducted in the closest towns. The target was two-fold: incorporate the suggestions of the local agents to the project from the initial phases, and integrate the local communities in its genesis and implementation (Figure 5).



*Figure 5: Some images of the participatory public process developed along the restoration process*

The restoration design included a first distribution of zones and objectives, and the utilisation of different restoration techniques, in order to reach the ecological

and landscape targets of the project. Thus, zones of maximum protection, of transitional character and of public use were selected, and a wide range of techniques adopted to fulfil the afore-mentioned aims (figure 6).

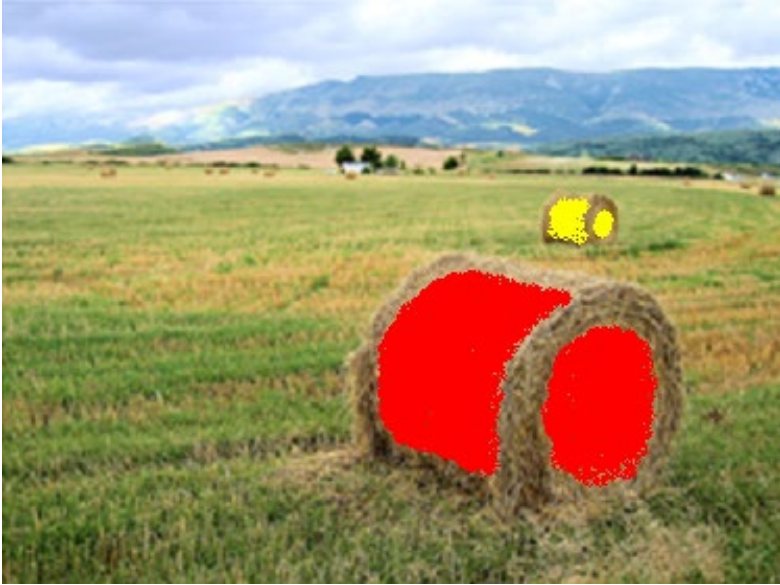


Figure 6: Restoration design zoning of the landscape integration project

The implementation of the project has been realised in 2009-2010 (Figure 8). The restoration of the micro-topography of the meander has been fulfilled, including the recuperation of non-active paleo-channels, the construction of preferential habitats for protected fauna, the elimination of alien species and the reforestation of the reference patchy riparian forests. From the end of the works, two ordinary floods have flooded the meander, proving the success of the hydrological reconnection developed.

The reforestation actions have been based on traditional plantations, but also in the utilisation of bioengineering techniques in the most critical areas. Only local, native species have been used in the reforestation.

Only 4% of the project area will be modified to sustain public use activities. These will be based on the construction of cultural itineraries that connect the now-dynamic meander with the most remarkable historical sites, the construction of informative panels and the preparation of interpretative areas as high-interest landscape sites.



*Figure 7: Restoration design zoning of the landscape integration project*

After the final implementation of the works, a monitoring programme is going to be conducted. This will last eight years, and it will include a thorough geomorphologic analysis of the meander evolution, and the subsequent changes of fauna and flora communities. Also the project will be linked to new restoration programmes, planned as part of the Arga floodplain restoration.



*Figure 8: Post-restoration panoramic view*

## **Conclusions**

The project has been designed as a participatory public process. This has allowed the change of land use from agricultural to a strictly fluvial use,

including ecological and landscape restoration techniques that now reconnect the main environmental and cultural values of the area. The integration of water and public agents from the initial steps has also improved the development of the design and implementation phases. The monitoring programme will give further instruction about the effective success of the restoration process in the medium and long term.

## **Inclusive design of the local road**

### **Mr Valentín ACEÑA RAMOS**

*Head of the Technical Office of Planning and Implementation of Infrastructures, Council of Barcelona, Spain*

### **Mr Diego FERNANDEZ BELMONTE**

*Consultant, Spain*

### **Mr Vicente IZQUIERDO CAMÓN**

*Head of the Service of Local Roads, Department of Infrastructures, Urbanism and Housing, Council of Barcelona, Spain*

## **Introduction**

Faced with the challenges and opportunities originated by the current situation of the local road network, the Barcelona Provincial Council has promoted the review of the principles governing the management of local roads and integrated them into an innovative vision. This vision is rooted in the conviction that any action on the local road network will be acceptable only if it is able to improve in a balanced way the service provided to people and territory. It is therefore necessary that such actions keep correspondence with the current use that people make of infrastructures, both in its more evident aspects and in its smaller details.

Accordingly, the planning and management of local roads should be undertaken in a comprehensive way, able to reflect on their role in the territory, the environment and the rest of the road network, and capable of combining the efforts of different administrations with the clear purpose of serving better all its users. To implement this new vision on the management of the local road network the Barcelona Provincial Council has defined specific Programmes, establishing the objectives and principles that should guide action on the local road network.

The objective of the following sections is to present a highlight of the Programmes and actions that are being currently implemented by the Barcelona Provincial Council, providing relevant examples of the outputs achieved so far.

## **Local road network programmes**

The common characteristic of the Programmes implemented is their focus on the maintenance and improvement of the elements related to the local road network, looking for the best user experience, the highest road safety and the respect of environmental conditions. Six Programmes have been defined:

- *Planning and modelling programme*, aimed at developing tools that allow the comprehensive planning of the local road network;
- *Road improvement programme*, which deals with the improvement of the local road network in view of its role in the overall road system;
- *Integration into the environment programme*, to improve the relation between the local road network and the environment it crosses, particularly in the case of population centres;
- *Road safety programme*, aimed at reducing accidents and improving safety for all users;
- *Intermodality and multimodality programme*, to improve and develop specific infrastructure to encourage sustainable transport modes and their intermodality with public transport;
- *Local and municipal roads support programme*, aimed at developing tools for the planning and management of municipal roads, on request of municipalities.

### **Planning and modelling programme**

The new approach to the local road network requires the implementation of a comprehensive vision on local roads and their management, able to contribute to the development of more sustainable territorial models and able to ensure a high degree of consistency between the interventions carried on the local road network and the regional and urban planning. In order to achieve this goal, the Planning and Modelling Programme develops specific tools for the integrated planning of the local network in harmony with the rest of the territorial system.

Its main outputs are the development of a traffic model of the road network, which is already in place, and the production of the Local Road Network Provincial Plan, which is on its way.

#### *Traffic model of the road network*

The Barcelona Provincial Council has developed its own traffic simulation model (TransMobal ® – see Figure 1), as a basic tool for analysing and making decisions on future actions on the local road network. The model takes into account the diversity of roads present in the Barcelona Province (main network, intermediate network and main urban network) and incorporates the forecasts of Urban Mobility Plans (PMU), Territorial Plans and Transport Plans.





*Figure 1: Transmoba model*

The traffic simulation studies obtained from the model have been used so far to support the planning of the future road network, to assess the impact of specific circumstances on the network, to identify bottlenecks and specific points for action or to improve the present design of the infrastructure. Furthermore, the traffic model has an important role in building support from other Local Administrations, as it is able to show the effects that changes in the road network have on local accesses.

### *Road improvement programme*

The objective of the road improvement programme is to develop the local road network, ensuring the harmonious and progressive connection with the main road network, the intermediate network and the territory. Its main outputs are the improvement of routes, junctions and bridges of the local road network.

### **Route improvement**

Due to the traditionally limited investment in the local road network with respect to other networks, today there are a number of shortcomings in the geometry of the infrastructure that must be corrected (radii, slopes, width and other cross section elements).

The road improvement programme includes interventions on the local road network in order to improve the geometric characteristics of specific road

sections and homogenise the whole itinerary. Priority is given to actions on sections that could represent a safety problem because of their poor geometry, like an extremely narrow platform or dangerous curves.



*Figure 2: Route improvement in C-153 road*

An example of action is provided by the improvement of safety conditions in road C-153 between Roda de Ter and Masies de Roda (Figure 2). In this case, the previous width of 5.50 m was upgraded to 6.50 m, minimum standard for the whole itinerary. Furthermore, the whole section was equipped with a concrete ditch that provides additional space for the crossing of heavy vehicles.

### **Junction improvement**

Similarly to other elements of the local road network, intersections also present heterogeneity in their geometric characteristics, as a consequence of the long historical process in which they were generated. The Road Improvement Programme includes actions to change the geometry of intersections with the aim of improving traffic safety and ensuring high standards of quality, comfort and integration into the environment. In the case of intersections where confluent roads belong to different administrations, actions have been focused on the provision of homogeneous and comprehensive design criteria.

A first example of these actions is offered by the construction of a new roundabout on the road BV-1433 directed to Les Franqueses del Vallès. In this case the new design (Figure 3) succeeded in improving the capacity of the intersection as well as road safety, since the previous design consisted of two opposed «T» unable to support the high traffic that occurred at peak-hours.



*Figure 3: Junction improvement in road BV-1433*

A second example is provided by the new roundabout at the junction of roads BV-1221 and BV-1275 in the municipality of Terrassa. In the situation prior to action, road BV-1221 was connected to the road BV-1275 through a very long straight section followed by a “T” intersection. This design encouraged an excessive approaching speed of vehicles and was not suitable for high traffic volumes, causing congestion problems.

The construction of the new roundabout with three branches, together with the improvement of the access to the junction from two minor roads, managed to increase capacity and improve safety conditions in the intersection, reducing the vehicle speed and securing the access from the two minor roads (Figure 4). Additionally, the action was also used to improve urbanisation and mobility in the area through the creation of routes for pedestrians and / or cyclists, the enhancement of bus stops and the construction of side roads to access nearby residential areas.



*Figure 4: Junction improvement in roads BV-1221 and BV-1275*

## **Bridge improvement**

In a similar way to intersections, bridges are singular points of the network that present different types of shortcomings. In some cases, bridges present structural deficiencies that need to be repaired to ensure their function. In other cases, some elements of the superstructure (i.e. contentions) do not meet current regulations, and need to be replaced. In addition to their general functionality, the bridges adjoining urban areas must ensure the safe movement of pedestrians, improving the quality of public space and the landscape and visual integration of the structure.

An example of this type of action is offered by the enhancement of the bridge over the Cardener River at Callús (road BV-3003). Initially the bridge did not have the width necessary in order to accommodate a safe and functional walkway for pedestrians. Furthermore the bridge did not allow the widening through a reform of the existing structure. The situation tended to worsen as the residential sectors in the left margin of Cardener were consolidating.



*Figure 5: Bridge over the Cardener River at Callús*

The action consisted in the construction of a footbridge attached to the current road bridge, allowing the connection of the neighbourhoods on both sides through a safe pedestrian route (Figure 5). The bridge incorporates a balcony in the central section as its most significant element. The result of the intervention has reached a high aesthetic quality, acting as a catalyst for the improvement of the surrounding environment.

Another example of action is provided by the widening and urban development of the bridge over the Torrent de l'Illa at El Bruc (BV-1104). The former bridge connected the towns of El Bruc de Baix and El Bruc de la Parroquia without adequate safety conditions for pedestrians, as it was quite narrow. The bridge was widened to have a segregated pedestrian sidewalk, while its urban elements and equipment were improved, including a contention in corten steel (Figure 6).



*Figure 6: Bridge over the Torrent de l'Illa at El Bruc*

### **Road Safety Programme**

The road safety programme is devoted to the improvement of safety conditions for all users and transport modes that interact with the local road network. Its main outputs are the conservation and winter maintenance of the network, the treatment of High Accident Concentration Sections (TCA) and High Accident Risk Routes (IARA) and the introduction of speed reducing elements.

#### **Conservation and winter maintenance**

The Barcelona Provincial Council has to deal regularly with episodes of snow that can affect the movement of vehicles if they are not treated correctly. Problems arise due to the accumulation of snow, ice sheets or other incidents linked to winter conditions (falling trees and branches, landslides, breaking of the firm, etc.).

Preventive actions begin after receiving weather warnings alerting the risk of snow, avalanches or low temperatures. Thereafter maintenance teams are mobilised and dedicated to salting the roads to avoid the formation of ice sheets and to hamper the accumulation of snow. There are some points of the

network where the low temperatures require the continuous provision of salt during the winter season.

In cases of significant snowfall, the maintenance teams remove the snow accumulated on the road to allow the flow of traffic. This task is accomplished with specialised trucks, snowploughs and other auxiliary machinery (Figure 7). The work is done according to the action plans established for every conservation sector. In those areas where avalanche risk is significant, work is generally postponed until safety conditions are appropriate.



*Figure 7: Conservation and winter maintenance*

### **Treatment of TCA and IARA**

Traffic accidents still represent a widespread problem with high social and economic impacts in developed countries. The Barcelona Provincial Council periodically produces Road Safety Studies based on the data provided by the Accident Statistical Reports of the Catalan Traffic Service. Their main goal is to identify High Accident Concentration Sections (TCA) defined as sections with a fixed length of 1 km that concentrate a relevant number of accidents and High Accident Risk Routes (IARA) defined as itineraries longer than 1 km that concentrate a relevant number of accidents.

In a first moment, the treatment of TCA and IARA is done through low-cost actions as signalling, vertical and horizontal marking and installation of new

bridge contentions. If these actions seem inadequate to ensure road safety, then far-reaching interventions are programmed and carried out.

### *Speed reducing elements*

The presence of different types of users in the urban sections of the local road network is likely to produce a higher number of accidents. These accidents are generally caused by an inadequate speed of vehicles and often involve pedestrians as victims. In order to reduce this accident risk in urban roads, the Road Safety Programme incorporates the setting up of speed-reducing elements as a strategic action.

These speed-reducers are aimed at moderating the speed of vehicles that pass through urban and suburban road sections, ensuring the safety of its more vulnerable users, like pedestrians. The Barcelona Provincial Council has equipped various urban sections of the local road network with different types of speed-reducers (Figure 8).



*Figure 8: Speed reducers in the local road network*

### **Intermodality and multimodality programme**

The specific nature of local roads provides them with a multi-user functionality. On them it is possible to find all sorts of vehicles, public transport, cyclists and pedestrians, although these many users have probably not been taken into account in the infrastructure's design.

In line with this vision, the intermodality and multimodality programme has been defined to improve the coexistence of the different users of the network.

It is specifically oriented to apply design criteria that take into account the functional needs and safety of the different transport modes, to improve access conditions to public transport and to provide specific spaces for pedestrians and cyclists. Its main outputs are the improvement of the access to bus stops and the implementation of pedestrian and cyclist routes.

### **Access to bus stops**

The Barcelona Provincial Council has inventoried 727 bus stations adjacent to the local road network, either in urban, suburban or rural environments. In many of them, especially in those bus stops located outside urban areas, the conditions of accessibility, safety and comfort need to be improved. A specific plan has been put into place and several actions have already been carried out.



*Figure 9: Improvement of bus stops in road BV-5022*

A significant example of this activity is provided by the improvements performed in the bus stops lining the road BV-5022 at Cabrils. They have been undertaken with the goal of urbanising the access and the environment of the bus stops and improving the safety of road users, with the ultimate purpose of increasing the quota of public transport. The works in Cabrils included the construction of new sidewalks in the margins of the road and the implementation of a pedestrian crossing with traffic lights to allow a safe crossing of the road. As well, a space for the manoeuvre of buses has been put into place (Figure 9).



## **Pedestrians and cyclists**

The Barcelona Provincial Council is promoting the construction of segregated spaces in the local road network to fulfil the demands arising from specific users, like cyclists and pedestrians. The characteristics of the local road network, closer to the territory, allow a greater mix of transport modes.



*Figure 10: Segregated lanes in road BV-1248*

A significant example can be found by the action performed in road BV-1248 in Sabadell, one of the most singular executions made in recent years by the Barcelona Provincial Council. The new design consists of a segregated lane of about three km long sided by a pedestrian walk which are both 3.5 metres wide (Figure 10). The urban furniture installed includes fountains, playgrounds, benches, lighting and other services.

## **Integration into the environment programme**

The integration into the environment programme promotes the integration of local roads that cross sensitive environments, as natural or urban areas, ensuring access conditions and enhancing the economic and social development of the traversed areas. Its main outputs include rest areas, urban crossings and the improvement of green areas.

## **A network of rest areas**

Infrastructures are a major engine for the transformation of the territory, as well as the main point of access to the landscape. The Barcelona Provincial Council

promotes the creation of a network of rest areas in connection with the local road network, using singular points on its margins. This initiative, rooted in the scenic potential of local roads, is intended to recover the traditional value of road trips, spotted by several «stops along the way», that encouraged the relationship, the business activity and the exchange with the traversed environment. Additionally, it tries to create spaces to stop, get informed or stay, that present a great potential for synergies with other initiatives, either institutional or private.



*Figure 11: Rest areas in the local road network*

The design principles followed in these areas are those of identification and integration. On the one side, the design criteria to be adopted should be applicable to the entire local road network, making them easily identifiable. Accordingly, all the selected viewpoints should meet some minimum requirements and respond to a common philosophy for the rest space. On the other side, all of them should be responsive to the specific areas in which they are located, being respectful with the sensitive environment that surrounds them (Figure 11).

### **Improvement of urban crossings**

The improvement of urban crossings pursues the objective of developing or redeveloping urban areas next to local roads in order to increase safety. Additionally, the actions on urban crossings allow the enhancement of the urban space quality, the development or redevelopment of urban areas next to local roads, the implementation of mobility management measures, the rationalisation of network services and the elimination of previous barriers.



*Figure 12: Urban crossing in Badalona (before and after action)*

An example of this type of action can be found in the works performed on Calle Independencia in Badalona (BV-5011). Prior to action, there existed several design deficiencies such as lack of a clear and safe route for pedestrians on the sidewalks because of the constant variations in the width of the section and the disordered arrangement of street furniture.

The improvements made were aimed at integrating the former suburban road into the present urban tissue. The sidewalks were enlarged, modifying the previous alignments, and the architectural barriers removed in compliance with the Accessibility Code. The action included the construction of two new pedestrian crossings, the improvement of urban elements, the replacement of street furniture and the construction of new drains to collect rainwater.



*Figure 13: Urban crossing in Sant Llorenç Savall*

In the case of the old urban crossing of San Llorenç Savall there was no treatment for integration of the road within the town (Plaza Mayor). Vehicles drove at high speed on a steep stretch and pedestrians lacked full-visibility when crossing the road, leading to a high accident risk, especially for the most vulnerable users: children and the elderly. The intervention raised the road pavement to the level of the sidewalks on a stretch of 400 m, forcing the oncoming vehicles to pass a significant step and therefore reduce speed.

*Improvement of the green environment*

In a large share of the local road network, road margins have not been subject to any special treatment and they tend to be colonised by invasive vegetation. This fact contributes to the poor conservation of the margins and to their degradation as it encourages road users to throw litter. To avoid this situation, the Barcelona City Council undertakes improvement actions intended to clean the green environment and the landscaping areas annexed to the roads, increasing the quality of the environment and the preservation of the margins. This objective is usually achieved through the introduction of native shrub or tree species with low water demand and requiring low maintenance, a drip irrigation system and a green cover (through hydroseeding).

The action on the margins of the BV-2005 in the section next to St. Vincenç dels Horts is an example of an application of these general design criteria. Here the work included cleaning the land, enhancing the physical and biological condition of the soil, planting trees, shrubs and hydroseeding, and implementing an irrigation system.



*Figure 14: Margins of road BV-2005*

## Local and municipal road support programme

The local and municipal road support programme is devoted to strengthening the unified management and sharing the investment in the local and municipal road network. It facilitates arrangements to promote a more effective management of infrastructure and improves the economic cooperation with other Local Administrations. Its main outputs are the Municipal Road Plans and the Urban Mobility Studies.

### Municipal road plans

In the current situation there are different factors that hinder the improvement of the municipal road network: the lack of a comprehensive legal framework, the absence of rigorous inventory and planning tools, an unclear ownership scheme (as they may be public or private) and budgetary constraints. For this reason, the Barcelona Provincial Council has developed different lines of work related to the improvement of municipal roads, as some of them are functionally behaving as local roads.

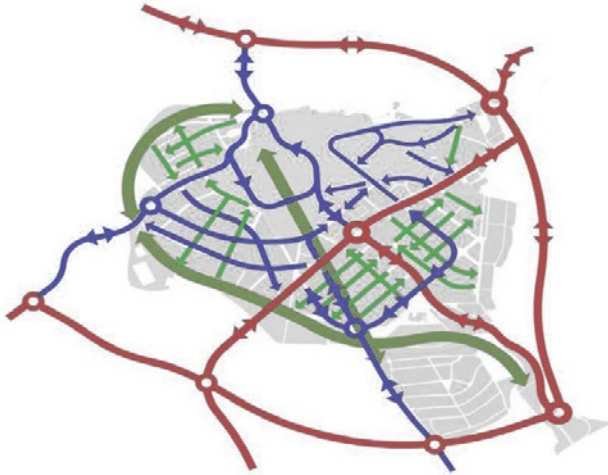
The main action carried out to improve the municipal road network includes the production of plans for those municipal roads considered as of territorial interest. These plans inventory and characterise the current state of the municipal roads, define proposals for their improvement and establish a prioritisation of the investments (Figure 15). The plans also take into account the maintenance costs of the network and ease the search of financing for the County and City Councils.



Figure 15: Example of diagnostic for a municipal road

### **Mobility studies**

The urban mobility plans and studies are the main tool of municipalities to meet the new demands for a sustainable and safe mobility. The Barcelona Provincial Council supports the elaboration of these instruments of local government, either in the cases where municipalities are obliged to produce them by law (plan) or when they are not compulsory (study).



*Figure 16: Street hierarchy. Mobility Urban Plan*

To study the mobility of the municipality, the Urban Mobility Plans develop five key areas: pedestrians, bicycle, public transport, private vehicle and freight transport. Its main objectives are to minimise energy consumption, to reduce the emissions of air pollutants, to improve the quality of the acoustic environment, to reduce and optimise the use of public space by private vehicles and to reduce the accidents due to mobility (Figure 16).

The Barcelona Provincial Council considers local mobility as a strategic field and has subscribed several agreements with the municipalities, with the aim of regulating and improving the outcome of these plans and studies.

## **In transition from steel to concrete: the Villanueva de la Reina bridge (Jaén, 1932)**

**Mrs Teresa SÁNCHEZ LÁZARO**

*GIASA, Public Agency for Infrastructures of Andalusia, Spain*

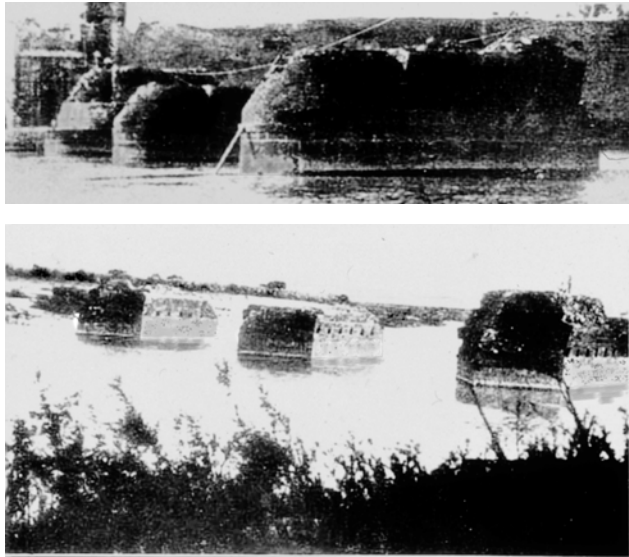
### **Introduction**

The presentation entitled *In transition from steel to concrete: Villanueva de la Reina bridge (Jaén, 1932)* is a summary of a short film made for the Public Works Heritage Research and Promotion Programme of the Regional Ministry of Public Works and Transport of the Andalucía Regional Government. The Public Works Heritage Research and Promotion Programme was undertaken from 2003 to 2009. The idea was to create an information system that offered historical documentation of public works, systematised for fast and easy use. Within the programme, a series of short ten-minute films were made of visits to public works, with specialists who not only had the technical knowledge to interpret the work, but who also had an emotional relationship with the visited works. This ensured that the discourse was technical whilst being comprehensible to the general public.



*Figure 1: Filming the old bridge from the bottom*

Considering that the history of public works is fundamental to understanding the history of the territory and its consequences for the landscape. The episode of *Site Visits* (the name of the series in [www.opandalucia.es](http://www.opandalucia.es)) that appears here is devoted to the crossing of the Guadalquivir River near Villanueva de la Reina (Jaén, Spain). It is related to a road improvement project in Jaén that the Regional Ministry of Public Works and Transport of the Junta de Andalucía started up in 2006. Although it apparently seemed to be a project to replace an old, reinforced-concrete bridge with another new construction, things became complicated when the consultants were met with a quite indefinable bridge from 1932, with its foundations in piles of possible Roman origin.



*Figure 2: Photographs of the old piles on which the Villanueva de la Reina bridge were constructed, taken by Antonio Blásques in 1923. See “Excavations in Roman roads: from Seville to Cordoba, by Antequera; from Cordoba to Cástulo, by Epora; from Cordoba to Cástulo, by El Carpio; from Fuente La Higuera to Cartagena, and from Cartagena to Cástulo”, Reports of the Advisory Board on Excavations and Antiquities (Madrid), 59 (1923) [Excavaciones en vías romanas: de Sevilla a Córdoba, por Antequera; de Córdoba a Cástulo, por Epora; de Córdoba a Cástulo, por El Carpio; de Fuente La Higuera a Cartagena, y de Cartagena a Cástulo», Memorias de la Junta Superior de Excavaciones y Antigüedades (Madrid), 59 (1923).]*



The project of improvements to the A-6075 road between Villanueva de la Reina and the A-4 (to the northeast of the province of Jaén, between the localities of Mengíbar and Villanueva de la Reina) would actually affect the old concrete bridge over the Guadalquivir river, located in a place with Roman sites and at which the local community ritually gather together every year. This meant that, if the bridge had historical interest, the location had even more.

Since it was necessary to tackle the project, the Regional Ministry of Public Works and Transport tasked the Public Works Heritage Research and Promotion Programme to make a historical report that would be integrated into the environmental impact assessment. The report was written by the author of this presentation and the expert on pre-stressed reinforced concrete, Ramón del Cuvillo Jiménez. It was the germ of the episode of *Site Visits* on the Villanueva de la Reina bridge.

It would be out of our scope to try and analyse the social meaning of this site but the essential feature is that this bridge is a testimony of the transition from metal bridges to reinforced concrete bridges in Spain. It was planned with a rare type of piling and at a time when no official models of reinforced concrete bridges even existed.

As we made progress in our study, it gradually became clear that the part of the bridge which had true historical interest was the reinforced concrete structure, not the old piles. Those piles are not dated. Some authors maintain that they could be Roman and others relate them to a bridge whose construction began in 1603 next to the hermitage of Santa Potenciana to be abandoned some years later due to lack of economic resources.

The Villanueva de la Reina Bridge has had a long and complex administrative history. It was planned in iron although it was finally constructed in reinforced concrete. The first construction project for the Villanueva de la Reina Bridge was approved in 1909. The bridge was justified on the grounds that the whole region would profit because the road that was going to be constructed would have remain otherwise useless without a bridge over the Guadalquivir. Without a bridge, the Villanueva citizens and its rich countryside on the right bank of the river were forced to make a detour of twenty-five or thirty kilometres to use the bridge at Andújar of the left bank of the river.

This first 1909 project, which was never actually implemented, located the bridge in a meander of the Guadalquivir River where the three old piles were positioned. In addition, the author of the project chose the measurement between the old piles as the span for his eleven sections and proposed that these sections were to be made of metal structures.

At the beginning of the 20th century there were conflicting opinions to be found on the most suitable type and materials for bridge construction. In fact, when the first project for the Villanueva de la Reina bridge was drawn up, it was just after the success of the Véles railway bridge (1907) which had reinforced concrete sections, a new and developing material. It was exactly between the first and second decades of the 20th century when the metallic lattices were transformed and the iron elements were covered with concrete for the important structural spans.



*Figure 3: A view of the old bridge and its mixed nature structure*

In 1917, a new project for the Villanueva de la Reina bridge was drawn up and approved, using the type and materials adopted by Juan Manuel de Safora in Véles (straight reinforced concrete sections), retaining the spans proposed in the first project, and adding another span to the eleven spans planned in the 1909 project.

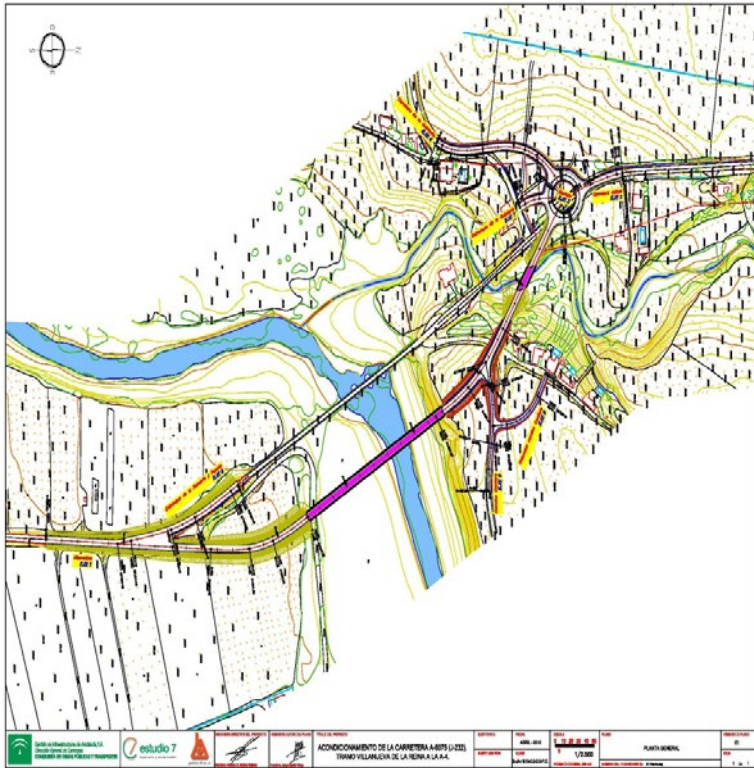
Francisco Navarro y Navarro, the civil engineer and author of the 1917 project, stated in the project report that one of the reasons for the change of materials was the fact that no bidders had come forward for the construction of the metal sections. In addition to this, he was not in favour of iron solutions for road works because of the maintenance cost and because they required a regular and meticulous inspection. Regarding the budget, the reinforced concrete method was cheaper, in spite of adding an extra span.

The new sections, twelve in number, were planned in 1917 in reinforced concrete, with spans of 20 metres. The length of the bridge was 240 metres (a length approximately equal to the line of maximum river flooding) and the structure terminated at each end with masonry supports. The platform had a carriageway of 4.5 metres and elevated walkways of 0.75 metres, which formed part of the resistant section.

With regard to the piles, the 1917 project proposed restoring and repairing the three existing piles in the main channel of the river and constructing a new one which would be the first one in from the support. The remaining piles, or piers, were planned as a framework of linear reinforced concrete sections.

The work began in 1920, but overran due to the general problems of constructing a significant bridge, to which was added the torrential character of the Guadalquivir river, the use of a budding technology, and structural changes proposed indiscriminately by the engineer in charge of the work or by the contractor. The work was finished in 1928, although it was officially opened to traffic in 1932.

It is not easy to find similar road bridges in service, albeit limited. The piers, considered then to be hydraulically superior to those constructed in the factory, were used, in some cases, as supports, but it is difficult to find them in use today. Among other possible examples are the bridges on the River Perales, the Escalante Bridge or the support of the Ormaistegi railway bridge. In addition, the important change in the structural composition of the openwork beams and the transformation of the framework was decisively evolved from the iron structures of the 19th century to that of reinforced concrete, a combined composition.



*Figure 4: Final Project for a new bridge next to the present Villanueva de la Reina Bridge in April 2010*

The 1917 project of the Villanueva de la Reina Bridge was innovative, in the way the work was adapted to the new materials during its construction. In spite of its confused administrative history, the work was singular in its magnitude and appearance and an example of technological advances.

An inspection made in 1989 verified that the structure presented flaws that could jeopardise the stability of the bridge, in a relatively short period of time, which is why circulation was restricted to vehicles with an authorised maximum weight of 16 tons until it was repaired. In 1990, a reinforcement project was approved that consisted of cleaning the structure, the

regeneration of the deteriorated concrete, and the reinforcement of those elements that required it.

In June 2006, the Directorate General of Roads of the Junta de Andalusia began an improvement project for the A-6075 road within the environs of the Villanueva de la Reina Bridge, and that, as was mentioned before, was the origin of the historical study of the bridge.

The first improvement of the A-6075 project, drawn up in 2007, included the improvement of 860 metres of road and a new bridge of 200 metres in length. This, it was proposed, would be located in an almost tangential position with respect to the old bridge, so that the new bridge would be constructed with the left support at 23 metres from the old bridge and the right support at two metres. This project has been improved and, at the present time, the location and dimensions of the new bridge on the Guadalquivir show more consideration for the old structure. The new work will be at seventy metres from the old construction and parallel with it.



# **STUDY VISITS / VISITES D'ÉTUDES**

## **The historic quarter of Córdoba and the landscape mosaic of the Guadalquivir valley between Córdoba and Almodóvar del Río**

**Mr Martín TORRES MÁRQUES**

*University of Córdoba, Department of Geography and Sciences of the Territory, Spain*

**Mr Alfonso MULERO MENDIGORRI**

*University of Córdoba, Department of Geography and Sciences of the Territory, Spain*

### **Introduction**

The aim of this session is to observe the current landscape configuration and the evolution of the historic urban area of the city of Córdoba, the recent expansion of its outskirts, as well as natural, economic and urban variables that affect the geography of the Guadalquivir Valley, located in the natural region of the Depression of the same name, and in contact with the foothills of the Sierra Morena mountain massif.

The natural conditions of the city's urban position, together with human exploitation, as well as its evolution over the centuries, have configured a river corridor, flanked by Sierra Morena, to the north, and the waving shapes of the Córdoba countryside, to the south, with a long history of anthropic-natural relations. Understanding the landscape as the result of continuously changing evolutionary dialectics, under the dynamics of symbiotic and predatory relations, our trip around the urban area of Córdoba and the west of the municipality, will allow us to contemplate the current outcome of an extraordinarily complex landscape, subject to many stresses and which juxtaposes a wide variety of uses and exploitations competing for the land and other resources. This translates into a true mosaic comprised of multiple tesserae, where the past and the present meet.



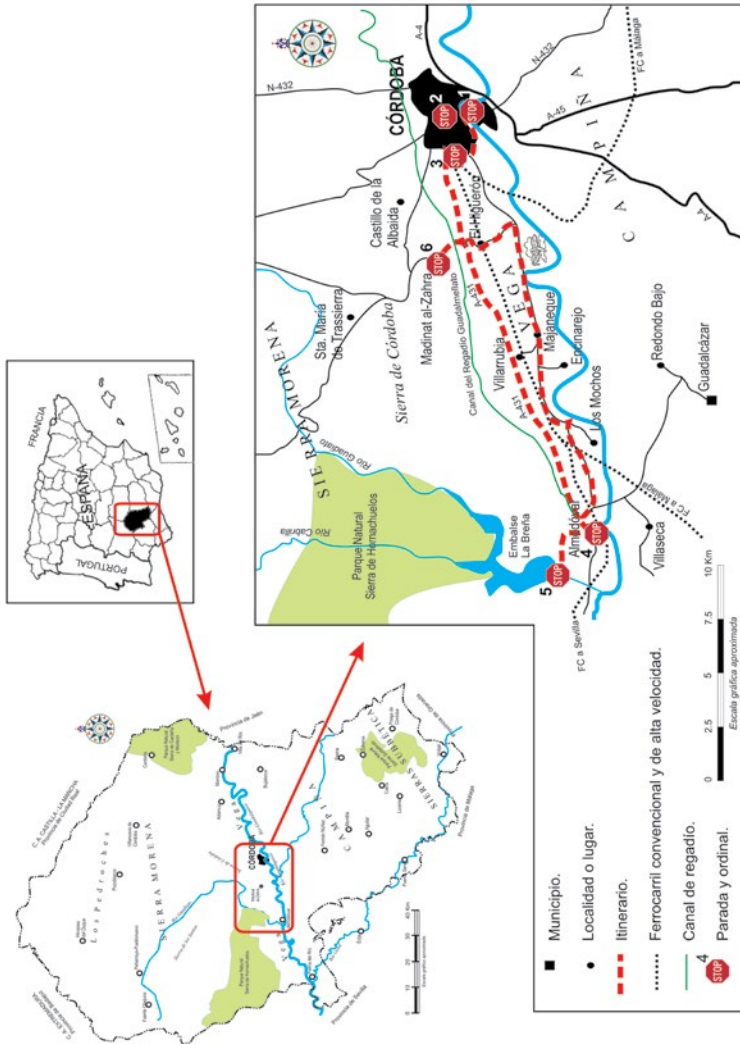


Figure 1: General outline

### ***Roman Bridge. Córdoba and its relationship with the Guadalquivir***

Thousands of years before Claudius Marcellus initiated the official Roman foundation of the city, Paleolithic, Neolithic, Chalcolithic, Eneolithic and Pre-Roman communities, as a result of practical experience and observation of the landscape as a source of resources, discovered the natural and strategic values of the Guadalquivir river banks. It was these first settlers, much before the arrival of Roman legions, who, intuitively, imagined the city that stands today, as so many others around the world, by the waters of the great river in the Spanish south, which has served as inspiration for poets and has truly shaped the landscape with its lowlands and terraces, the backbone of historic and modern Andalusia, and even an essential element to understand the traditions and the spirit of inland Andalusia. In short, Córdoba, the Córdoba of the past and the Córdoba of today, owes its origin to the presence of the Guadalquivir river. The first stable settlement, thousands of years before our Era, was located in what is now known as the Colina de los Quemados [Hill of the Burnt], upon a mound next to the river, close enough to make use of its benefits, and at a prudent enough distance and height to be protected from its sharp rises.

The Roman civilisation, experts in practical observation and masters of land use, imagined a large city supported by the thousand-year-old existence of the settlement on the Colina de los Quemados. They laid out a broad open area at some distance from the Pre-Roman hamlet, upon a river terrace which, although near the course, was also protected from floods by its height. This led to the official foundation of the *urbs quadrata* of Corduba, a place of “civilisation” that was fated to be a city-bridge, city-fortress, city-port and political-economic hub of the south of the old Hispania (García Verdugo, F. R; Martín López, C, 1995, 420). The Guadalquivir is therefore the birthplace that justifies the remote location of the city, reinforcing this relationship throughout the Middle Ages and the Modern Age thanks to the preindustrial development of its riverbanks and bed, favoured with a significant water level and the driving force of its movement.

### ***Historic World Heritage City***

The formerly walled enclosure of the “villa” of “high city” of Córdoba, whose perimeter, following the destruction of the first foundation and Republican city in the 1st Century BC, was already defined by the orderly

city planning of the Roman Empire. The passing of the centuries shall lead us to the complex and organic Spanish-Muslim city of the High Middle Ages, and the low-medieval and modern changes of Christian origin that still exist today, bearing witness to the sum of all the various visions of urban life.

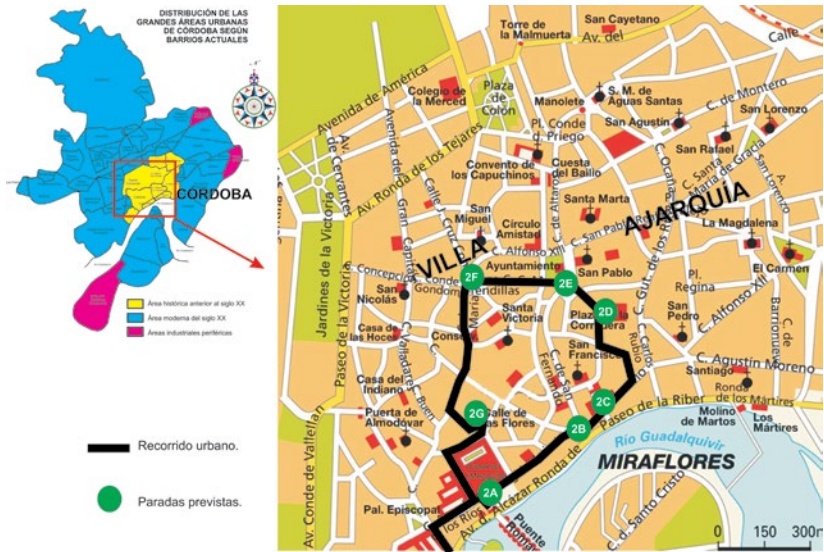


Figure 2: Details of Córdoba's current historic quarter

**Plaza del Triunfo or Puerta del Puente:** Expression of the physical relationship comprising the natural substratum of the city location and its development with relation to the course of the Guadalquivir and its bridge, as well as a definition of the urban ennobling due to the high-medieval placement of the political, religious and economic hub around a complex comprised of the Andalusí palace, the old mosque and the adjoining market area. An urban nucleus of power that shifted the centrality of the former *urbs quadrata* of the Roman city.

**Crus del Rastro:** the commercial and demographic expansion of the Islamic city in the 10th Century, was translated in urban terms into the development of an extension in the outskirts towards the west of the old classic city, forming the expansion known as *Ajarquía*, separated from the high city by a wall, structured around the old farm houses and with three communication axes.

*Plaza del Potro:* going into the old *Ajarquía*, through calle Lucano, we shall find open public squares in the urban weave of the old Islamic city following the reconquest of the city. A good example of these squares, a cultural and literary hallmark of the city of Córdoba, is known as the Plaza del Potro, *ex novo* open space in the 16th Century. The purpose of opening the historic compact urban design of high-medieval tradition was due to the need to provide a wide space for one of the main accesses to the city from the old Madrid road.

*Plaza de la Corredera:* also in the 16th Century, although its execution was notably prolonged in time, began the opening of what was to become the great public square of the city of Córdoba. The Plaza de la Corredera is one of the most emblematic places in the city of Córdoba, with the singularity of being the only rectangular main square in Andalusia, remarkably similar in structure to the well-known main squares of Madrid and Salamanca. It comprises a model of public space inspired by urban ones of the Renaissance and Humanist tradition, conceiving the new public space as the new economic and political centre, specially designed to house political or festive public events.

*Intersection of Claudio Marcelo-Capitulares streets:* back to the urban junction of Villa and Ajarquía, going up to the main terrace of the Guadalquivir through the Claudio Marcelo street, where we shall see the nobility of the remains of the former Roman Temple, placed on the old Roman wall and which, aside from religious purposes, was a spectacular monument which, together with the nearby circus of the former *Corduba Patrician Colony*, welcomed those who arrived along the *Vía Augusta*. This is, therefore, a clear example of landscape invention with monumental and propaganda aims.

*Plaza de las Tendillas:* going up the above Claudio Marcelo street, better known as Calle Nueva or New Street, as it is an intervention on the old quarter carried out during the first third of the 20th Century, we reach the Plaza de las Tendillas. In the current square, around the 14th Century, were the houses of the Order of Calatrava as well as various shops or establishments, a fact which rapidly derived in the toponym *Tendillas de Calatrava*. It was during the 17th and 18th Centuries when this type of establishments flourished. However, over the centuries and with their commercial growth, the reduced open space of this square proved to be insufficient, and in the 19th Century various reform projects were undertaken seeking to align the sides of the

square. The intention was to create a new city centre, recovering the authority centrality of the former Roman *urbs quadrata*. Financial difficulties delayed the project until the early 20th Century, leading to the disappearance of the old Swiss hotel, and the configuration of a bourgeois urban medium, where regionalist architecture prevailed, to be practically completed in 1930.

*Calle de las Flores*: returning towards the course of the Guadalquivir and in the Cathedral complex, we shall access the arboreous streets of the medieval city, which is perfectly seen in the unique and well-known Calle de las Flores. This is an example of traditional *asucaques* or *cul-de-sacs* of high-medieval tradition: closed streets that comprise a landscape of closed perspectives, whitewashed façades close together, and a winding layout, a consequence of an urban development model defined by the non-existence of urban planning. The current look of the street is the result of historicist and heritage reforms carried out in certain places of the historic quarter in the mid-20th Century.

### ***The landscape transformation of Ronda de Poniente***

An inner alternative road in the city of Córdoba, called Ronda de Poniente and Ronda Oeste de Córdoba. Along its layout, of special relevance due to its scenic magnificence in the western periphery of the city, are infrastructures such as the Andalusia Bridge, over the Guadalquivir, the Tunnel of Los Omeyas and the Tunnel of the Almunia. This road connects the A-4 (Madrid-Córdoba-Cádiz), at Arroyo de la Miel, to the Glorieta de la Arrusafilla.

## **Guadalquivir Valley**

Key elements of the territory covered:

### ***Physical elements***

The whole unit has a low altitude (between 170 and 100 m approximately) is flat and slightly sloping towards the course of the Guadalquivir. In summary, it is made up of three essential topographic areas: the foothills of Sierra Morena, that acts as a morphological link between the river terraces and Sierra Morena itself; the river terraces, which are the main element shaping the relief of the west of Córdoba; and finally, the strict alluvial plain or current course of the Guadalquivir.

The climate variables present, in general terms, adequate conditions for Mediterranean-type agriculture, although rainfall is markedly irregular.

Average annual temperature is 17.4 ° C, and average rainfall is about 631 mm, concentrated primarily in the winter months, while the summer months are very hot, which results in a potential evapotranspiration of 927.8 mm/year, emphasising the arid character of the nature unit.

The geomorphological characteristics allow a diversity of hydrogeological situations thanks to the presence of alluvial detritic that extends along the course of the Guadalquivir. In addition to these groundwaters are the surface waters of the Guadalquivir itself, and its mountain tributaries.

It has fertile soil, suitable for agriculture, both due to its mineral content and, especially, its topography which facilitates farming, handling of irrigation water or mechanisation, to which must be added a reasonable defence against erosion thanks to the scarcity of slopes. In general, these soils are not highly evolved on modern sediments, luvisols and fluvisols, where waterlogging is not infrequent due to a lack of natural drainage.

The natural vegetation, as the fauna, today practically gone or highly transformed by man and the rotovating of the area, is limited to the presence of river bank wood along the Guadalquivir, and, of course, the immediate mountain area, where there is a predominance of Mediterranean scrubland and holm oak meadows.

### ***Human elements***

Given the advantages and favourable condition of the physical variables, especially flexible to shaping by human actions, the Vega and Terraces of the Guadalquivir have been intensely transformed by man. Initially, it stands out for being the provincial geographic unit with the highest degree of anthropisation and the most complex juxtaposition of uses and exploitation, ranging from agriculture to the intensive and recent process of rural-urban development. This intense human presence is directly related to the peri-urban character of the area with relation to the city of Córdoba and other nearby villages such as Almodóvar del Río, which, since olden times, has sparked an economic, agricultural, mining and infrastructure interest in the favourable lands of the Vega and Terraces of the Guadalquivir.

*Infrastructure and agricultural uses prior to the 20th Century: cereal and livestock ways and farms:* The natural corridor provided by the Vega of Córdoba, given its topographic and morphological conditions, and historically

strengthened by its proximity to the demographic concentration of the city of Córdoba, resulted in it playing a significant role, since olden times, in the development of land communications between the inside of the Guadalquivir Depression and its Atlantic arch, thereby becoming a natural and human medium suitable for tracing major roads and paths which, naturally, included the Guadalquivir itself.

Together with these communications, the Vega and Terraces of the Guadalquivir witnessed, practically since Roman times, intensive ploughing of the land. This led to an early loss of the ecological values associated to the presence of the Mediterranean or river bank woods which were replaced, at least in the early decades of the 20th Century, by an extensive agricultural system, specialised in exploiting large cereal estates or developing a holm oak meadow landscape for stockbreeding purposes. In a way, a rural medium was developed based on the agricultural exploitation of the land, consolidating a diverse habitat of agricultural, stockbreeding and farms, similar to what existed in the country beyond the Guadalquivir, but with a notable presence of holm oak meadow exploitations half way between the Sierra and its foothills, or on the very banks of the Guadalquivir.

*Exploitation of the subsoil: groundwater and rock mining:* While the land resource of the Vega, either to support communication pathways or for agriculture, experienced an early alteration of its original landscape, the subsoil resources were also of interest and exploited. The presence of groundwater at a depth not too difficult to access favoured, among the traditional drylands, the flourishing since olden times of certain irrigated farms, nearly always small in size and with a meagre use of water. For this, wells with waterwheels were used, as well as the springs that emerged naturally in contact with the terraces of the Guadalquivir or its banks.

The other relevant hypogeal exploitation was the obtaining of mining resources, primarily calcarenites, sands and gravel. Obtaining calcarenite is the oldest mining practice recorded in the western area of Córdoba. Since Roman times, there is archaeological and landscape evidence of open-pit quarries of this raw material which, as well as used to build the walls and buildings of Córdoba, left a permanent mark on the foothills of Sierra Morena, natural and artificial caves which, at times, made up an interesting troglodytic habitat in places such as Cuevas de Artasa.

The mineral exploitation of sands and gravels was activated in the 19th century and remains operative to this date. Its origin in the area is associated to the execution, in the second half of the century, of the layout for the Madrid-Córdoba-Sevilla railway, and it has continued in time until the present, generating open extractions on the terraces or the course itself of the Guadalquivir, which have altered the relief, led to the presence of artificial ponds, impoverished the soil and diminished the agricultural productivity of the Vega. As well as, obviously, having an impact on nature and the visual pollution of the landscape of the Córdoba Vega.

*Planned irrigation in the mid-20th century: irrigation of the Guadalmellato, rise in population, development of stabled livestock and agroindustrialisation:* there is no doubt that agricultural development of the Vega and its use to support communication equipment, was already well established in the first third of the 20th century. Although in the field of extensive and dryland production, the west of Córdoba already presented in the early 20th century a markedly humanised land and landscape organisation and nature variables with a definite scenic regression.

Nonetheless, this process of humanisation was accelerated in the first half of the 20th century due to the implementation of the large irrigation zone of the Guadalmellato (Torres Márques; 2000 and 2009). The direct and indirect consequences of the transformation into irrigation were, in summary:

- in the agricultural setting, there was a transformation of the old cereal and stockbreeding drylands, intensification of soil production –maintaining the formula of indirect exploitation of the existing estates–, development of agriculture with no intermission, introduction of new irrigation crops – beetroot, corn, green vegetables, etc.– and a regression of meadow stockbreeding, which became stabled stockbreeding and specialising in dairy production;
- the introduction of new crops and, in particular, industrial crops, fostered the rise of agroindustrial sites, specialising above all in obtaining sugar from beets, dairy production or fruit and vegetable canning. Worth noting is the significance of the industrial complex of the former sugar refinery San Rafael de Villarrubia, created in 1932, or the also extinct dairy cooperative COLECOR, founded in 1945;



- the socioeconomic interest sparked by the appearance of the large irrigation zone of the Guadalquivir and the incipient agroindustrial sector of the Córdoba Vega, generated a considerable immigration process that affected the whole of the west of Córdoba, leading to a dramatic population rise in the 40s. As a result of this process, which began before the first PGOU [General Plan of Urban Development] of Córdoba (1958) and which was prolonged in time even beyond it, the outlying, clustered and road villages El Higuerón, Cañada Real Soriana, Villarrubia, La Golondrina, Majaneque, Veredón de los Frailes and Veredón de los Mochos were born, which, over time, have consolidated their survival as demographic areas of certain importance in the municipal outskirts of Córdoba and Almodóvar del Río.

*Conurbation and rural-urban development in the last third of the 20th Century:* parcelling and new communications and transport infrastructures: with the above precedents, the traditional settlement of farmhouses on the Vega gradually lost its financial and demographic functionality in favour of the new villages abovementioned, surviving in the best cases as testimonial ruins of the rural past of the west of Córdoba, while it reinvented its landscape and moved towards a process of urban and rural-urban conurbation closely linked to the socioeconomic functions of the nearby city of Córdoba. These land dynamics and their effect on the landscape, while the irrigated surface area was being cut back and an industrial offshoring was taking place, meant a demographic and urban increase in the stable towns mentioned which, since the 70s and 80s, turned into the territory support of a rapid and illegal process of agricultural land parcelling belonging to the Irrigation Community of the Guadalquivir.

Nowadays, following a process of parcelling of more than thirty years, as a result of the permissiveness of the competent authorities or the tacit and express recognition of regularised initiatives, based on an irregular situation, the rural-urban development of plots is a notable fact which, among other social, economic and ecological consequences, is mortgaging the future of land and landscape planning in this area. Practically all of the Vega on the west of Córdoba is divided into several pockets of rural-urban plots ranging between 3,000 and 1,500 m<sup>2</sup> in surface area; with mixed uses, including urban as well as rural and recreational; and where a large bedroom sector of the diffuse city of the Córdoba outskirts has been set up. A diffuse city that has, therefore,

blurry boundaries: there is no black or white, but rather a varied range of gray. Likewise, its features and limits are no longer easily recognisable, since it has opened its doors to the creation of new landscapes managed outside the urban planning and where uses, land, divisions, part-time vegetable gardens, swimming pools and architecture combine with the interests of a complex society as far as its land and landscape requirements.

*New land uses: solar farms:* More recently, in the first decade of the 20th century, as so many other places in the south of the peninsula, major areas of electrical power production have been introduced in the Vega through the installation of what have been termed solar farms or solar fields. These are sites or spaces where small photovoltaic facilities with various owners share infrastructures and services. The difference between a solar park and solar farm is its size and its industrial or agricultural nature. A solar park is a solar centre, usually a large facility, more industrial and comprised of several solar plants which require a centralised control room and high voltage transformers. Solar farms refer to individual facilities of small producers aimed at producing energy at a small scale in order to sell it to the electrical grid. These solar farms originated in the agricultural feature of the farmland used for energy exploitation, since these are installed on rural and agricultural lands, such as old vegetable farms, pastures or vineyards; and because metaphorically they cultivate sun to produce energy, as if it were just another earth crop.

### ***Landscape interpretation of the area from the castle hill of Almodóvar del Río***

The monumental and scenic hill of the Castle of Almodóvar, rising up to 252 m above sea level, provides a clear and extensive view of the complex landscape of the Guadalquivir valley, that extends between Sierra Morena and the cereal fields of Córdoba and which currently appears before observers as a complex and humanised medium, with multiple land uses.

### ***The new hydraulic infrastructure: visit to the reservoir of La Breña (Guadiato river, Almodóvar del Río)***

The Breña reservoir is located in the municipality of Almodóvar del Río, in the final stretch of the Guadiato, very near the confluence with the Guadalquivir River. The reservoir, with a current capacity of 823 Hm<sup>3</sup> following the construction of the dam Breña II, is one of the largest ones in Andalusia. It has

two distinct arms, on the river Guadiato itself, approximately 20 kilometres and another one on the La Cabrilla stream, tributary of the Guadiato, 5 kilometres long. These arms represent what is commonly known as the “tails” of the reservoir, which, in this case, extend towards the mountain and into the natural park Sierras de Hornachuelos, a protected area in the Andalusian network and declared Special Protection Zone for Birds (SEPA), Place of Community Interest (L.I.C.) and Natura 2000, of special ecological value due to the survival of a significant community of Iberian lynx (*Lynx pardinus*).

### ***The archaeological site of Madinat al-Sahra***

Research carried out in recent decades, associated to the prospecting and excavation of new adjoining or distant areas of the old palace of Madinat al-Sahra, have confirmed a longstanding conviction that could not be proven until recently. Today, nobody questions the value of the old city and its palace as artistic and historic assets: but also, thanks to recent archaeological discoveries, very few dare deny the territorial significance and geographical dimension of the complex. Although for decades there have been clues, thanks to several publications, that the actual dimension of the caliphal city of al-Sahra greatly exceeded the palace complex partially unearthed, few imagined the size of the old urban caliphal foundation, while only a handful of specialists embarked on unravelling the geographical and territorial dimension of its urban development, outskirts, crop fields, farms, communication networks, etc.

By virtue of these principles, the palace and adjoining city of Madinat al-Sahra, provide an overall picture that more than exceeds the BIC/2003 perimeter or even the area defined by the PEPMA (Special Protection Plan). In fact, the territory associated to the old caliphal foundation affects practically all of the western Vega of the Guadalquivir through Córdoba, as well as the natural slope and southern side of the Córdoba Sierra Morena.

## **The Campiña and subbetic mountains of Cordoba**

**Ms Gema FLORIDO TRUJILLO**

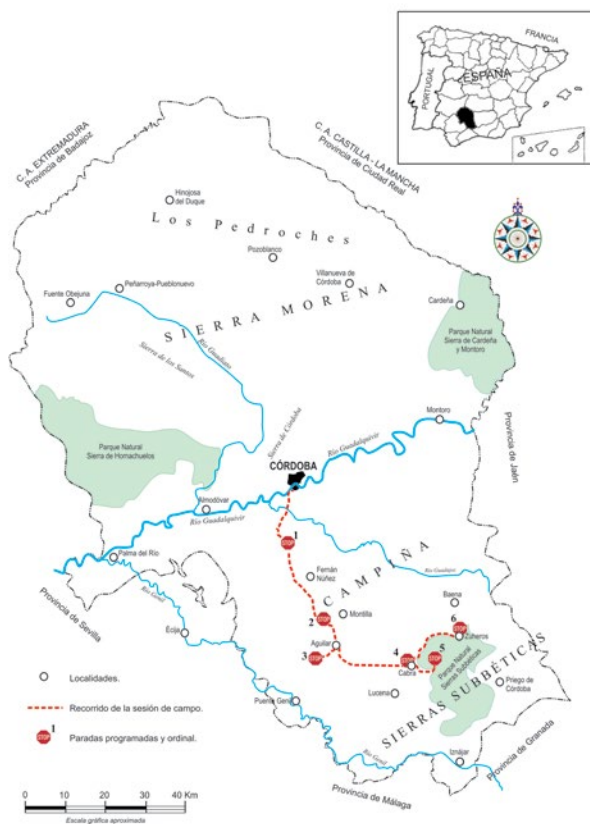
*University of Córdoba, Department of Geography and Sciences of the Territory, Spain*

**Mr José NARANJO RAMÍRES**

*University of Córdoba, Department of Geography and Sciences of the Territory, Spain*

**Ms Luisa RAMÍREZ LÓPEZ**

*University of Córdoba, Member of the Study Group on Geography, Spain*



*Figure 1: General map*

## General presentation of the outing

The outing that we are going to describe below will run through two large natural regions: the Guadalquivir Depression and the Subbetic Mountains. The former is the scenario of landscapes marked by the Guadalquivir and its tributaries on sediments from the Cenozoic Era, predominantly *Miocene*. The land, therefore, is young and soft and consequently very sensitive to the erosion of rivers and streams, which model a gently undulating relief, with moderate heights, gentle slopes and placed in an untidy succession of hillocks and open valleys.

As a whole, this broad strip, known as “Campaña del Guadalquivir”, is an area with a very strong inclination towards agriculture. The earth is typically fertile and the prevailing crops are rain-fed cereals, olives and to a lesser extent, vineyards. Different sub-regions can be detected within the Guadalquivir Depression and the outing will take us through the “strict Valley of the Guadalquivir”, the “Low Campaña” and the “High Campaña”.

The natural inclination towards agriculture is dominant in these Campañas, but this has not been an obstacle to the generation of a series of wetlands in certain areas of the hinterland, which, due to their environmental values, have been recognised as “Nature Reserves”. This is the case of the Wetland Areas of the South of Cordoba.

With respect to the other large natural region that the outing runs through – the Subbetic Mountains –, this is integrated within the *Alpine domain* and forms part of the great Andalusian mountain range. Compared with the gentle and undulating forms of the Campañas, the Subbetic mountains form a series of medium height reliefs, that are rough and precipitous, where the decisive geological elements are limestone from the Mesozoic Era (*Jurassic*), the presence of a permanent *allochthony* and the development of an extensive repertoire of *karst forms* whose environmental values have led the area to be accredited as a Nature Park.

Both large regions (Campaña and Subbetic mountains) also share a very valuable urban and architectonic heritage with a predominance of the fortress village model.

## From the Valley to the Campaña: the cereal crop landscape

### *Contrasting scenarios, singular landscapes*

In the broad perspective offered by the place, one of the few with these characteristics in the *campaña* environment, the backdrop to the north is made up

of the southern edge of Sierra Morena, a rectilinear escarpment of dark materials, the majority of which are *Palaeozoic* materials, whose mountain-like image contrasts with the fertile lowlands of the Depression that spread out at its feet.

It is precisely the Guadalquivir Depression, framed among the *Marian* reliefs to the north and the Subbetic Mountain ranges to the south, where we will make the first stop after entering the *Andalusian Campiñas*.

The middle sector of the province and intermediate section in the course of the large Andalusian river, the genesis of this space is linked to the *Alpine* folding, in connection with which the main relief lines of the south and east of Andalusia were configured: the Guadalquivir Depression per se and the Andalusian Mountain Ranges.

#### *The landscape of the calm lands*

From the geomorphologic viewpoint, the singularity of the Low Campiña comes about from the nature of its materials, mainly *greyish-blue marl* with a high *clay* content, the majority of which were deposited in the sea beds of the *Andalusian Gulf* when the thrusts of the *Alpine* movement had already ceased.

Since ancient times this area has been intensely given over to agriculture. Its gentle slopes, fertile soils and Mediterranean type climate with irregular but sufficient rainfall have made an early and integral occupation possible.

The main crop is rain-fed cereal, mainly wheat, which is produced in large parcels of land under an intensive *two-field crop rotation* system where it alternates with *soil-improving* sunflower crop. This is the system which, since the middle of the 20th century, in a process that was described as “*the most radical crop revolution ever seen in the Cordoba Campiña and in the entire Andalusian Valley*” (LÓPES ONTIVEROS, A., 1985), replaced the traditional “three-field crop rotation” system that had prevailed for centuries, and which today determines the visual image of the calm lands, “*an enormous undulating carpet of large geometrical pieces, occupied equally by wheat fields and sunflowers, and of changing colours depending on the time of the agricultural year*” (MATA, R. & SANS, C., 2004).

Another key that explains the landscape and character of the Low Campiña is an agricultural structure where there is an overwhelming predominance of the large property, which can be visualised much more clearly in the system of *tierras acortijadas* (land belonging to the *cortijo*) arranged by the arable land, which excludes any smaller parcelling and any activity that is not exclusively agricultural, and which represents, par excellence, the great Andalusian *latifundio* (large estate).

## The High Campiña from the Cerro del Portichuelo

### *Basic aspects of physical geography*

The decisive fact for the configuration of the High Campiña is that, due to its proximity to the Andalusian Mountains, the effects of the *Alpine orogeny* also affected the sediments that had been deposited in the *Andalusian Gulf*. The result was a landscape with more pronounced forms, higher altitudes (up to 450 m) and steeper slopes than those of the Low Campiña.

In addition, all of this has represented an increase in the erosive power of rivers and streams, which in many cases, will excavate their courses more efficiently and deeper, to the extent that materials from previous geological periods have been brought to light, including, above all, the materials from the Triassic period. One of the consequences of this is the formation and existence of salt pans in this High Campiña.

All the physical circumstances that configure the High Campiña come together in a substratum which, compared with the Low Campiña is much richer in *calcium carbonate*, with less clay and are sandier. In this context, the production of rain-fed cereals becomes difficult and problematic, fostering a change in the crops and a move towards olive groves and vineyards.

### *The olive grove and vineyard Campiña*

Precisely due to its natural inclination to agriculture, this sub-region has been named “The olive-grove and vineyard Campiña”. The first of these crops is much more important than the second; in fact it is the olive grove that has really left its footprint in the *High Campiña* landscape, whilst the vineyards are only predominant in very limited areas (Sierra de Montilla and Moriles Altos).

Even so, the quality and personality of the wines obtained from these vineyards have justified the *Montilla-Moriles Denominacion de Origen*. With the “Pedro Ximenes” grape variety as the base, the main types of wines produced are the “finos”, although the “olorosos”, “amontillados” and sweet raisin wines are also of an extraordinary quality.

With respect to the *settlements*, these are concentrated in small towns, and in villages or hamlets of a certain size in the High Campiña. In many cases, these are “*agro-towns*”, in other words, centres of population which, due to their demographic contingent, should be considered as real towns but which, due to their economic dynamics and predominant activities, have a marked

rural nature. The majority of them can be considered as “*fortress-villages*”, located at the top of a hill, with the castle and church standing out above the rest, and with the houses clustered together around them, progressively moving down the slope until they reach the main roads.

### **The Lagunas de Sónar (lakes)**

The Sónar Lake is the main lake of a series of *wetlands* which include the Amarga, Rincon, Tiscar, Jarales and Salobral lakes. The first two have permanent water, but the others – together with other smaller lakes – have seasonal water that dries up in summer. The ensemble was declared as Integral Reserves by the Spanish Law of 1984, and currently the lakes are considered as Nature Reserves due to their singular values as wintering and nesting places for migratory birds.

#### *The wetland landscape: a “pearl” in the surrounding dry land*

The Laguna de Sónar (lake) can be considered, due to its extension and dynamics, as the only lake of Andalusia.

According to RECIO & GÓMES (2008), it might have been formed after the Mid- and Late Pleistocene as a result of a series of processes involving the dissolution and subsidence of materials (lithologies of the Triassic and supra-Miocene calcarenites) which would end up by forming the uneven relief that today houses the troughs of the lake complex.

Sónar is rectangular in shape, its maximum depth is about 16 metres and it extends over a 53 hectare area. It is permanently flooded by slightly brackish waters and although its water sheet fluctuates, it remains throughout the year thanks to the *upwelling* of Puente de los Eucalpitos and to the intakes from the springs of Sónar and Escobar.

In an area that has been occupied by man since olden times and populated by olives, vines and some market gardens, some repopulations of holm oaks, broom and lentiscus also appear here, whose aim is to recover the old *Mediterranean woodland* and curb the erosive processes that threaten the lake. But it is the vegetation of the narrow *perilagunar* strip, with species such as wild reed (*Phragmites australis*), the common reed (*Arundo donax*) or the lesser bulrush (*Typha sp.*), that is the most specific and typical of the *wetland*.

With respect to its wildlife, we can highlight the existence of the *herring smelt*, a fish that is scarcely found in the Iberian Peninsula; but what really stands out with respect to the Sónar and confers upon it its classification as a



space of special biological importance, is the fact that it is the main wintering space for aquatic birds in the province of Cordoba; essential is the presence of the “White-headed duck” (*Oxyura leucocephala*).

*Relationships between the human groups and the wetlands: consequences and derived teaching*

The great singularity of the Laguna de Soñar lies in the fact that it has been a scenario where human intervention has managed to save an endangered species. This species is the *white-headed duck*. But this space also appears as a paradigm of the evolution of what in Spain have been considered and treated as *lacustrine* landscapes.

Aspects that show this evolution could be the following: having been a hunting space for centuries; continuous co-existence with the agricultural activity in the area; being an area of permanent *settlement* (the market gardeners of Soñar); having suffered a progressive loss of environmental values; benefiting later on from a chain reaction of the people, which will lead to the protection of the area, to the increase of *white-headed ducks* and to the return of the species to other Andalusian spaces from where it had disappeared; showing the conflict between the protected space and the nearest centres of population; becoming a scenario for the introduction of allochthonous species, some of which (*common carp* and *carpines*) will cause changes in the ecosystem; suffering truly risky experiences and actions (use of natural toxic substances, such as *rotenome*), to eradicate these foreign species and recover the typical features and dynamics of the ecosystem, etc.

**Old Railway Station of Cabra (Green Way of the Subbetic Mountains)**

The Green Way of the Subbetic Mountains is a recently devised infrastructure whose aim is to attract rural tourism, providing knowledge and enjoyment of the region's landscapes and environmental values. Its route, which runs through the south of the province of Cordoba for 8 km, coincides with the route of the old “oil train”, an old railroad used to send the product to the main consumer centres and which served to consolidate these regions among the main producers in Spain. Today, thanks to hiking or bicycle rides, the Way takes us to picturesque villages and genuine landscapes of the municipal districts of Luque, Suheros, Doña Mencía, Cabra and Lucena; the continuation of this route through the neighbouring lands of Jaen completes a surprising 112 Km run.

## **The Subbetic Mountain ranges: a broken mid-mountain landscape**

### *The structural component: the great lines of the relief*

An area with extraordinary geological and geomorphologic complexity, ORTEGA ALBA (2009) distinguishes three sub-units in the Subbetic mountains within the limits of the province of Cordoba: the SE-NW orientated *mountainous spur*, the Priego-Alcaudete *Depression* and the W. *foothills*

The Cabra mountain range presents a rounded perimeter that limits to the N and NW with the High Campiña and to the S with the Carcabuey corridor. It is comprised of several rounded elevations the highest ones being the Picacho (1217 m), the Lastra (1242 m) and Lobatejo (1380 m).

### *The lithological component: the limestone landscape*

It has been possible, due to the hardness of these deposits, to preserve the coverage of *limestone* and *dolomite rocks*, but other circumstances have also contributed to this, such as the actual fracture and cracking of the crags, which has facilitated the rapid infiltration of the majority of the rainfall, and above all, the early decrease in level of the *karst* base, since the end of the Miocene era, which considerably limits the external dissolving of the carbonates. However, the materials have not remained unharmed. Their limy nature per se, their topographic layout and the existence through the Quaternary era of climate periods with high rainfall, have favoured the development of important *karst* processes. These are the processes that really explain the current morphology of this bare landscape, a limy space with clear features, which, on the outside, offers a whole series of specimens of *exokarstic* shapes (with *sinks*, *karst valleys*, *lapies*, *poljes*, etc.) and which, under the surface, create a complex world of *grottos*, *galleries*, *wells* and *shafts*.

With respect to this enormous variety of forms, from the Poljé de la Nava vantage point, there is a magnificent view of two spaces that, in this regard, are anthological examples: the aforementioned *polje* (*polje*) and the *lapies* of Los Lanchares.

### *The lapies of Los Lanchares*

This impressive *karst* surface starts in the place known with the expressive toponym of “*Los Pelaos*” (which translates as *The Bare*), referring to its bare and gaunt morphology, where the profuse outcrops appear full of

hollows and furrows and covered with surface striations that carve sharp stone edges.

Los Lanchares are inherited *lapies* and, at least in its master lines, it develops on very pure and homogeneous limestone, which, in this area of the Mountain range, appears in almost horizontal strata. This layout, the old edaphic coverage and the once abundant vegetation, helped retain the surface water and resulted in an intensification of the dissolving processes of the underlying rock. Thus, the limestone became progressively corroded and gradually evolved until it took on the extremely irregular morphology it has today

Subsequently, the *lapies* has evolved very little. However, and although with much less intensity, the *karstification* continues. But, with the current humidity conditions and the extreme infiltration of water that causes the generalised fracture of the crags, this is limited to detailed touches that give rise to a generalised *microlapies* over more exposed surfaces.



Source: Junta of Andalusia

Geological diagram of the Los Lanchares sector and the Polje de la Nava

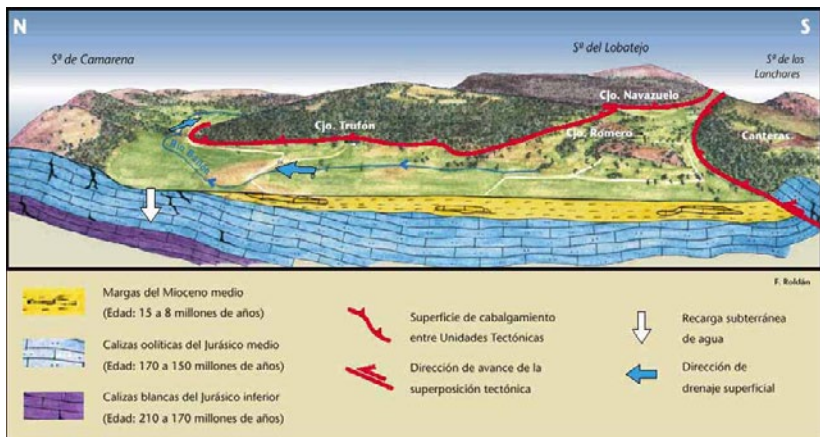
With these physical determining factors, it is easy to understand not only the lack of vegetation but also the absolute human vacuum of these areas, entirely lacking in any type of habitation and where the human activity can only be discerned by some stone walls used as open pens for stock-breeding of a very extensive nature, which is one of the few agricultural uses of these sterile spaces.

Another very different matter is the industrial use. And in this regard, the open wound represented by the stone *quarries* makes a more than considerable impact. These are inactive today but the necessary restoration landscaping work still has to be done and they generate the more obvious and negative visual impact in this special protection area.

### The Poljé de La Nava

The second of the highly significant landscape *karst* forms, devisable from the vantage point is the *Poljé* de La Nava, also known in the area as the “*Llanos of the Virgen de la Sierra*” due to its flat morphology in the context of the rugged mountain forms and singularised by their agricultural wealth in the bare context of the limestone outcrops.

In view of the landscape that spreads out at our feet, it can undoubtedly be said that this is a beautiful example of a large *karst depression*, which, although of average dimensions, clearly shows all the typical elements of this type of formation, both relating to its genesis process and with respect to its functional and formal aspects.



Source: Junta of Andalusia (s.f.)

Initially, this polje was closed and it drained out almost entirely underground, but later on, it discharged the water through the river course of the Bailon River, converting the formation into a *fossil polje*.

Nowadays, the drainage is still insufficient and, despite having constructed artificial drainage channels, flooding still occurs during periods of heavy rainfall. However, in a context of bare and broken rocks, the flat topography and fertility of the soils conditioned its use for agricultural purposes. Today, agriculture is in decline and a lot of the land is used as *pasture* for the cattle, but this has not represented the recovery of natural vegetation that the *Castastro de Ensenada* still talks about when mentioning the gall oak and maple tree woods that carpeted the flatland but which, after intense deforestation processes, is only preserved in small enclaves.

*El Picacho: "Balcony and Geographic Centre of Andalusia"*

For scientific purposes, the great discoverer of the natural values of this mountain range was the geologist and geographer, Juan Carandell, the first person to subject these reliefs to a rigorous scientific analysis and the person who proposed the name that identifies them today (Subbetic Mountain Range). He was also responsible for them being known both nationally and internationally.

Apart from his many other documents, as a collaborator in the organisation of the XIV International Geological Congress (1926) and responsible for the Outing/visit to Sierra Nevada, passing firstly through Cabra and Torca de Antequera, the travel log that he wrote and the actual visit of the congress delegates represented a real discovery of these *mountain chains*. Together with the other values mentioned above, he also underlined the fact that, on reaching the peak of the Picacho, 1216 m above sea level, there is a watchtower from where the structure and organisation of all the Andalusian relief units –Plateau (Sierra Morena), Guadalquivir Depression and Andalusian Mountain Ranges–, can be devised and understood, which led to its classification as "*Balcony of Andalusia*" and "*Geographical Centre of Andalusia*".

Carandell can also be thanked for his work in preparing the reports which, in 1929, led to it being acknowledged and declared as a "*Natural Site of National Interest*", meaning that the area of the Virgen de la Sierra Sanctuary was one of the first Protected Natural Spaces in Spain.



Water colour painting by Juan Carandell for the book "Sierra Nevada",  
by Constancio B. de Quirós

Finally, it is worth pointing out that the coincidence of all these natural values with a series of scientific, cultural, religious facts, etc., which convert this landscape into a clear example of what we have agreed to call "landscape with symbolic and heritage value" (NARANJO RAMÍRES, 2007).

### On the edge of the Cabra Massif: the Bailon River Canyon

The path borders around the foot of the Cabra Massif, establishing the contact between the *rocky vanguard* of the *thrust* front and the lands of the southern periphery of the *Campiña* through some *foothills* where olive groves become the sole crop.

The canyon of the Bailon River is the natural exit towards the *Campiña* of the Bailon River, the course that drains the Polje de la Nava and its neighbour of Fuenseca.

Situated on the mountain edge, it is a narrow *gorge* with vertical walls with *river-karst* origin, which was formed in recent geological eras, in the Quaternary era, as a result of the collapse of an old underground cavity and

the subsequent erosive incision of the river on the bottom of the course. And it must not be forgotten that one of the most typical features of limestone landscape is its intense underground circulation, a fact which, in the geographical area of the Cabra Mountain range, takes on special importance and explains the existence of endless underground *grottoes* and *galleries*. The best known of these are the Cueva de los Murciélagos (Bats' Cave) – Suheros–, and the Sima de Cabra (Cabra Shaft).

Today, the spectacular nature of the forms of the relief and the chromatic contrast between the bare rocks and the carpet of vegetation that makes use of the smallest pieces of soil, make the *canyon* one of the most visited places of geological and landscape interest of the Subbetic Mountains.

### **Suheros Vantage point**

The road that going to the Cueva de los Murciélagos gives access to a vantage point which offers us a fantastic panorama whose most outstanding features are:

- vertical view of the *ravine* worked by the Bailon River.
- interior of the Mountain range, where remains of old crops can still be seen today.
- old railway Bridge, which today forms part of the Green Way of the Subbetic Mountains.
- agricultural olive grove landscape, set on the slopes of the Mountain range and in the High Campiña region of Cordoba, spreading out to the province of Jaen.
- spectacular is the view from here of the town centre of Suheros, whose most outstanding features include:
  - the special configuration of its intricate road network, typical of Al-Andalus villages.
  - closely related to the above, the general radial layout of the streets around the historical centre, above all insofar as the perimeter of the “Villa” is concerned.
  - mention of its meticulous houses, with their clean and regular aspect, their whiteness and Arab tiled sloping roofs is inevitable.

- the place occupied by its Castle also acquires a special dimension which, on a tall rock next to the *canyon* of the Bailon River, acts as an exceptional guard watching over the Subbetic Mountain range and the High Campiña region of Cordoba, as well as its connections, to the east, with the nearby province of Jaen.



## **Landscapes in central-eastern Sierra Morena in Cordoba and the “Sierra de Cardeña y Montoro” Nature Park**

**Mr Rafael GARSÓN GARCÍA**

*University of Córdoba, Department of Geography and Sciences of the Territory, Spain*

**Mr Manuel RIVERA MATEOS**

*University of Córdoba, Department of Geography and Sciences of the Territory, Spain*

### **A presentation of the area**

The route through Sierra Morena in Cordoba and the singular Los Pedroches district, including the Sierra de Cardeña y Montoro Nature Park, is primarily designed to reveal the most representative landscapes of this area in the north-east of Cordoba province (Figure 1), from the medium-high Guadalquivir valley (to the south) to the beginning of the Castile plateau and the plains of Extremadura (to the north).

#### *Key regional factors and major landscape units*

Like most of the old Hercynian mountain system of Sierra Morena, the proposed route is a characteristic Mediterranean medium mountain area, with little population and considerable socioeconomic depression. The sustainability problems associated to traditional agrarian activities (primarily forestry and livestock breeding) and their landscapes have triggered profound functional and landscape changes in the last few decades.

The area considered here is part of the central-eastern sector of Sierra Morena in Cordoba as far as the granite plateau of Los Pedroches in the north. It is relatively different from other adjacent hill areas such as Sierra Morena in Jaen, to the east, or the Guadiato Valley and Sierra de los Santos, to the west, thanks to the territorial fragmentation derived from the land's orographic complexity, with hills and deep river valleys alternating as a result of the erosive effect of the principal tributaries of the Guadalquivir such as the Yeguas and Guadalmellato rivers (Figure 2).

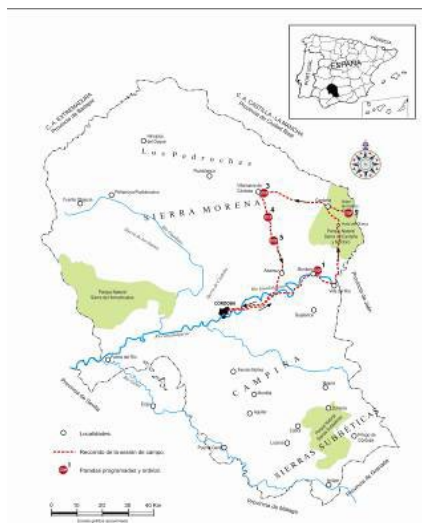
In this area, we can distinguish four major types of landscape forming bands from the north-west to the south-east, which suddenly merge in the area in

general and in the “Sierra de Cardena y Montoro” Nature Park in particular, as the map clearly shows (Figure 3):

- built-up rural landscapes (urban units, particularly concentrated in the areas of transition between the Guadalquivir valley and the hills),
- medium mountain agricultural landscapes (particularly olive groves),
- mountain landscapes used for forestry, pasture land and hunting,
- *dehesa* landscapes.

There are also other singular, occasional landscape items in the region that are not major types in themselves but do enrich the diversity of the hills, such as the gallery forests in the deep ravines found in some river valleys or occasional rural buildings of agrarian origin (farmhouses, estate houses, mills, etc.), most of which are now abandoned or have been reconverted to perform recreational or tourist functions.

*Rationale and interest of the route*



*Location of the route in the context of the province of Cordoba*

This route provides a general overview of the large variety of Sierra Morena landscapes, with their different physical (geological, geo-morphological), environmental (vegetation, ecosystems, protected areas, etc.) and human occupation (land use and settlements) characteristics. In this area, we see everything from hillside olive groves around Montoro and Sierra Morena piedmont to the granite batholithic livestock dehesa of Los Pedroches, including intermediate forest and hunting areas on rougher ground with poorer, more fragile soil and steep slopes.

The “Sierra de Cardeña y Montoro” Nature Park is of significant importance on this route, as it is affected by several factors: the size of the protected area (38,449 hectares); its low degree of direct humanisation, the preservation of most traditional agrarian uses and the diversity of its landscapes; its magnificent environmental conservation and the importance of its vegetation and wildlife; and the fact that it borders on other protected areas (“Sierra de Andújar” Nature Park, in Jaen to the east, and “Sierra Madrona y Valle de Alcudia” Nature Park, in Ciudad Real to the north).



Figure 2 : Basic geographic contextualisation of the route in the eastern sector of Sierra Morena in Cordoba and the Los Pedroches district



*Figure 3 : Major plant formations of landscape-related significance in the “Sierra de Cardena y Montoro” Nature Park and its surroundings*

### **Built-up rural landscapes: Montoro and its surrounding area**

After travelling east for 50 kilometres on the A-4 motorway, we reach Montoro, where we make the first technical stop on our route, due to its geographic specificity and picturesque landscapes.

- A strategic position → a town located between Sierra Morena and the Guadalquivir valley, making a living from the forest, livestock and hunting land of the hills and the fertile crop land in the Guadalquivir plain.
- Catalogued as a medium-sized Andalusian town that acts as the main centre of the Alto Guadalquivir district in Cordoba.

- A very interesting geological substrate red or reddish-brown soil on Triassic sandstone. The rock in this substrate is popularly known as “*pedra molinasa*” with its unmistakable reddish colour.
- Unlike other sections (where it passes through the Tertiary Depression), in this part of the route, the Guadalquivir river flows very close to the hills of Sierra Morena, and in this medium-high, narrow context, the river forms interesting meanders, a spectacular example of which can be seen as it passes through Montoro.
- Montoro also has a protected historic centre, which was declared of cultural interest in 1969 in acknowledgement of its architectural and physiographic values: perfect adaptation to the layout of the land, although now with difficult access, use of “*pedra molinasa*” in buildings, including houses (alternating with the traditional white of most constructions in Andalusia), St Bartholomew’s Church (15th century) and “The Damsels’ Bridge” (15th century), and the deteriorated condition of numerous old houses with habitability problems.
- Driving around Montoro to the north, in Sierra Morena piedmont areas, we find the hillside olive groves introduced at the end of the 19th century, most of them on Triassic sandstone (rock that has been used to build the dividing walls that still dot the landscape and most of the rural buildings).

### **Accessing the “Sierra de Cardeña y Montoro” Nature Park from the south: hillside olive groves and forest-hunting landscapes**

#### *Hillside olive groves*

- Olive groves spreading over the Sierra Morena piedmont area, with a progressive geological, geomorphological, functional and landscape-related transition.
- An initially rolling terrain which becomes increasingly intricate.
- From a geological perspective, the olive groves closest to the Guadalquivir valley are on Triassic sandstone, whereas to the north (closest to the hills and forests themselves) they are based on carboniferous material (essentially slate).
- The Triassic groves are better adapted to their setting and more productive (with a better quality oil), but the higher trees are on steep slopes, which explains their limited development, and there are recurring soil erosion processes because of a

lack of protection, the work of the growers and the reduced depth of the subsoil, so all agricultural work has to be done by hand in these marginal groves.

– The trees concerned are quite old (over 100 years on average), and difficult to replace, with limited cost-efficiency, although the cheap immigrant hand labour that has become available in the last few years, the medium-high quality of the oil obtained, and the fact that the *Montoro-Adamux Extra Virgin Olive Oil Designation of Origin* has recently been granted, are maintaining sustainability expectations for these crops.

– The rural buildings that dot the landscape also enrich its diversity: we can see farmhouses and outbuildings, mills and old post houses among the olive groves, creating a striking red and white colour contrast to the north of Montoro and Adamux where walls are whitewashed and red “*pedra molinasa*” is used on the cornices, corners and skirting of these buildings. In the transition area close to the batholithic granite of Los Pedroches, however, granite and quartz materials are used for building purposes.

#### *The mountain landscape of forest-hunting vocation*

– Characteristic Appalachian relief: abrupt and intricate, with a continuous succession of mountain alignments and valleys in a predominantly NW-SE and N-S (Armorican) direction.

– Strong engagement of the numerous water courses flowing towards the Guadalquivir river, caused by the effect of the water on the softer materials (basically, carboniferous slate) that alternate with greywacke masses and limestone in the hills.

– Steep slopes, in spite of the area’s modest altitude (a maximum of around 2,250 ft) and its aged, rounded peaks.

– The road network is adapted to the layout of the area: the three N-S roads between Montoro and Cardeña (N-420, A-420 and CO-510) are practically parallel.

– Reduced demographics in this mountain area, with a small population limited nearly entirely to the buildings associated to large farm operations (predominantly private estates ranging from 500 to 1500 hectares).

– Extensive forest areas. There has been widespread reforestation (artificial) since the mid-20th century, primarily involving species of the *Pinus* genus (*Pinus pinaster* and, to a lesser extent, *Pinus pinea*).

– Repopulation processes covering large areas of land, generally monospecific and with high density values with evident environmental risks: weakening of the tree stock, greater exposure to forest infestations, high risk of fire, less biodiversity, etc.).

– In some sectors there are clearly exotic species: *Pinus canariensis* and *Eucaliptus* (especially in trough lines close to water courses).

– Frequent establishment of consortia between the old public forestry administration and landowners for reforestation purposes. Most of these consortia are still valid and are used by the regional environmental agency to plan silvicultural treatments that are ultimately aimed at recovering the original Mediterranean woodland (clearing pinewood stock and regeneration of *Quercus* units).

– Based on this initiative, an environmental and landscape requalification process is underway in large sectors of the central-southern strip of the protected area, which has enabled the emerging consolidation of mixed *Pinus-Quercus* clumps in some areas previously occupied solely by pines.

– Another factor of interest is the conservation (particularly in more complex areas) of traces of autochthonous Mediterranean vegetation, especially thicket made up of strawberry trees, mastic trees, kermes oaks, rockrose and briar, with some holm oaks and, very occasionally, cork oaks and gall oaks.

– The forest areas are largely used for hunting (an activity that is compatible with the silvicultural treatments aimed at improving the zone), with a predominance of large game hunting grounds, with widespread use of fencing with a great impact on the landscape.

– Here, however, hunting is not as consolidated and traditional as in other parts of Sierra Morena (Sierra de Hornachuelos, Cordoba, and Sierra de Andújar, Jaén), although it has grown considerably in the last thirty years.

**In the central sector of the “Sierra de Cardeña y Montoro” Nature Park: Los Pedroches arcade and splendid “dehesa” landscape**

– *Los Pedroches* is a large natural and historic district (approximately 3,500 km<sup>2</sup>), covering the entire northern strip of the province of Cordoba. Indeed, it is the northernmost part of the region of Andalusia.

– Geologically, it presents a great intrusion of granite materials (batholith), which is visible in the typical round blocks or balls of granite (*pedroches*), especially in the eastern part of the district, that are a characteristic feature of this landscape.

- From a geomorphological perspective, it is a gently rolling plateau, at medium altitude, with a gentle slope from the east (around 2,100-2,400 ft) to the centre-west (1,500-1,200 ft). It is nearly entirely surrounded by mountain ranges.
- The degree of direct urbanisation is reduced (few towns or villages, relatively distant from each other) but has a considerable degree of humanisation with regards to the agrarian landscape of *dehesa* (livestock grazing land under cleared woodland, with scattered trees) .
- Splendid *dehesa* landscape in the eastern half of the *Los Pedroches* district (primarily in the boroughs of Cardeña and Villanueva de Córdoba).
- Extraordinary degree of territorial continuity shown by this “hollow forest” and its associated agrarian uses.
- Young, very dense trees (always more than 40 units per hectare), well generated due to the conservation and selection of *Quercus* for subsequent plantation purposes.
- A tree stratum comprising nearly exclusively holm oaks (*Quercus ilex*), with the very occasional presence of other species such as wild oak (*Quercus pyrenaica*) inside the “Sierra de Cardeña y Montoro” Nature Park (location in different disperse clumps in the proximity of “Venta del Charco” and along the sides of the A-420 road), as this is the highest sector of *Los Pedroches* and therefore has relatively greater rainfall.
- Greater atomisation of property relative to forest-hunting areas to the south of *Los Pedroches*.
- This land is used for largely extensive livestock grazing (with pigs in the wooded areas). Nonetheless, there is recent evidence of growing intensification, especially in the smaller businesses, with supplementary feed being provided to the animals at some times of the year.
- Greater density of original Mediterranean vegetation in the most intricate areas (generally close to river valleys: Yeguas, Arenoso, Matapuercas, etc.), where traditional livestock use is often compatible with hunting.
- Traditional granite walls (important feature of the landscape).
- Closely-knit network of livestock trails (one of the few public domains in Sierra Morena in Cordoba and the *Los Pedroches* district), although they are now only used for tourist-recreational purposes.



– El Cereso: ancient post house, now uninhabited, of granite buildings, around 7 kilometres to the east of Cardeña, on the old way between Fuencaliente (Ciudad Real) and the Guadalquivir valley, strategically positioned on a site of extraordinary beauty. It has been partially rehabilitated and subsequently reconverted into rural tourism accommodation.

**The “Montes Comunales” of Adamus: magnificent example of publicly owned land in Sierra Morena (Cordoba)**

– The altitude of the “*Montes Comunales*” ranges from 1,200 to 1,950 feet, typically alternating in this area between valleys and hills, with lithological features characterised by slate and carboniferous greywacke.

– This is one of the most representative forest areas in this part of Sierra Morena. Of special interest is the number of pines planted in reforestation processes, with reduced density and important signs of recovery of original Mediterranean *Quercus* woodland.

– There are different clumps of Mediterranean wood combining *Quercus* (especially holm oaks) with dense thicket with a large variety of species (mastic trees, strawberry trees, thyme, rosemary, etc.). In some parts of the estate, there are also some occasional, disperse plantations of other artificial species such as cypress or ailanthus and, above all, eucalyptus.

– Communal nature: this is one of the few remaining examples in Sierra Morena of the important masses of communal land dating from medieval and modern times (owned by the local residents, who used the land to obtain basic natural resources such as wood, fruit, grazing land, game, etc.).

– Present functions of the “*Montes Comunales*” of Adamus: multifunctionality, combining basic uses (big game with plenty of deer and wild pigs and, in the last ten years, facilities designed for rural tourism and environmental education purposes).

**The Matapuercas River and its riverside woodland: a singular landscape of ecological significance**

This is a very characteristic valley of Sierra Morena, created by the Matapuercas river, which borders the “*Montes Comunales*” area to the south. Most of the original riverside woodland is well preserved, dominated by species such as alders, willows, oleanders and ashes.

- Element of landscape enrichment and diversification: frequent linearity in the landscape, considerable in the case of the Mediterranean mountains, due to the greater altitude of the riverside vegetation and its darker green colour compared with the browner or duller tone of typical *Quercus* woods.
- Ecological significance of this water course and its valley. The riverside woodland itself acts as a refuge for an interesting wildlife community linked to the river (grey herons, mallards, kingfishers, otters, water snakes, etc.).
- Significant potential as an ecological river corridor (connectivity between remote habitats): the permanence of the water course (even during the summer and periods of drought), the good development of the riverside tree formations, their territorial continuity and their good relationship with other adjacent or nearby plant formations. It introduces an element of ecological connectivity between the “Sierra de Cardeña y Montoro” area (an ecological site of the first order) and the Guadalquivir valley, further to the west.
- Interest for conservation of the Iberian lynx, the most endangered feline species in the world. This species is endemic to the Iberian Peninsula and its most important population is found on the “Sierra de Cardeña-Sierra de Andujar” axis, although attempts are being made to foster its presence in the Guadalquivir area as part of the European Union LIFE-Lynx project.

### **Descending towards the Guadalquivir valley through the Sierra Morena piedmont of Adamus and Villafranca de Córdoba**

The Sierra Morena piedmont is seen as a gentle slope descending towards Adamus, with the Guadalquivir valley and its adjacent countryside in the distance.

Adamus is in a small hollow after the first line of Sierra Morena hills that separates this borough from Villafranca de Córdoba, a characteristic mixed Hill-Valley borough. A little before arriving in Villafranca, we can see on the right a forest mass of *Pinus*, on a publicly-owned hill known as *Fuente Agria*, where a Peri-urban Park has been installed. This is very characteristic type of protected area in Andalusia, designed to respond to demand for recreational facilities in the countryside by nearby urban populations.

**LIST OF PARTICIPANTS /  
LISTE DES PARTICIPANTS**

## **ANDORRA / ANDORRE**

Mrs. Anna CLAVERIA, Técnica de impacte ambiental, Governement d'Andorre, C/ Prat de la Creu, 62-64 AD 500 ANDORRA

Tel: +376 875 707 – Fax: +376 869833

E-mail: [anna\\_claveria@govern.ad](mailto:anna_claveria@govern.ad)

Mrs. Anna MOLES, Ministère de l'Environnement et de l'Agriculture, C/ Prat de la Creu 62-64, AD 500 ANDORRE

Tel: +376 875707 – Fax: +376 869 833

E-mail: [annam@andorra.ad](mailto:annam@andorra.ad)

Mrs. Natalia ROVIRA, Conseillère, Ministère de l'Environnement, Governement d'Andorre, C/ Prat de la Creu, 62-64, AD 500 ANDORRE

Tel: +376 875 707 – Fax: +376 869 833

E-mail: [natalia\\_rovira@govern.ad](mailto:natalia_rovira@govern.ad)

## **AZERBAIJAN / AZERBAIDJAN**

Mr. Faig SADIGOV, Manager, Ministry of Ecology and Natural Resources, Istiglaliyyat Street 31, AZ-

Tel: +994 124 529 831 – Fax: +994 124 925 907

E-mail: [faig\\_sadigov@yahoo.com](mailto:faig_sadigov@yahoo.com)

## **BELGIUM / BELGIQUE**

Mrs. Mireille DECONINCK, Dr. Sc. géographiques, Attachée, Ministère de la Région Wallonne, Division du Patrimoine, 1 Rue Brigades d'Irlande, 51000 NAMUR

Tel: +32 81 33 25 22 – Fax: +32 81 33 22 93

E-mail: [mireille.deconinck@spw.wallonie.be](mailto:mireille.deconinck@spw.wallonie.be)

Mrs. Gislaine DEVILLERS, Attachée, Ministère de la Région Wallonne, Département du Patrimoine, 1 Rue des Brigades d'Irlande, 5100 NAMUR

Tel: +32 81 33 21 64 – Fax: +32 81 33 22 93

E-mail: [gislaine.devillers@spw.wallonie.be](mailto:gislaine.devillers@spw.wallonie.be)

Mme. Marie-Jeanne GHENNE, Chef du Secrétariat de la Chambre Provinciale du Hainaut, Commission royale des monuments, sites et fouilles, Ministère de la région wallonne

E-mail: [marie.ghenne@spw.wallonie.be](mailto:marie.ghenne@spw.wallonie.be)

## **BULGARIA / BULGARIE**

Mrs. Kapka PANTCHEVA, RTA for ISPA Project, Water Sector, Kiril I Metodi str. № 14, Balchik 1202 BALKCHIK

Tel: +359 887 969 258

E-mail: kpancheva@mail.bg

## **CYPRUS / CHYPRE**

Mr. Adrian AKERS-DOUGLAS, Director, Laona Foundation for the Conservation and Regeneration of the Cypriot Countryside, PO Box 50257, 3602 LYMASSOL

Tel: +357 35358 – Fax: +632 357 253 52 657

E-mail: adrianaspidernet.com.cy

Mr. Phaedon ENOTIADES, Planning Officer, Department of Town Planning and Housing, 1454 CYPRUS

Tel: +357 22 40 8157 – Fax: +357 226 77 570

E-mail: penotiades@tph.moi.gov.cy

Mr. Artemis YIORDAMLI, Director, Laona Foundation for the Conservation and Regeneration of the Cypriot Countryside, PO Box 50257, 3602 LYMASSOL

Tel: +357 35 358632 – Fax: +357 25352657

E-mail: director@terracypria.org

Mr. Costas OROUNTIOTIS, Deputy Director, Laona Foundation for the Conservation and Regeneration of the Cypriot Countryside, PO Box 50257, 3602 LYMASSOL

Tel: +357 35 358 632 – Fax: +357 253 52 657

E-mail: corountiotis@terracypria.org

## **CZECH REPUBLIC / REPUBLIQUE TCHEQUE**

Mrs. Klara JANCUROVA, CENELC, Chynin 17, Nove Mitrovice 335 63

Tel: + 420 724 749 086

E-mail: klarajancurova@yahoo.com

Mrs. Marta STRANSKA, CENELC.CZ, Studio MAC-Architecture, LTD, Susicka 17/1487, 16000

Tel: +420233 323 338-9 / +420 724 162 007

E-mail: mac@arch.cz

Mr. Martin STRANSKY, CENELC.CZ, Studio MAC-Architecture, LTD,  
Susicka 17, 16000 PRAGUE

Tel: +420233 323 338-9

E-mail: mac@arch.cz

Mrs. Julia TOBIKOVA, Contact person for European Landscape Convention,  
Ministry of Environment, Vrsovicta 65, 110 00

Tel: +420 267 12 27 12

E-mail: julia.tobikova@mzo.cz

### **DENMARK / DANEMARK**

Mr. Andersen JEPPE AAGAARD, Landscape Architect, Nordhavns Vej 1,  
HELSINGOR

Tel: +45 40109171 – Fax: +4549200071

E-mail: jaaamobil@attglobal.net

### **FINLAND / FINLANDE**

Mrs. Sonja FORSS, Coordinator, Finnish Environment Institute, PB 140 251  
HELSINKI

Tel: +358 407366791

E-mail: sonja.forss@ymparisto.fi

Mr. Tapio HEIKKILA, Senior Advisor, Ministry of the Environment PO Box  
35 2323 HELSINKI

Tel: +358 50 594 7515

E-mail: tapio.heikkila@ymparisto.fi

### **FRANCE**

Mr. Guy DE LA PERSONNE, Chargé de mission SETRA, 46 avenue A.  
Briand, 92225 BAGNEUX

Tel: +33 01 46 11 35 19

E-mail: guy.de-la-personne@developpement-durable.gouv.fr

Mr. Bernard LASSUS, Professeur, Architecte-Paysagiste, 4 Rue Bénard,  
75014 PARIS

Tel: +33 01 45 43 47 82 – Fax: +33 01 45 42 36 86

E-mail: bernard.lassus@bernard-lassus.com

Mr. Yves LUGINBUHL, Directeur de recherche, UMR Ladyss CNRS France,  
2 rue Valette 75005 PARIS  
Tel: + 33(0)1 44 07 76 27 – Fax: 00(0)1 44 07 76 03  
E-mail: luginbuhl@univ-paris1.fr

Mrs. Chantal PRADINES, Arbres et Routes, 4 rue Morée, F 88350 TRAMPOT  
Tel: +33 03 29 06 78 50  
E-mail: chantal.pradines@wanadoo.fr

Mr. Jean-François SEGUIN, Chef du Bureau des Paysages, Ministère de  
l'écologie et du développement durable et de la mer, La Grande Arche, 92055  
LA DEFENSE Cedex  
Tel: +33(0)1 40 81 34 48 – Fax: +33(0) 1 42 19 20 35  
E-mail: jean-francois.seguin@developpement-durable.gouv.fr

Mrs. Nadia TOBON-RICO, Président, Association, Yuremaiko, 6 rue Malar,  
F 75007 PARIS  
Tel: +33 01 53 59 99 56  
E-mail: ntobon@free.fr

### **GERMANY / ALLEMAGNE**

Mr. Adrian HOPPENSTEDT, Professor, TU Berlin and Representative of  
EFLA, Fridastrasse, 24, DE 30161 HANOVER  
Tel: +49 511 344 574  
E-mail: hoppenstedt@hhp-raumentwicklung.de

### **GREECE / GRECE**

Mr. Kimon HADJIBIROS, Ass. Professor, National Technical University of  
Athens, 5 Iroon Polytechniou Street, 15780 ATHENS  
Tel: +30 210 7722 896 – Fax: +30 210 7722 899  
E-mail: k.hadjibiros@hydro.ntua.gr

### **HUNGARY / HONGRIE**

Mrs. Katalin BOKOR, Administrator of Culture, Ministry of Education and  
Culture of Hungary, Szalay U.10-14 1055 BUDAPEST  
Tel: +36 795 4572 – Fax: +36 795 0282  
E-mail: katalin.bokor@okm.gov.hu

Mr. Gabor KISS, Senior Counselor, Ministry of Environment and Water of Hungary, 011 Budapest foutca 44-50 HUNGARY

Tel: +3614573434 – Fax: +36/1/2754504

E-mail: kissgab@mail.kvvm.hu

## **ITALY / ITALIE**

Mrs. Maria Elisabetta CATTARUZZA, Landscape Architect, Via Luigi Pigorini 24, 162 ROMA

Tel: +39 0687195478

E-mail: c.sissi@fastwebnet.it

Mrs. Ilaria Maria COPPA, ANAS S.p., A Via Monzambano 10, 185 ROMA

Tel: +39 064 446 379 – Fax: +39 064 446 2531

E-mail: i.coppa@stradeanas.it

Mrs. Rita MICARELLI, Scientific Committee, Atelier dei Paesaggi mediterranei Toscana, Via Mattioli 43, I 50139 FIRENZE

Tel: +39 055 48 01 52 – Fax: +39 055 48 01 52

E-mail: rita.micarelli@libero.it

Mr. Giorgio PIZZIOLO, Professor, Università di Firenze, Via Mattioli, 43, 50139 FIRENZE

Tel: +39 055 480 152 – Fax: +39 055 480 152

E-mail: pizzio@unifi.it

Mrs. Daniela SANDRONI, Director of landscape quality and preservation, Ministry for cultural heritage and activities, Via di San Michelle 22, 153 Roma

Tel: +39 065 843

E-mail: daniela.sandroni@beniculturali.it

Mrs. Lionella SCAZZOSI, Professeur, Université Polytechnique de Milan Corso Lodi 78, I 20139 MILANO

Tel: +39 338 259 7162 – Fax: +39 02 569 2637

E-mail: lionella.scazzosi@tiscali.it

Mrs. Erminia SCIACCHITANO, International Relations, Ministry for Cultural Heritage and Activities, General Directorate for the Quality and Protection of Landscape, Architecture and Contemporary Art, Via di San Michele 22, 153 ROMA

Tel: +39 065 843 4857 – Fax: +39 065 843 4880

E-mail: esciacchitano@darb.beniculturali.it



Mr. Carlo VALORANI, DPTU, Dip. Pianificazione Territoriale e Urbanistica, Università «La Sapienza» di Roma/ANAS, Spa Via Flaminia 72, 196 ROMA

Tel: +39 0687195478

E-mail: valorani@fastwebnet.com

### **LUXEMBOURG**

Mrs. Carmen WEISGERBER, Attachée d'Administration, Ministère du développement durable et des infrastructures, Département de l'environnement, 18, Montée de la Pétrusse, 2918,

Tel: +352 24 76 68 13

E-mail: carmen.weisgerber@mev.etat.lu

### **MALTA / MALTE**

Mrs. Anja DELIA, Senior Planning Officer, Malta Environment and Planning Authority, St Francis Ravelin, 1230 FLORIANA FRN

Tel: +356 2290 000 – Fax: +356 2290 2295

E-mail: anja.delia@mepa.org.mt

### **MOROCCO / MAROC**

Mr. Abdelouahab IDELHADJ, Responsable du Club Patrimoine, Développement et Citoyenneté, Responsable de la Formation Universitaire, Tourisme Rural et Patrimoine Culturel, l'université Abdelmalek Essaadi, El Mhanech II, Lot Mounia, Rue Maysour, n° 19, TETOUAN

Tel: +212 613 863040 – Fax: +212 539 994500

### **NETHERLANDS / PAYS-BAS**

Mr. Niek HAZENDONK, Senior Policy Officer, Directorate of Knowledge and Innovation, PB 482, BL 6710BL EDE

Tel: +31 616 76 28 78

E-mail: n.f.c.hazendonk@minlnv.nl

Mrs. Annemiek TROMP, Program Manager, Route Design, Rijkswaterstaat, Dienst Verkeer en Scheepvaart, PO 5044, 2600 GA DELFT

Tel: +31 6 15 87 96 71

E-mail: atromp4@hotmail.com

## **NORWAY / NORVEGE**

Mr. Audun MOFLAG, Senior Adviser, Ministry of the Environment PO Box 8013, 30 OSLO

Tel: +47 22 24 59 52 – Fax: +47 22 24 57 59

E-mail: audun.moflag@md.dep.no

## **POLAND / POLOGNE**

Mr. Marek DEGORSKI, Director, Academy of Sciences, Institute of Geography and Spatial Organisation Twarda 51/55, PL 818 WARSAW

Tel: +48 22 69 78 841 – Fax: +48 22 69 78 903

E-mail: m.degor@twarda.pan.pl

Mr. Marek KAJA, Specialist, General Directorate for Environmental Protection, Wawelska St 52/54, 922 WARSAW

Tel: +4822 5792153 – Fax: +48225792128

E-mail: marek.kajs@gdos.gov.pl

Mrs. Maria ZALEWSKA, Expert, Ministry of Regional Development, Wspolna 2/4 00-926 WARSAW

Tel: +48 022 461 32 21 – Fax: +48 022 461 32 63

E-mail: maria.zalewska@mrr.gov.pl

## **PORTUGAL**

Mrs. Maria Joao BOTELHO, Sous-Directrice Générale, Direction Général de l'aménagement du territoire et développement urbain, Campo Grande 50, P 1749-014 LISBOA

Tel: +351 21 782 50 – Fax: +6 351 21 782 50 06

E-mail: mjbotelho@dgotdu.pt

Mrs. Maria José FESTAS, Senior Advisor, Directorate General for Spatial Planning and Urban Development, Campo Grande 50, P 1749 014 LISBOA

Tel: +351 (21) 782 50 11 – Fax: +351 (21) 782 50 03

E-mail: gabdg@dgotdu.pt

## **ROMANIA / ROUMANIE**

Mrs. Victoria-Marinella BERZA, Assoc. Prof. Dr Arch, Universitatea "Spiru Haret", Faculty of Architecture, Str. Ion Ghica 13 Sector 3, BUCURESTI

Tel: + 4 021 32 76761 ext237 – Fax: +4 0212 3276761

E-mail: berzavima@yahoo.com

## **SERBIA / SERBIE**

Mrs. Biljana FILIPOVIC, Ministry for the Environment and Spatial Planning of the Republic of Serbia, Dr. Ivana Ribara 91, 11070 BELGRADE  
Tel: +381 112 093 803 – Fax: +381112 093867  
E-mail: biljanafilipovic@ekoplan.gov.rs

Mrs. Dejana LUKIC, Head of the Section, Institute for Nature Conservation, Dr. Ivana Ribara 91, 11070 BELGRADE  
Tel: + 381 11 2093 851 – Fax: + 381 11 2093 867  
E-mail: dejana-lukic@zzps.rs

Mrs. Svetlana NOJKOVIC, Ministry for the Environment and Spatial Planning of the Republic of Serbia, Omladinskih Bigrada 1, 11070 BELGRADE  
Tel: +381 113131355 – Fax: +381131 31355  
E-mail: svetlana.nojkorovic@ekoplan.gov.rs

Mr. Nenad STAVERTOVIC, Institute for Nature Conservation of Serbia, Dr. Ivana Ribara 91, 11070 BELGRADE  
Tel: +381 112 093 803 – Fax: +381112 093867  
E-mail: beograd@zzps.rs

## **SLOVAKIA / SLOVAQUIE**

Mrs. Pavlina MISIKOVA, National Focal Point for the European Landscape Convention, Ministry of the Environment, Landscape Planning Department, Nam.L.Stura 1,SK 81235 BRATISLAVA  
Tel: +421 2 5956 24 17 – Fax: +421 2 5956 2127  
E-mail: misikova.pavlina@enviro.gov.sk

Mrs. Ida REPASKA, Senior Adviser, Ministry of Construction and Regional Development, Lamacska Cesta c.8, 83304 BRATISLAVA  
Tel : +42 12 593 644 27  
E-mail: ida.repaska@build.gov.sk

Mrs. Marta ZAHUMENSKA, Senior Adviser, Ministry of Construction and Regional Development, Lamacska Cesta c.8, 83304 BRATISLAVA  
Tel: +42 12 5936 4266  
E-mail: marta.zahumenska@build.gov.se

## **SLOVENIA / SLOVENIE**

Mrs. Andreja BASKOVČ, Director, ZELENO D.O.O. Ingliceva 15, 1000 LJUBLJANA 386 131 211

Tel: +62 386 1 230 20 22

E-mail: andreja.baskovc@siol.net

Mrs. Natasa BRATINA-JURKOVIC, Head of Department for Landscape Architecture, Allinea Plus D.O.O Einspielerjeva 6, 1000 LJUBLJANA

Tel: +386 1437 9330 – Fax: +386 1437 9331

E-mail: natasa.b.jurkovic@allinea.si

Mrs. Jurca NIKO, Head of Spatial Planning Department, Municipality of Nova Gorica, Trg Edvarda Kardelja 1, 5000 NOVA GORICA

Tel: +386 41 387 633 – Fax: +386 5 302 1233

E-mail: niko.jurca@nova-gorica.si

## **SPAIN / ESPAGNE**

Mr. Valentín ACEÑA RAMOS, Diputación de Barcelona Urgell 187, 48036 BARCELONA

Tel: +34 93 402 21 94 – Fax: +34 93 402 2494

E-mail: acenarv@diba.cat

Mrs. Paloma ACUÑA FERNANDEZ, General Manager, Real Fundación de Toledo Pza. Victorio Macho 2, 45002 TOLEDO

Tel: +34 925 28 42 25 – Fax: +34 925 28 42 38

E-mail: rftoledo@realfundaciontoledo.es

Mr. Luis AGUILAR AGUILAR, ANALITER S.L Consultores, C/Pino Central 60, 41016 SEVILLA

Tel: +34 954 921 579 – Fax: +34 954 933 115

E-mail: laguilar@analiter.es

Mr. Jose Pedro ALBA GARCIA, Urbaconsult, S.A., C/Maestranza, 4-1º, 29016 MÁLAGA

Tel: +34 952 061100 – Fax: +34 952 062 042

E-mail: jpalba@urbaconsult.es

Mr. Juan Antonio ALBA RIPOLL, Urbaconsult, S.A., C/Maestranza, 4-1º, 29016 MÁLAGA

Tel: +34 952 061100 – Fax: +34 952 062042

E-mail: juan.alba@urbaconsult.es

Mr. Damian ALVAREZ ALVAREZ, Centro de Estudios Paisaje y Territorio,  
Presidente del Consejo Rector, Patio de Banderas 14, 41011 SEVILLA  
Tel: +34 954 712 540  
E-mail: damian.alvarez@juntadeandalucia.es

Mr. Rocio ALLEPUZ GARRIDO, Secretaria General de Planificación  
y Desarrollo Territorial, Junta de Andalucía, Consejería de Vivienda y  
Ordenación del Territorio, Avda. Diego Martínez Barrios, nº10 5º Planta E,  
41071 SEVILLA  
Tel: +34 955 05 78 09 – Fax: +34 955 057866  
E-mail: sgpdt.cvot@juntadeandalucia.es

Mr. José AMO MORENO, Arquitectura y Paisaje C/Alonso Uclés 7 1ºB,  
14940 CABRA  
Tel: +34 677 122436 – Fax: +34 957 520803  
E-mail: amo-moreno@arquired.es; jose.amo@ciacirdiba.net

Mr. Vicente ANDREU, CSIC Official Researcher, Spanish National Research  
Council, Centro de Investigaciones sobre Desertificación, Cami de la Marjal  
s/n, 46470 ALBAL  
Tel: +34 96 122 05 40 – Fax: +34 96 127 09 67  
E-mail: vicente.andreu-perez@uv.es

Mrs. Carmen AÑÓN, Honorary President of the International Scientific  
Committee on Cultural Landscapes, ICOMOSIFLA, C/Puerto de Santa  
Maria 49, 28043 MADRID  
Tel: +34 91 721 93 55 – Fax: +34 91 319 80 29  
E-mail: carmenanon@telefonica.net

Mrs. Maria Paz ARAMBURU MAQUA, ETSI Montes UPM, Ciudad  
Universitaria s/n, 28040 MADRID  
E-mail: paz.aramburu@upm.es

Mrs. Maria ARCE GARCIA, Autónomo C/Gallinero 128, 11510 PUERTO REAL  
Tel: +34 615 123 555  
E-mail: mariaarce@arquitectosdecadiz.com

Mrs. Rosa María ARCE RUIZ, Transyt-Centro de Investigación del  
Transporte de la Universidad Politécnica de Madrid, C/ Profesor Aranguren  
s/n, 28040 MADRID  
Tel: +34 91 33 66694 – Fax: +34 913 365 362  
E-mail: rarceruiz@caminos.upm.es

Mr. José Maria ARENAS CABELLO, Delegación Provincial de la Copt. en Córdoba, c/ Tomás de Aquino, s/n 8ª planta, 14071 CÓRDOBA  
Tel: +34 957 00 14 01 – Fax: +34 957 00 15 80  
E-mail: josem.arenas.cabello@juntadeandalucia.es

Mr. Diego ARRIBAS, Profesor de Bellas Artes, Universidad de Zaragoza, C/ Sante Amalia nº 7, TERUEL  
Tel: +34 617 258 623  
E-mail: borraja@gmail.com

Mr. Antonio Jesús ASENJO VERGARA, INOCSA Ingeniería, S.L., C/ Cardenal Bueno Monreal 56. 4ª Dcha, 41013 SEVILLA  
Tel: +34 954 238 072 – Fax: +34 954 624140  
E-mail: asenjo@inocsa.es

Mr. Braulio ASENSIO ROMERO, Analiter S.L Consultores, C/Pino Central 60, 41016 SEVILLA  
Tel: +34 954 921 579 – Fax: +34 954 933 115  
E-mail: basensio@analiter.es

Mrs. Carmen AYCART, Directora del Programa Vías Verdes, Fundación de los Ferrocarriles Españoles Santa Isabel 44, MADRID  
Tel: +34 91 151 10 62 – Fax: +91 151 10 68  
E-mail: aserna@ffe.es; caycart@ffe.es

Mr. Jose María BALLESTER PALAZÓN, Dirección General de Patrimonio Histórico, Comunidad de Madrid C/Arenal 18, 28013 MADRID  
Tel: +34 609066644 / +34 915809386 – Fax: +34 914208526  
E-mail: jose\_maria.ballester@madrid.org

Mr. Miguel BATURONE CASTILLO, Consejería de Obras Públicas y Vivienda, Junta de Andalucía Charles Darwin, s/n Isla de la Cartuja, 41092 SEVILLA  
Tel: +34 955 057 405 – Fax: +34 955 057 465  
E-mail: miguelj.baturone@juntadeandalucia.es

Mr. Miguel BENCOMO WEBER, Oficina de Deplanteamiento, S.L.P. C/ Ollerías, 45-1ªE, 29012 MÁLAGA  
Tel: +34 629 134661 / +34 952 609052 – Fax: +34 952 606052  
E-mail: bwgb@coamalaga.es; estudio@oficinadeplanteamiento.com

Mr. Felix BENITO MARTIN, Universidad Europea de Madrid, Catedrático de Urbanismo y Ordenación del Territorio C/Lerida 3, 28020 MADRID  
Tel: +34 91 5711076  
E-mail: f.benito@telefonica.net

Mr. Andreu BLANCH BOU, U:50 mil, Planeamiento Territorial C/Pujades 166 1-1-C, 8005 BARCELONA  
Tel: +34 934 856 876  
E-mail: ablanch@u50mil.com

Mrs. Marta BONET VIANA, C/Islas Canarias 78, 46023 VALENCIA  
Tel: +34 637 061 344  
E-mail: tabobonet@hotmail.com

Mr. Manuel BOROBIO SANCHIS, Director General, Xunta de Galicia, ES San Lázaro, s/n 15871 SANTIAGO DE COMPOSTELA (LA CORUÑA)  
Tel: +34 981 54 17 53 – Fax: +34 981 54 17 57  
E-mail: secretariadxsp@xunta.es

Mr. Justo BORRAJO, Jefe del Área de Carreteras de Gran Capacidad Paseo de la Castellana 67, 28071 MADRID  
Tel: +34 915 977 712 – Fax: +34 915 978 536  
E-mail: jborrajo@fomento.es

Mr. Diego BRAVO SILVA, Consejería de Obras Públicas y Vivienda Junta de Andalucía, Charles Darwin, s/n 41092 SEVILLA  
Tel: +34 955 058317  
E-mail: diego.bravo@juntadeandalucia.es

Mrs. Anabel CAMPOS BURGUI, Gobierno de la Rioja-Técnico Ordenación Territorio, C/Prado Viejo nº62 Bis, 26071 LOGROÑO  
Tel: +34 941 291100 Ext.4500 – Fax: +34 941 291178  
E-mail: anabel.campos@larioja.org

Mr. Luis CANCER, Jefe de Sección de Estudios, Dirección Gral, Ordenación del Territorio, Gobierno de Aragón Puerta Cinegia, Coso 33-35, 1º Planta, ES 50071 ZARAGOZA  
Tel: +34 976 714 416  
E-mail: lcancer@aragon.es

Mr. Raimundo CAPARRÓS FLORES, Arquitectura, Calle Júpiter nº 13 2º  
B7, 41003 SEVILLA  
Tel: +34 630 039 472  
E-mail: raimundocaflo@hotmail.com

Mr. Francisco CASTILLO RODRIGUEZ, Jefe de Servicio, Xunta de Galicia,  
San Lázaro, s/n 15871 SANTIAGO DE COMPOSTELA (LA CORUÑA)  
Tel: +34 981 54 1041 – Fax: +324 981 54 17 57  
E-mail: francisco.castillo.rodriquez@xunta.es

Mr. Juan Carlos COBOS MORILLO, Diputación de Córdoba, Unidad de  
Urbanismo, Avda. del Mediterráneo s/n 14001 CÓRDOBA  
Tel: +34 957 211474 – Fax: +34 957 211177  
E-mail: jccm01@dipucordoba.es

Mrs. Rosa COLMENAREJO, Universidad de Córdoba, C/ Pedro López 25  
C-6, 14002 CÓRDOBA  
Tel: +34 657 822200  
E-mail: rosa.colmenarejo@telefonica.net

Mr. José María CORONADO TORDESILLAS, Ets. ing.de Caminos, C.y  
P. Universidad de Castilla-La Mancha, Avda. Camilo José Cela, s/n 13071  
CIUDAD REAL  
Tel: +34 926 295 300 EXT.3262 – Fax: +34 926 295391  
E-mail: josemaria.coronado@uclm.es

Mrs. Isabel CORRAL TORRES, Presidenta, Laboratorio de Paisaje de  
Canarias El Salvador 10, ES 35010 LAS PALMAS DE GRAN CANARIA  
Tel: +34 928 26 36 42  
E-mail: canarias@laboratoriodepaisaje.org

Mr. Salustiano CRESPO RODRIGUEZ, Ayuntamiento de Salas Apartado de  
Correos 151, 33860 SALAS  
Tel: +34 696493653 – Fax: +34 985 965012  
E-mail: arquitecto@ayto-salas.es

Mrs. Linarejos CRUZ PEREZ, Technicienne en Patrimoine et Paysage,  
Institut du Patrimoine culturel d Espagne, Ministère de la Culture, C/Pintor  
Greco 4, 28040 MADRID  
Tel: +34 91 550 44 06 – Fax: +34 91 550 44 44  
E-mail: linrejos@mcu.es



Mr. Miguel Angel CHAVES GENTIL, Arquitecto Paisajista, Sta. María de Gracia 4, 3º, 41003 SEVILLA  
Tel: +34 676104120 – Fax: +34 954212800  
E-mail: mchavesgentil@gmail.com

Mr. Gonzalo DE LA FUENTE VAL, Departamento de Medio Ambiente Geozone Asesores, S.L. C/ Reyes Cathólicos 17 pta. 4, 49960 ALDAIA  
Tel: +667 857 741  
E-mail: gdelafte@gmail.com

Mrs. Leonor DE LA PUENTE, Profesora titular de Analisis geografico regional, Avda. de los Castros s/n, ES 39003 SANTANDER  
Tel: +34 942 201 785 – Fax: +34 942 201 783  
E-mail: puente1@unican.es

Mrs. Ángela DE MEER, Profesora Titular de Geografía humana, Departamento de Geografía, Urbanismo y Ordenación del Territorio, Avda. de los Castros s/n, ES 39003 SANTANDER  
Tel: +34 942 20 1899  
E-mail: meera@unican.es

Mr. Javier DE VERA, C.O.A.N / Gerencia Municipal de Urbanismo de Lucena, Plza. Cristo del Amor 1, Primera Planta, 14900 LUCENA  
Tel:+34 957 51 04 16  
E-mail: 14158vera@coan.es

Mrs. Virginia DEL RIO ORDUÑA, Asistencias Técnicas Clave, C/ Progreso 5, 41013 SEVILLA  
Tel: +34 954 236508 – Fax: +34 954 236 827  
E-mail: virginia@atclave.es

Mrs. Josefa DIAZ CALVO, Arquitecta, C/Cubo, 12,1, 30870 MAZARRON  
Tel: +34 606512526  
E-mail: pepa@coamu.es

Mr. Juan Luis DIAZ QUIDIELLO, Consejería de Obras Públicas y Vivienda, Dirección Gral. de Planificación y Sostenibilidad, Servicio de Planificación y Estadística, Avda.Charles Darwin, s/n 41092 SEVILLA  
Tel: +34 955 058085 – Fax: +34 955 058638  
E-mail: juanl.diaz@juntadeandalucia.es

Mrs. Ana Francisca DIAZ-MORLET MEDINA, Arbusto Jardines, S.L. C/  
Villafuerte 36, 29017 MÁLAGA

Tel: +34 607641233 – Fax: +34 952203605

E-mail: anafrancisca@artbusto.com

Mrs. Carmen DOMINGUEZ ARES, Consultoría, Ambiental, S.L. Ronda de  
los Tejares 32 Acceso 1º-3º-3, 14008 CÓRDOBA

Tel: +34 670 603 377 – Fax: +34 957 496 308

E-mail: carmen@geambiental.com

Mr. Juan José DOMINGUEZ VELA, C/Arjona 14.Escalera 2.1ªA, 41001  
SEVILLA

E-mail: j.d.dominguez@casa.eads.net

Mr. Eugenio DOMÍNGUEZ VILCHES, Gestión de Infraestructuras de  
Andalucía, S.A. (GIASA), Consejero Corporativo, Avda. Charles Darwin,  
s/n 41092 SEVILLA

Tel: +34 955 007470 (307470)

E-mail: eugenio.dominguez@giasa.com

Mrs. Maria Lluïsa DUBON PRETUS, Consellera de Territori, Consell de  
Mallorca General Riera 113, ES 7010 PALMA DE MALLORCA

Tel: +34 971 21 98 89 – Fax: +34 971 17 38 10

E-mail: amartinez@conselldemallorca.net

Mr. Luis ERNETA ALTARRABIA, DPTO. Geografía. Univ. Navarra Edif.  
Biblioteca Campus Univ. Navarra 31009 PAMPLONA

Tel: +34 948 425600

E-mail: lerneta@unav.es

Mr. Rafael ESCRIBANO BOMBIN, ETSI Montes UPM, Ciudad  
Universitaria, s/n 28040 MADRID

Tel: +34 677708397

E-mail: rafael.escribano@upm.es

Mr. Ignacio ESPAÑOL ECHANIZ, Lecturer, Universidad Politécnica de  
Madrid, C/Rey Francisco nº 16, 3º dcha, ES 28008 MADRID

Tel: +34 627 551 561

E-mail: ignacioespanol@yahoo.es

Mr. Diego FERNÁNDEZ BELMONTE, C/Milá i Fontanals 64, At. 2º, 8012 BARCELONA

Tel: +34 699 793925

E-mail: dfbelmonte@yahoo.es

Mr. Marc Albert FERNANDEZ BOU, Minuartia PTGE, Domenech 3, 8470 SANT CELONI BARCELONA

Tel: +34 938 484 030 – Fax: +34 938 484 292

E-mail: mfernandez@minuartia.com

Mrs. Silvia FERNANDEZ CACHO, Jefa, Centro de Documentación y Estudio, Instituto Andaluz del Patrimonio Histórico, Camino de los Descubrimientos, s/n Isla de la Cartuja, 41092 SEVILLA

Tel: +34 955 03 70 21

E-mail: silvia.fernandez.cacho@juntadeandalucia.es

Mr. Nicolás FERNANDEZ DE VILLATA DEHESA, Jefe del Servicio técnico de Carreteras, Cabildo insular de Tenerife, Plaza de Espana, s/n, SANTA CRUZ DE TENERIFE

Tel: +34 922 84 39 48 – Fax: +34 922 843 900

E-mail: nfvillalta@tenerife.es

Mr. Jose Manuel FERNÁNDEZ IGLESIA, Junta de Andalucía. Dirección Gral. de Planificación y Sost. Charles Darwin, s/n Isla de la Cartuja, 41071 SEVILLA

Tel: +34 670941195

E-mail: josem.fernandez.iglesia@juntadeandalucia.es

Mr. Manuel FERNÁNDEZ OLMO, DOMO arq.s.co-op. and profesional, C/ Vidrio nº38, 1º Dcha., 41003 SEVILLA

Tel: +34 615 286 004 – Fax: +34 954 900 648

E-mail: manu@domoarq.com

Mr. Eduardo Jesús FERNÁNDEZ POYATOS, Tragsatec, C/Parsi 5, s/n 41016 SEVILLA

Tel: +34 654 971 145

E-mail: edujfp@gmail.com

Mr. Manuel Enrique FIGUEROA CLEMENTE, Universidad de Sevilla Departamento de Biología Vegetal y Ecología, Facultad de Biología, Avenida Reina Mercedes 6, 41012 SEVILLA

Tel: +34 628 221557 – Fax: +34 954 615780

E-mail: figueroa@us.es

Mrs. Gema FLORIDO TRUJILLO, Dpto. de Geografía y C.C.del Territorio,  
Universidad de Córdoba, Plaza.Cardenal Salazar 3, 14003 CÓRDOBA  
Tel: +34 57 212 088 – Fax: +34 957 218 939  
E-mail: gema.florido@uco.es

Mr. Valentín FRANCO DEL POZO, INOCSA Ingeniería, S.L. C/Cardenal  
Bueno Monreal 56.4ª Dcha, 41013 SEVILLA  
Tel: +34 954 238 072 – Fax: +34 954 624 140  
E-mail: valentin.franco@inocsa.es

Mr. Jose GALAN VIVAS, President, Asociacion Española de Paisajistas  
(AEP), Avda. Reino de Valencia, nº 22, pta. 3, 46005 VALENCIA  
Tel: +34 927 434493 – Fax: +34 96 387 9855  
E-mail: juagavi@urb.upv.es

Mrs. Eva GAMERO RUIZ, Direccion General de Inspección de Ordenación  
del Territorio, Urbanismo y Vivienda, Junta de Andalucía, Carlos Brujes, 4 B,  
3º Derecha, 41013 SEVILLA  
Tel: +34 606 305 811  
E-mail: evam.gamero@juntadeandalucia.es

Mrs. Susana GARCÍA BUJALANCE, Oficina de Deplaneamiento, S.L.P. C/  
Ollerías, 45-1º E 29012 MÁLAGA  
Tel: +34609 765 991 / +34 952 609 052 – Fax: +34 952 606052  
E-mail: sgbujalance@coamalaga.es;estudio@oficinadeplaneamiento.com

Mr. Juan Carlos GARCIA DE LOS REYES, Arquitectos Asociados, S.L.P.U.,  
Avda.Andalucia, 18 Portal 2 bajo  
Tel: +34 958 279013  
E-mail: garciadelosreyes@gr-arquitectos.com

Mr. Luis GARCIA DEL VALLE MANZANO, Dir. Gral. de Polit. Territorial  
de Gobierno de la Rioja, C/ Prado Viejo 62 bis, 26071 LOGROÑO  
E-mail: dg.polter@larioja.org

Mrs. Pilar GARCIA MARTINEZ, Profesora titular de Analisis geografico  
regional, Universidad de Jaén Paraje Las Lagunillas, s/n, ES JAÉN  
Tel: +34 953 311 983  
E-mail: pgarcia@ujaen.es

Mrs. Isabel GARCIA ROJAS, Técnico de Medio Ambiente en Carreteras, Cabildo Insular de Tenerife Plaza de España, s/n, SANTA CRUZ DE TENERIFE

Tel: +34 922 84 39 38 – Fax: +34 922 843900

E-mail: igarcia@tenerife.es

Mr. Pablo GARCIA SERRANO, Dpto. Ecología UAM C213, C/ Darwin S/n. Facultad de CC Biológicas, 28049 MADRID

Tel: +34 91497 8003 – Fax: +34 91 497 7801

E-mail: pablo.garcia@uam.es

Mr. Rafael GARZÓN GARCÍA, Universidad de Córdoba, Dpto. de Geografía y Ciencias del Territorio, Plaza del Cardenal Salazar, s/n 14003 CÓRDOBA

Tel: +34 957 218 302 – Fax: +34 957 218 379

E-mail: rafael.garzon@uco.es

Mrs. Laureá GINE BENAIGES, Departamento de Medio Ambiente y Vivienda Generalitat de Catalunya, Vidal I Barraquer 12-14, 43005 TARRAGONA

Tel: +34 977 24 15 14 – Fax: +34 977 241 509

E-mail: wgine@gencat.cat

Mr. Jose Antonio GOMEZ CASADO, Ingeniero de Caminos, Canales y Puertos, GIASA, Consejería de Obras Públicas y Vivienda, Junta de Andalucía, Avda. Charles Darwin, s/n Isla de la Cartuja, 41092 SEVILLA

Tel: +34 955 007 400 – Fax: +34 955 0074 77

E-mail: jagomes@giasa.com

Mrs. Alejandro Melissa GÓMEZ VILARIÑO, Consultoría e Ingeniería C/ Enrique Larreta 1, 28036 MADRID

Tel: +34 913152391 – Fax: +34 91 315 23 07

E-mail: alejandrogomez@melissa-sa.com

Mr. Alejandro GÓMEZ VIVES, C/Paseo 77, 12192 VILAFAMÉS

Tel: +34 619 526 140

E-mail: algovives@hotmail.com

Mrs. Clara GÓMEZ ZAPATERO, Autónomo/Free Lance, C/Albahaca 13, 28760 TRES CANTOS

Tel: +34 654 74 48 25

E-mail: cgzdid@gmail.com

Mr. Tomás GONZÁLES DE CANALES, Delegación de Córdoba, Jefe del Servicio de Carreteras, C/Santo Tomás de Aquino, 1-8º y 9º plantas, 14071 CÓRDOBA

Tel: +34 957 511389

E-mail: tomas.gonzalezcanales@juntadeandalucia.es

Mr. José Maria GONZÁLEZ BENITO, Dirección General de Patrimonio Histórico, Comunidad de Madrid Arenal 18, 28013 MADRID

Tel: +34 915 809385

E-mail: jgb10@madrid.org

Mrs. Isabel Yolanda GONZÁLEZ RODRÍGUEZ, Reserva Mundial de la Biosfera La Palma, Avda. Marítima nº3 S/C de La Palma, 38700 S/C DE LA PALMA

Tel:+34 922 423 100 Ext.4465 – Fax: +34 322 423 471

E-mail: isabel@lapalmabiosfera.es

Mr. Antonio HERENCIA RUIZ, Dirección General de Planificación, COPT, Junta de Andalucía Charles Darwin, s/n 41092 SEVILLA

Tel: +34 955 058 314 – Fax: +34 955 058 638

E-mail: antonio.herencia@juntadeandalucia.es

Mrs. Josefina HERNANDEZ MARQUEZ, Jefa de Sección, Unidad orgánica de Medio Ambiente en Carreteras Cabildo Insular de Tenerife, ES SANTA CRUZ DE TENERIFE

Tel: + 34 922 84 3937 – Fax: +34 922843 900

E-mail: joserrfina@tenerife.es

Mr. Javier HERRERA SÁNCHEZ, Consejería de Obras Públicas y Vivienda, Junta de Andalucía, Avda Charles Darwin, s/n 41071 SEVILLA

Tel: +34 955 058034 – Fax: +34 955 058638

E-mail: javier.herrera.ext@juntadeandalucia.es

Mr. Andreas HILDENBRAND SCHEID, Consejería de Vivienda y Ordenación del Territorio, Avda Diego Martínez Barrios nº10, 41071 SEVILLA

Tel: +34 957 357801

E-mail: andreas.hildenbrand@juntadeandalucia.es

Mr. Vicenc IZQUIERDO CAMON, Diputación de Barcelona Urgell 187, 4 8036 BARCELONA

Tel: +34 93 4022479 – Fax: +34 93 4022494

E-mail: izquierdocv@diba.cat

Mr. Javier JEREZ ESCOLANO, Ambartec S.L Grupo Planigest Alcalde  
Acatángelo Soler, 5- OFI. 1, 3015 ALICANTE  
Tel: +34 965 94 18 72 – Fax: +34 965 65 6391  
E-mail: jjerez@planigest.com

Mr. Esteban JORDÁN GONZÁLEZ, Ingeniería del Entorno Natural, Avda  
Pompeya 10.1º-3, 30500, MOLINA DE SEGURA  
Tel: +34 620 451 931 – Fax: +34 968 616 551  
E-mail: mariavictoria@entornonatural.org

Mr. Mathieu LÉBRE, GR-Arquitectos Constitución, 18 PT 2 Bajo, 18012  
GRANADA  
Tel: +34 635 148 016 – Fax: +34 958 279 013  
E-mail: mathieu@gr-arquitectos.com

Mr. Manuel LEON FUERTES, AGROBIT Ingenieros S.C. 14005 CÓRDOBA  
Tel: +34 9547 084348 / +34 676744200 – Fax: +34 957 084348  
E-mail: mlfortes@agrobit.es

Mr. Rafael Lucas LOBON Y MARTIN, LDV Paisaje y arquitectura, Avda. de  
3-B 3º G, 29680 ESTEPONA  
Tel: +34 952 807 143 – Fax: +34 952 791 804  
E-mail: rlm@coamalaga.es

Mr. Antonio LÓPEZ ONTIVEROS, Departamento de Geografía y Ciencias  
del Territorio, Facultad de Filosofía y Letras, Plaza del Cardenal Salazar, nº  
3, 14071 CÓRDOBA  
Tel: +34 957 218761  
E-mail: gg1loona@uco.es

Mrs. Alicia LÓPEZ RODRIGUEZ, ETSI Montes UPM, Ciudad Universitaria,  
s/n 28040 MADRID  
Tel: +34 913367102  
E-mail: alicialrz@yahoo.es

Mr. César A. LÓPEZ SANTIAGO, Universidad Autonoma de Madrid, Dpto.  
de Ecología, C/ DARWIN 2, Campus Cantoblanco, 28049 MADRID  
Tel: +34 609 66 96 58 – Fax: +34 914 97 80 01  
E-mail: cesaragustin.lopez@uam.es

Mrs. Mónica LUENGO, President of the International Scientific Committee on Cultural Landscapes, ICOMOS-IFLA, C/Miguel Angel 4, 28010 MADRID  
Tel: +34 91 319 09 60 – Fax: +34 91 319 80 29  
E-mail: monica@atpaisaje.com

Mrs. Teresa LUESMA BARTOLOME, Directora, Centro de Arte y Naturaleza, Fundación Beulas, Avda. Doctor Artero, s/n 22004  
Tel: +34 974 239893 – Fax: +34 974 223 762  
E-mail: direccion@cdan.es

Mr. Fernando MAGDALENO MAS, Ministerio de Fomento, C/ Alfonso XII 3, 28014 MADRID  
Tel: +34 913 357 212 – Fax: +34 913 357 249  
E-mail: fernando.magdaleno@cedex.es

Mr. Juan MARTÍN GARCÍA, Diputación de Almería Rambla Alfareros nº 30, 4071 ALMERIA  
Tel: +34 950 211 739 – Fax: +34 950 211 672  
E-mail: jmarting@dipalme.org

Mrs. Belén MARTIN RAMOS, C/Profesor Aranguren, Transyt-Centro de Investigación del Transporte de la Universidad Politécnica de Madrid, ETSI Caminos Canales y Puertos, s/n 28040 MADRID  
Tel: +34 913 365 234 – Fax: +34 913 365 362  
E-mail: bmartin@caminos.upm.es

Mr. Juan José MARTIN RODRIGUEZ, Consejería de Obras Públicas y Vivienda, Junta de Andalucía, Avda Charles Darwin, s/n 41071 SEVILLA  
Tel: +34 955 058558 – Fax: +34 955 058507  
E-mail: juanj.martin.rodriguez@juntadeandalucia.es

Mrs. Francisca MARTINEZ TORO, EGMASA, Plaza de Belén 4 5º B, 23003 JAÉN  
Tel: +34 670 944601 – Fax: +34 953 006413  
E-mail: fmartinez@egmasa.es

Mr. Rafael MATA OLMO, Professor of Geography, Departamento de Geografía, Facultad de Filosofía y Letras Carretera de Colmenar, Km 15, Universidad Autónoma de Madrid, 28049 MADRID  
Tel: +34 619 011 680 – Fax: +34 91 497 40 42  
E-mail: rafael.mata@uam.es



Mr. Mateo SÁNCHEZ, M. CRUZ, ETSI Montes, UPM Ciudad Universitaria,  
s/n 28040 MADRID  
Tel: +34 913367102  
E-mail: mcruz.mateo.sanchez@gmail.com

Mr. Emiliano MELLADO ALVAREZ, ANALITER S.L Consultores, C/Pino  
Central 60, 41016 SEVILLA  
Tel: +34 954 921 579 – Fax: +34 954 933 115  
E-mail: emellado@analiter.es

Mr. Matias MERIDA, Profesor Titular, Universidad de Malaga Campus de  
Teatinos s/n, 29071 MÁLAGA  
Tel: +34 95 213 34 44 – Fax: +34 95 2131700  
E-mail: mmeria@uma.es

Mr. Javier Fco. MORENO ORTIZ, Asistencias Técnicas Clave, C/ Progreso  
6, 41004 SEVILLA  
Tel: +34 657 962 429  
E-mail: javiermoreno.ort@gmail.com

Mr. Isabel MOTA PERNIAS, Arquitecto, Profesional Liberal, C/Dársena  
13,1ªA, 41002 SEVILLA  
Tel: +34 676 2321 459  
E-mail: motapernias@gmail.com

Mr. Alfonso MULERO MENDIGORRI, Dpto. de Geografía, Universidad de  
Córdoba, Plaza. Cardenal Salazar 3, 14071 CÓRDOBA  
Tel: +34 606 505 177 – Fax: +34 957 218 379  
E-mail: gt1mumea@uco.es

Mrs. Elena MUÑOZ ESPINOSA, Escuela Técnica Superior de Ingenieros  
de Caminos, Canales y Puertos, Universidad de Castilla, La Mancha Avda.  
Camilo José Cela, s/n 13071 CIUDAD REAL  
Tel:+34 626 020276  
E-mail: elenamaria.munoz@uclm.es

Mrs. Olga MUÑOZ YULES, Estudiante, Máster en Protección, Gestión y  
Ordenación del Paisaje, C/Granate, nº 1, Ppal B, 4100 SEVILLA  
Tel: +34 666 674 928  
E-mail: omyules@yahoo.es

Mr. Murillo MORÓN Fco. Javier BASOINSA SL, Luis Bilbao Libano 11  
Entrepant D, 48940 LEJONA  
Tel: +34 944 807073 – Fax: +34 944 805951  
E-mail: fjmurillo@basoinsa.com

Mr. José NARANJO RAMIREZ, Dpto. de Geografía y C.C.del Territorio,  
Universidad de Córdoba, Plaza Cardenal Salazar 3, 14003 CÓRDOBA  
Tel: +34 957 218 053 – Fax: +34 957 218989  
E-mail: jnaranjo@uco.es

Mr. Jesus Raul NAVARRO GARCIA, Investigador Científico, Consejo Superior  
de Investigaciones Científicas, C/Alfonso XII 16, ES 41002 SEVILLA  
Tel: +34 665 59 3802 – Fax: +34 954 500 954  
E-mail: jrauleha@hotmail.com

Mrs. Joan NOGUE, Director, Landscape Observatory of Catalonia, C.Hosbu  
8, BARCELONA  
Tel: +34 972 27 95 64 – Fax: +34 972 27 15 89  
E-mail: anna.montero@catpaisatge.net

Mr. Pablo OLIVARES PHÉLIX, Dpto. Ingeniería y Sostenibilidad de  
GIASA, Consejería de Obras Públicas y Vivienda, C/Charles Darwin, s/n.  
41092 SEVILLA  
Tel: +34 955 007 400 – Fax: +34 955 007 477  
E-mail: pablo.olivares@giasa.com

Mr. Jesús ORCARAY DURÁN, Asociación para el Desarrollo Rural del  
Medio Guadalquivir, Plaza de los Pósitos, 1-1º Planta, 14730 POSADAS  
Tel: +34 957 630 972 / +34 957 632 084 – Fax: +34 957 630 877  
E-mail: info@medioguadalquivir.org

Mrs. Margarita ORTEGA, Official Senior Adviser, Ministry of Environment  
and Rural and Marine Affairs, Alfonso XII, Nº62, 28003 MADRID  
Tel: +34 91 347 3722 – Fax: +34 92 347 1506  
E-mail: mortega@mma.es

Mrs. Inmaculada ORTIZ BORREGO, Consejería de Medio Ambiente, Junta  
de Andalucía Manuel Siurot nº50, 41073 SEVILLA  
Tel: +34 955 00 34 35 – Fax: +34 955 003 601  
E-mail: maria.ortiz@juntadeandalucia.es

Mr. Fernando OSUNA PÉREZ, Estudio Arquitectura, Urbanismo, Paisaje C/  
Arenillas nº20, 14002 CÓRDOBA

Tel: +34 660821126

E-mail: ferospe@hotmail.com

Mr. Manuel PALOMINO GALERA, Laboratorio de Paisaje de Canarias, El  
Salvador 10, 35010 LAS PALMAS DE GRAN CANARIA

Tel: +34 928 26 36 42

E-mail: canarias@laboratoriodepaisaje.org

Mrs. Maria PALLAS MARGALEJO, Centro de Arte y Naturaleza, Fundacion  
Beulas, Avda. Doctor Artero, s/n 22004

Tel: +34 974 239893 – Fax: +34 974 223 762

E-mail: direccion@cdan.es

Mr. Carlos PAÑOS ADILLO, Asociación para el Desarrollo Rural del Medio  
Guadalquivir, Plaza de los Pósitos 1-1º Planta, 14730 POSADAS

Tel: +34 957 630972 / +34 957 632 084 – Fax: +34 957 630 877

E-mail: observatorio@medioguadalquivir.org

Mr. Santiago Manuel PARDO GARCÍA, C/Albero nº 1 4º C, 29700 VÉLEZ

Tel: +34 649 725 744

E-mail: santiagopardogarcia@gmail.com

Mr. Juan Antonio PASCUAL AGUILAR, Técnico Superior de Apoyo a la  
Investigación, Centro de Investigaciones sobre Desertificación-CSIC, Cami  
de la Marjal, s/n 46470 ALBAL, VALENCIA

Tel: +34 961 22 0540 – Fax: +34 961 27 096 76

E-mail: juan.a.pascual@uv.es

Mrs. Sophie PASLEAU CALLEJON, Consejería de Obras Publicas y  
Vivienda, Technical Responsible of Landscape European Projets Consejería  
de Obras Publicas y Vivienda-Secretaria Gral. de Planificación y Desarrollo  
Territorial, Avda Diego Martinez Barrios, 41071 SEVILLA

Tel: +34 955 057 813

E-mail: sophie.pasleau.ext@juntadeandalucia.es

Mr. Tomas PASTOR MARTINEZ, PLANIGEST Pº. Germanías 98, 46702  
GANDIA

Tel: +962 86 40 61 – Fax: +34 962 87 01 16

E-mail: tpastor@planigest.com

Mr. José Tomás PASTOR PUIG, E.A Estudio de Arquitectura S.L.T, Pº.  
Germanías 99, 46703 GANDIA – Tel: +963 86 40 61  
Fax: +35 962 87 01 16  
E-mail: 09050@ctav.es

Mr. José PEDRAZA SERRANO, R. IES la Escribana, PZA. San Pedro, 23  
ESC. 4 2º Dcha, 14002 CÓRDOBA  
Tel: +34 957 470 450  
E-mail: joserramonps@hotmail.com

Mr. Agustin PEREZ AMIL, Ayuntamiento de Adamuz, C/ de la Fuente 1,  
14430 ADAMUZ  
Tel: +34 663 86 00 08 – Fax: +34 957 16 64 65  
E-mail: sostenibilidad@adamuz.es

Mrs. Ángela María PEREZ CASTAÑO, C/Murcia nº 3, 6º C, 14010  
CÓRDOBA  
Tel: +34 696 762001  
E-mail: gata.raisa@hotmail.com

Mr. Rafael PEREZ DE LA CONCHA, Ayuntamiento de Córdoba, Unidad  
de Turismo y Patrimonio de la Humanidad, C/ Rey Heredia 22, 14003  
CÓRDOBA  
Tel: +34 957 200 522 – Fax: +34 957 200 277  
E-mail: perezconcha@ayuncordoba.es

Mr. José Carlos PÉREZ EDROSA, Ingeniería, IDOM Internacional José  
Abascal 4, 28003 MADRID  
Tel: +34 914 441 150 – Fax: +34 914 473 187  
E-mail: jcp@idom.com

Mr. Miguel Ángel PÉREZ GARCÍA, Consejería de Obras Públicas y  
Vivienda, Junta de Andalucía Charles Darwin, s/n 41092 SEVILLA  
Tel: +34 955 058 087 – Fax: +34 955 058 638  
E-mail: miguel.perez.g.ext@juntadeandalucia.es

Mr. Álvaro PÉREZ SARABIA, IDOM, C/Exposición 14, 41927 MAIRENA  
DEL ALJARAFE  
Tel: +34 955 600 528 – Fax: +34 955 600 488  
E-mail: apsarabia@idom .com

Mrs. Maria Jesús PERLES ROSELLÓ, Departamento de Geografía,  
Universidad de Málaga Campus de Teatinos, s/n 29071 MÁLAGA  
Tel: +34 952 133 444 – Fax: +34 952 131700  
E-mail: mjperles@uma.es

Mr. Javier PIEDRA, Ingeniero, Servicio de Construcción, Diputación  
Provincial de Valencia, C/Hugo de Moncada nº 9, 46010 VALENCIA  
Tel: +34 667 108 890 – Fax: +34 96 388 39 92  
E-mail: javier.piedra@dival.es

Mrs. Mercé PLANAS FONT, Generalitat de Catalunya Josep Tarradellas 40,  
8029 BARCELONA  
Tel: +34 93 444 50 00 – Fax: +34 93 419 61 39  
E-mail: wplanas@gencat.cat

Mr. Guillen PLANCHADELL MILLÁN, I.V. Ingenieros Consultores, S.A.  
Primado Reig, 129-ent.S.A., 46020 VALENCIA  
Tel: +34 963 391 870 – Fax: +34 963 629 161  
E-mail: gplanchadell@ivicsa.es

Mr. Juan José PONS IZQUIERDO, DPTO. Geografía, Univ. Navarra Edif,  
Biblioteca Campus Univ. Navarra, 31009 PAMPLONA  
Tel: +34 948 425600  
E-mail: jpons@unav.es

Mr. Ignacio POZUELO MEÑO, Consejería de Obras Públicas y Vivienda,  
Junta de Andalucía, Avda. Charles Darwin, s/n 41092 SEVILLA  
Tel: +34 955 058007 – Fax: +34 955 058638  
E-mail: ignacio.pozuelo@juntadeandalucia.es

Mr. Josep PUIG, Dr. Ingeniero Industrial, ECOSERVEIS e ICTA-UAB  
Eduard Toda 98, 1º 2, 8031 BARCELONA  
Tel: +34 629 932 908  
E-mail: pep.puig@uab.cat

Mr. Martí PUIG CABEZA, Departamento de Medio Ambiente y Vivienda  
Generalitat de Catalunya, Avda. ó Josep Tarradellas, 40 Entresuelo, 8029  
BARCELONA  
Tel: +34 93 4445000 Ext.3719 – Fax: +34 934 196 139  
E-mail: marti.puig@gencat.cat

Mr. Luis RAMAJO RODRIGUEZ, Gestión de Infraestructuras de Andalucía,  
S.A. (GIASA), Avda. Charles Darwin s/n, 41092 SEVILLA

Tel: +34 957 307431

E-mail: luis.ramajo@giasa.com

Mrs. María Luisa RAMIREZ LÓPEZ, Dpto. de Geografía y Ciencias del  
Territorio, Universidad de Córdoba, Plaza. Cardenal Salazar 3, 14003 CÓRDOBA

Tel: +34 957 218 302 – Fax: +34 957 218 379

E-mail: l92ralom@uco.es

Mr. Antonio RAMIREZ RAMIREZ, Centro de Estudios Paisaje y Territorio  
Patio de Banderas 14, 41004 SEVILLA

Tel: +34 954 712 547 – Fax: +34 954 712 548

E-mail: antonio.r.ramirez.ext@juntadeandalucia.es

Mr. Juan REQUEJO LIBERAL, Asistencias Técnicas Clave, C/ Progreso 5,  
41003 SEVILLA

Tel: +34 954236 508

E-mail: requejo@atclave.es

Mr. Jose Manuel REYES ALCALA, Empresa Municipal Monturque Suelo y  
Vivienda S.L., Plaza Constitución 3, 14930 MONTURQUE

Tel: +34 957 535614

E-mail: arquitectura@ciudaddemonturque.com

Mrs. Rosa REYES MINAGORRE, Consejería de Obras Públicas y Vivienda,  
Junta de Andalucía Avda. Charles Darwin, s/n 41092 SEVILLA

Tel: +34 955 058203 – Fax: +34 955 058638

E-mail: rosa.reyes@juntadeandalucia.es

Mr. Pascual RIESCO CHUECA, Escuela Técnica Superior de Ingenieros  
Industriales, Dpto. de Ingeniería Aeroespacial y Mecánica de Fluidos  
Despacho 3, planta baja, ángulo NW Camino de los Descubrimientos, s/n  
Isla de la Cartuja, 41092 SEVILLA

E-mail: riescochueca@us.es

Mr. Manuel RIVERA MATEOS, Universidad de Córdoba, Dpto. de Geografía  
y Ciencias del Territorio, Plaza del Cardenal Salazar, s/n 140741 CÓRDOBA

Tel: +34 957 015 718

E-mail: manuel.rivera@uco.es

Mr. Francisco RIVERO PALLARÉS, Junta de Andalucía, C/Tiberiades 17,  
41007 SEVILLA

Tel: +34 696 61 60 80 – Fax: +34 696 616 080

E-mail: friverop@hotmail.com

Mrs. Doris Zaida RIVEROL GÓMEZ, Reserva Mundial de la Biosfera La  
Palma, Avda. Marítima nº 3, 38700 S/C DE LA PALMA

Tel: +34 922 423100 – Fax: +34 922 423 471

E-mail: doris@lapalmabiosfera.es

Mr. Leonardo RODIGUES LAGOEIRO, Universidad Federal de Río de  
Janeiro y Master Erasmus Mundus EURMED, C/ Radio Sevilla, 4. Portal 4  
Piso 5B, 41001 SEVILLA

Tel: +34 678 328 872

E-mail: leolagoeiro@gmail.com

Mr. Jose Maria RODRIGO CAMARA, Técnico, Centro de Documentación  
y Estudios, Instituto Andaluz del Patrimonio Histórico, Camino de los  
Descubrimientos, s/n Isla de la Cartuja, 41092 SEVILLA

Tel: +34 955 03 70 21

E-mail: jose.rodrigo@juntadeandalucia.es

Mr. Óscar RODRIGUEZ ALONSO, ORC Comunicación, C/Normas nº 3  
3º B, 28043 MADRID

Tel: +34 629 675101 – Fax: +34 914 163 395

E-mail: rodralon@telefonica.net

Mr. Pedro RODRIGUEZ ARMENTEROS, Director general de Infraestructuras  
Viarias de la Consejería de Obras Públicas y Vivienda de la Junta de  
Andalucía, Charles Darwin, s/n 41092 SEVILLA

Mrs. Carmen RODRIGUEZ CÁCERES, Reserva Mundial de la Biosfera La  
Palma, Avda. Marítima nº 3, 38700 S/C DE LA PALMA

Tel: +34 922 423100 – Fax: +34 922 423 471

E-mail: nola@lapalmabiosfera.es

Mrs. Josefa María RODRIGUEZ MELLADO, Profesional Libre Medio  
Ambiente, C/Tiberiades 17, 41007 SEVILLA

Tel: +34 679 21 61 79 – Fax: +34 954 570 992

E-mail: josefarm7@hotmail.com

Mr. Jesús RODRIGUEZ RODRIGUEZ, Centro de Estudios Paisaje y Territorio Patio de Banderas 14, 41004 SEVILLA  
Tel: +34 954 712 545 – Fax: +34 954 712 548  
E-mail: [jesus.r.rodriguez.ext@juntadeandalucia.es](mailto:jesus.r.rodriguez.ext@juntadeandalucia.es)

Mr. José RODRIGUEZ RUEDA, Plaza Colón, 16.7º B, 14001 CÓRDOBA  
E-mail: [Pepe.rodriguez.rueda@hotmail.com](mailto:Pepe.rodriguez.rueda@hotmail.com)

Mrs. Maria Teresa Portavoz ROJO-LÓPEZ, Los Verdes de Andalucía, C/ Imagen, 6, ES 41003 SEVILLA  
Tel: +34 650 422 068 – Fax: +34 954 214 756  
E-mail: [losverdessevillagmail.com](mailto:losverdessevillagmail.com)

Mrs. Elena ROMERO SÁNCHEZ, Dirección General de Patrimonio Histórico, Comunidad de Madrid Arenal 18, 28013 MADRID  
Tel: +34 657 891 077  
Email: [ers20@madrid.org](mailto:ers20@madrid.org)

Mrs. Carmen ROSELL PAGÉS, Minuartia Estudis Ambientals PTGE, Domenech, 3, 8470 SANT CELONI  
Tel: +34 938 484 030 – Fax: +938 484 292  
E-mail: [crosell@minuartia.com](mailto:crosell@minuartia.com)

Mrs. Maria ROZPIDE SAN JUAN, TECNOMA, Isla del Hierro 7, 28703 SAN SEBASTIÁN DE LOS REYES  
Tel: +34 91 722 73 00 Ext. 7612 – Fax: +34 91 651 94 90  
E-mail: [mrozpide@tecnoma.es](mailto:mrozpide@tecnoma.es)

Mr. Ignacio RUIZ GONZÁLEZ, Diputación Foral de Álava, Plaza de la Provincia, s/n, 1001 VITORIA-GASTEIZ  
Tel: +34 945 181 818 (Ext. 2087) – Fax: +34 954 181 915  
E-mail: [iruiz@alava.net](mailto:iruiz@alava.net)

Mrs. Inmaculada RUS PEREZ, Dirección General de Patrimonio Histórico, Comunidad de Madrid Arenal 18, 28013 MADRID  
Tel: +34 91 420 85 08  
E-mail: [inmaculada.rus@madrid.org](mailto:inmaculada.rus@madrid.org)

Mr. Pere SALA I MARTI, Technical Coordinator, Landscape Observatory of Catalonia, C/Hospici 8, 17800 OLOT (GERONA)



Tel: +34 972 27 35 64 – Fax: +34 972 27 15 89

E-mail: pere.sala@catpaisatge.net

Mr. Óscar SANCHEZ CESTEROS, GIASA, Charles Darwin, s/n 41092 SEVILLA

Tel: +34 697 953576 – Fax: +34 955 007477

E-mail: oscar.sanchez@giasa.com

Mrs. Teresa SÁNCHEZ LÁZARO, GIASA, C/Santiago 33, 41003 SEVILLA

E-mail: teresa.sanchez.lazaro.ext@juntadeandalucia.es

Mr. Jose Miguel SÁNCHEZ MIGUEL, Departamento de Medio Ambiente y Vivienda Generalitat de Catalunya, Vidal I Barraquer 12-14, 43005 TARRAGONA

Tel: +34 957 241 514 – Fax: +34 977 241 509

E-mail: wjmsanchez@gencat.cat

Mr. Juan Carlos SANTIAGO MARTIN, FORESTARIA, S.L. C/Atarazanas, 4, 4º-Módulo 2, 29005 MÁLAGA

Tel: +34 952 227 381 – Fax: +34 9572 215 011

E-mail: jcsantiago@forestaria.es

Mr. Alfonso SANZ ARAUJO, Dirección de Ordenación del Territorio, Gobierno Vasco Donostia, San Sebastián 1, 1010 VICTORIA-GASTEIZ

Tel: +34 945 019 824 – Fax: +34 945 019 854

E-mail: alfonso-sanz@ej-gv.es

Mr. Pablo SARAVIA GARRIDO, Excmo, Ayuntamiento de Monturque (Alcalde), Plaza Constitución 3, 14930 MONTURQUE

Tel: +34 957 535614

E-mail: arquitectura@ciudaddemonturque.com

Mr. Juan de DIOS SARAZÁ JIMENA, Servicio de Arquitectura y Urbanismo, Diputación de Córdoba, Avda. del Mediterráneo, s/n 14011 CÓRDOBA

Tel: +34 957 211474 – Fax: +34 957 211477

E-mail: jdsaraza@dipucordoba.es

Mr. Luis SERRANO MUÑOZ, Dirección General de Patrimonio Histórico, Comunidad de Madrid Arenal 18, 28013 MADRID

Tel: +34 914 208 493

E-mail: luis.serrano.munoz@madrid.org

Mr. Eduardo TAMARIT PRADAS, Director General de Transporte y Movilidad de la Consejería de Obras Públicas y Vivienda de la Junta de Andalucía, Charles Darwin, s/n 41092 SEVILLA

Mrs. Maria del Pilar TAMAYO MUÑOZ, Incoydesa-Ingennya S.L., Avda. Cervantes 10 1º, 18008 GRANADA

Tel: +34 958535671 / +34 649960151 – Fax: +34 958 536407

E-mail: p.tamayo@ingennya.com

Mr. Arturo TEROL CASTERÁ, PLANIGEST, Regne de Valencia 58 3º- 12, 46005 VALENCIA

Tel: +34 963 739 193 – Fax:+34 963 733177

E-mail: aterol@perezterol.es

Mr. Maria Angela TOLEDO MORALES, EDP Renovaveis, C/Serrano Galvache 56 Edif Encina 5ª Planta, 28033 MADRID

Tel: +34 626 694 383

E-mail: atoledo@edprenovaveis.com

Mr. Martín TORRES MÁRQUEZ, Dpto. de Geografía y C.C. del Territorio, Universidad de Córdoba, Plaza Cardenal Salazar 3, 14071 CÓRDOBA

Tel: +34 957 218 805

E-mail: martin.torres@uco.es

Mrs. Teresa TROJO LOPEZ, Universidad de Sevilla, Facultad de la Comunicación, Isla de la Cartuja, SEVILLA

Tel: +34 650 068422

E-mail: trojo@us.es

Mrs. Ana Louise TROUT TATE, Centro de Estudios Paisaje y Territorio, Patio de Banderas 14, 41004 SEVILLA

Tel: +34 954 712 549 – Fax: +34 954 712 548

E-mail: alouise.trout.ext@juntadeandalucia.es

Mr. Miquel VADELL BALAGUER, Director Insular de Urbanismo, Consell de Mallorca General Riera 113, 7010 PALMA DE MALLORCA

Tel: +34 971 21 98 89 – Fax: +34 971 173810

E-mail: amartinez@conselldemallorca.net

Mr. Bartolomé VALLE BUENESTADO, Facultad de Filosofía y Letras Departamento de Geografía y Ciencias del Territorio, Plaza del Cardenal Salazar 3, 14003 CÓRDOBA

Tel: +34 957 218783

E-mail: bvalle@uco.es

Mrs. Carmen VENEGAS MORENO, Centro de Estudios Paisaje y Territorio  
Patio de Banderas 14, 41004 SEVILLA

Tel: +34 954 712 543 – Fax: +34 954 712548

E-mail: carmen.venegas.ext@juntadeandalucia.es

Mrs. Maria Victoria VICENTE VALERO, Ingeniería del Entorno Natural,  
Avda. Pompeya 10.1º-3, 30500 MOLINA DE SEGURA

Tel: +34 620 451 931 – Fax: +34 968 616551

E-mail: mariavictoria@entornonatural.org

Mrs. Piiia Maria VIHONEN, Autónoma-Diseñadora Paisajista, C/Javier  
Lasso de la Vega, 3,2-J, 41002 SEVILLA

Tel: +34 662072031

E-mail: piiama@gmail.com

Mrs. Nieves Rosa YANES MARICHAL, Reserva Mundial de la Biosfera La  
Palma, Avda. Marítima nº 3, 38700 S/C DE LA PALMA

Tel: +34 922 423100 – Fax: +34 922 423 471

E-mail: nryanes@lapalmabiosfera.es

Mr. Juan José YARRITU RUIZ DE GODEJUELA, Diputación Foral de  
Álava Plaza de la Provincia, s/n 1001 VITORIA-GASTEIZ

Tel: +34 945 181 729 – Fax: +34 945 181 928

E-mail: jyarritu@alava.net

Mr. Florencio ZOIDO NARANJO, Centro de Estudios Paisaje y Territorio,  
Director, Patio de Banderas 14, 41004 SEVILLA

Tel: +34 954 71 25 40 / +34 636612033

E-mail: florencio.zoido.ext@juntadeandalucia.es

## **SWEDEN / SUEDE**

Mrs. Anita BERGENSTRALE-LIND, Member of CDPATEP and Deputy  
Head of Department for Sustainable Management, Swedish National Heritage  
Board Box 5405, 11484 STOCKHOLM

Tel: +46 851 91 84 24

E-mail: anita.bergenstrahle-lind@raa.se

Mr. Johan BERGKVIST, Landscape architect, Swedish Transport Administration, 78185 BORLANGE

Tel: +46 70 7245416 – Fax: +46 243 445009

E-mail: johan.bergkvist@banverket.se

Mr. Malin ERIKSSON, Lecturer, Department of Urban and Rural Development, SLU Box 7012, SE 75007 UPSALA

Tel: +46 18 67 19 56

E-mail: malin.eriksson@sol.slu.se

Mr. Lennart FOLKESON, VTI / Olaus Magnus laus Magnus väg 35, SE-581 95 LINKÖPING

Tel: +46 13 20 41 59

E-mail: lennart.folkesson@vti.se

Mr. Anders LARSSON, Swedish University of Agricultural Sciences, Head of the Department of Landscape Architecture, PO Box 58, 230 53 ALNARP

Tel: +46 40 41 54 37 – Fax: +46 40 46 54 42

E-mail: anders.larsson@ltj.slu.se

Mrs. Katri LIZITZIN, Researcher, SLU (Swedish University of Agricultural Sciences), PO Box 7012, SE 7507 UPSALA

Tel: +46 18 671000 – Fax: +46 18 67 35 12

E-mail: katri.lisitzin@sol.slu.se

Mrs. Birgitta LUNDH, County Administrative Board of Sodermanland, S61186 NYKOPING

Tel: +46 155 264 117 – Fax: +46 155 267 125

E-mail: birgitta.lundh@lansstyrelsen.se

Mr. Jerker MOSTROM, Executive Officer, National Heritage Board of Sweden Box 5405, SE 11484 STOCKHOLM

Tel: +46 851 91 85 34 – Fax: +46 86 67 89 43

E-mail: jerker.mostrom@raa.se

Mrs. Kristina Lulea NILSSON, Swedish University of Agricultural Sciences, Dep. of Urban and Rural Development, Landscape Architecture

Tel: +46 18 672682

E-mail: Kristina.nilsson@sol.slu.se,

Mrs. Birgitta SANDER, Senior Advisor, Swedish National Heritage Board Box 5405, 11484 STOCKHOLM

Tel: +46 85 191865

E-mail: birgitta.sander@raa.se

### **SWITZERLAND / SUISSE**

Mr. Enrico BUERGI, Chair of the First and Second Council of Europe Conferences of the European Landscape Convention, Casa al ronco, ch 6654, CAVIGLIANO SWITZERLAND

Tel: +41 78 792 04 12

E-mail:enrico.buergi@gmx.ch

### **“THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA” / « L'EX-REPUBLIQUE YOUGOSLAVE DE MACEDOINE »**

Mrs. Danica PAVLOVSKA, Head of Department, Ministry of Environment and Physical Planning Franklin Ruzvelt 14, MK 1000 SKOPJE

Tel: +389 76 446759 – Fax: +389 2 3213 633

E-mail: cigipavlovska@yahoo.com

### **TURKEY / TURQUIE**

Mr. Abdurrahman GUZELKELES, Expert officiel, Ministère de l'environnement et des forêts, Direction générale pour la protection de la nature et des parcs nationaux, Section conservation du paysage, 14 bestepe, ANKARA

Tel: +90 312 207 58 85 – Fax: +90 312 207 59 59

E-mail: aguzelkeles@yahoo.com; aguzeelkeles@cevreorman.gov.tr

Mrs. Serap KARGIN, Expert officiel, Ministère de l'environnement et des forêts, Direction générale pour la protection de la nature et des parcs nationaux, Section conservation de la nature, 14 bestepe, ANKARA

Tel: +90 312 207 58 85

E-mail: serapkar.0103@yahoo.com.tr

### **UNITED KINGDOM / ROYAUME-UNI**

Mr. Graham FAIRCLOUGH, Head of Characterisation, English Heritage, Waterhouse Square, 138-142, EC1N 2ST LONDON

Tel: +44 207 97 3124

E-mail: graham.fairclough@english-heritage.org.uk

Mr. Angus GORBY, Landscape Adviser, Transport Scotland Buchanan House, 58 Port Dundas Road, G40HF GLASGOW  
Tel: +44 0141 272 7256 – Fax: +44 0141 272 72 72  
E-mail: angus.corby@transportscotland.gsi.gov.uk

Mr. Hugh LLEWELYN, Team Leader, Landscape Conservation, Department for Environment, Food and Rural Affairs, DEFRA Zone, 1/03, Temple Quay House 2, The Square, Temple Quay, BS16 1AS BRISTOL  
Tel: +44 (0)117 372 8201 – Fax: +44 (0) 117 372 8201  
E-mail: hugh.llewelyn@defra.gsi.gov.uk

Mrs. Kathryn MOORE, Birmingham City University, Professor 37, Crossbie Road, Harborne, B17 9BG BIRMINGHAM  
Tel: +121 427 7167  
E-mail: kathryn.moore@bcu.ac.uk

Mr. Eduardo RICO CARRANZA, Design Tutor, Architectural Association 95 Savernake Rd 1st floor NW3 2LG SAVERNAKE  
E-mail: soyeduardorico@hotmail.com

## **GENERAL SECRETARIAT OF THE COUNCIL OF EUROPE / SecrÉTariat GÉNÉral Du Conseil DE L'EUROPE**

### **DG IV - Education, Culture and Heritage, Youth and Sport / Education, Culture et Patrimoine, Jeunesse et Sport**

Ms Maguelonne DÉJEANT-PONS, Head of the Landscape, Cultural Heritage and Spatial Planning Division, Executive Secretary of the European Landscape Convention and CEMAT, Council of Europe, F-67075 STRASBOURG CEDEX

Tel.: +33(0) 3 88 41 23 98 Fax: +33(0) 3 88 41 37 51  
E-mail: maguelonne.dejeant-pons@coe.int

Mrs. Tania BRAULIO, Assistant, Service of Culture, Heritage and Diversity, Council of Europe, F-67075 STRASBOURG CEDEX

Tel: +33(0)3 88 41 32 06  
Mobile: +33 (0)6 60 82 72 83  
E-mail: tania.braulio@coe.int

# PROGRAMME



## EUROPEAN LANDSCAPE CONVENTION

### Florence Convention

#### ***NINTH COUNCIL OF EUROPE MEETING OF THE WORKSHOPS FOR THE IMPLEMENTATION OF THE EUROPEAN LANDSCAPE CONVENTION III INTERNATIONAL CONGRESS ON LANDSCAPE AND INFRASTRUCTURES***

*being held during the Spanish EU Presidency in spring 2010*



**- FINAL PROGRAMME -**

### ***Landscape and infrastructure for society***



Córdoba

**Córdoba, Spain, 15 – 16 April 2010**

Palacio de Congresos

**Study visits, 17 April 2010**

Document by the Cultural Heritage, Landscape and Spatial Planning Division of the Council of Europe



The Meeting is organised by the Council of Europe – Cultural Heritage, Landscape and Spatial Planning Division, Directorate of Culture and Cultural and Natural Heritage – in cooperation with the Government of Spain – Ministry of Public Works, Ministry of Culture, Ministry of Environment, Agriculture and Rural and Marine Affairs – the Junta de Andalucía, Department of Public Works and Housing, and the Center for Landscape and Territory of Andalucía, Seville, Spain.

### **Introduction**

The Council of Europe European Landscape Convention was adopted in Florence (Italy) on 20 October 2000 and came into force on 1 March 2004, with the aim of promoting European landscape protection, management and planning and organising European co-operation in this area. The Convention is the first international treaty to be exclusively concerned with all aspects of European landscape. It applies to the entire territory of the Parties and covers natural, rural, urban and peri-urban areas. It concerns landscapes that might be considered outstanding as well as everyday or blighted landscapes.

The Convention represents an important contribution to the implementation of the Council of Europe’s objectives, namely to promote democracy, human rights and the rule of law and to seek common solutions to the main problems facing European society today. By taking into account landscape, cultural and natural values, the Council of Europe seeks to protect the quality of life and well-being for all.

As of 30 out of 47 member states of the Council of Europe had ratified the Convention: Armenia, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Moldova, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Slovak Republic, Slovenia, Spain, “the former Yugoslav Republic of Macedonia”, Turkey, Ukraine, United Kingdom. Seven states had signed but not ratified it: Azerbaijan, Bosnia and Herzegovina, Greece, Malta, Serbia, Sweden and Switzerland.

Organised by the Council of Europe on a regular basis since 2002, the Meetings of the Workshops for the implementation of the European Landscape Convention take a detailed look at the implementation of the Convention. Special emphasis is given to the experiences of the state hosting the meeting.

A genuine forum for sharing practice and ideas, the Meetings are also an opportunity to present new concepts and achievements in connection with the Convention. The proceedings are published in the Council of Europe's "European Spatial Planning and Landscape" series. The following Meetings of the Council of Europe Workshops for the implementation of the European Landscape Convention have been held so far:

23-24 May 2002, Strasbourg: "Landscape policies: contribution to the well-being of European citizens and to sustainable development (social, economic, cultural and ecological approaches); Landscape identification, evaluation and quality objectives, using cultural and natural resources; Awareness-raising, training and education; Innovative tools for the protection, management and planning of landscape"

27-28 November 2003, Strasbourg: "Integration of landscapes in international policies and programmes and transfrontier landscapes; Landscapes and individual and social well-being; Spatial planning and landscape";

16-17 June 2005, Cork (Ireland): "Landscapes for urban, suburban and peri-urban areas"

11-12 May 2006, Ljubljana (Slovenia): "Landscape and society"

28-29 September 2006, Gerona (Spain): "Landscape quality objectives: from theory to practice"

20-21 September 2007, Sibiu (Romania): "Landscape and rural heritage"

24-25 April 2008, Piestany (Slovakia) "Landscape in planning policies and governance: towards integrated spatial management"

8-9 October 2009, Malmö (Sweden), "Landscape and driving forces"

Website of the European Landscape Convention:  
[www.coe.int/europeanlandscapeconvention](http://www.coe.int/europeanlandscapeconvention)

## Organisers

The Council of Europe wishes to thank for their cooperation the Government of the Spain – Ministry of Public Works, Ministry of Culture and Ministry of Environment and Rural and Marine Affairs –, the Junta de Andalucía, Department of Public Works and Housing, and the Center for Landscape and Territory of Andalucía, Seville, Spain.

The Council of Europe also thanks the Swiss Federal Office of the Environment, Forestry and Landscape for its support.

## Partners Organisations

AYUNTAMIENTO DE CÓRDOBA



DIPUTACIÓN PROVINCIAL  
DE CÓRDOBA



UNIVERSIDAD DE CÓRDOBA



UNIVERSIDAD INTERNACIONAL  
DE ANDALUCÍA (UNIA)



GESTIÓN DE INFRAESTRUCTURAS  
DE ANDALUCÍA S.A. (GIASA)



Gestión de infraestructuras de Andalucía, S.A.  
CONSEJERÍA DE OBRAS PÚBLICAS Y VIVIENDA

CENTRO DE ESTUDIOS PAISAJE  
Y TERRITORIO DE ANDALUCÍA



Centro de Estudios Paisaje y Territorio  
JUNTA DE ANDALUCÍA  
UNIVERSIDADES PÚBLICAS DE ANDALUCÍA

## **The aim of the Meeting of the Workshops**

The theme chosen of the Meeting provides a framework to discuss jointly current developments in the field of infrastructures policies and the way they incorporate landscape as an essential part of them.

In order to achieve strong, forward looking policies, strategies and effective measures for landscape governance, there is a need to explore and to understand the forces of landscape transformation. These issues are highly relevant to the implementation of the entire European Landscape Convention and especially to the implementation of its Article 5d.:

“each party undertakes to integrate landscape into its regional and town planning policies and in its cultural, environmental, agricultural, social and economic policies, as well as in any **other policies with possible direct or indirect impact on landscape**”.

The structure of the Meeting aims to combine and exchange insights, perspectives, practical and theoretical approaches from the European, national, regional and local levels.

## **Information on the Websites of Spanish Authorities**

Ministry of Public Works: [www.fomento.es](http://www.fomento.es)

Ministry of Culture: [www.mcu.es](http://www.mcu.es)

Ministry of Environment and Rural and Marine Affairs: [www.marm.es](http://www.marm.es)

Junta de Andalucía, Department of Public Works and Housing:

[www.juntadeandalucia.es/obraspublicasytransportes](http://www.juntadeandalucia.es/obraspublicasytransportes)

[www.juntadeandalucia.es/viviendayordenaciondelterritorio/](http://www.juntadeandalucia.es/viviendayordenaciondelterritorio/)

Centre for Landscape and Territory of Andalucía, Seville, Spain:

[www.paisajeyterritorio.es](http://www.paisajeyterritorio.es)

## **Venue**

The Meeting will be held at the Palacio de Congreso de Córdoba, Andalucía, Spain:

Torrijos, 10 - Palacio de Congresos - Tel.: 957471235 - [www.andalucia.org](http://www.andalucia.org)

Office of tourism of Córdoba: [www.turismodecordoba.org](http://www.turismodecordoba.org), Plaza de la Tendillas, 5, Tlf. 957491677



## **Participants**

The Meeting is addressed to government officials, representatives of local and regional authorities, universities, professionals, governmental and non-governmental organisations working on landscape and sustainable spatial development. The number of participants is limited to 250.

## **Working languages**

The working languages are English, French and Spanish.

## **Side events**

Exhibitions on initiatives related to infrastructure and landscape will be presented during the Meeting.

A photograph exhibition concerning infrastructure and landscape will be also presented.

Exhibit space during the whole Meeting at the Palacio de Congresos de Córdoba – poster presentations, book tables, additionally communication papers can be submitted to the Center for Landscape and Territory Studies of Seville by 28 February 2010. Concerning side events, please contact Mrs Rebeca MORA FERNANDEZ-VEGNE, Responsible of International Congress Concord Congressos Torrijos 10, 14003 Córdoba, SPAIN, Tel: +34 (0) 902 123 411, Fax: +34 (0) 902 123 412

E-mail: [paisajeinfraestructuras@concordcongresos.com](mailto:paisajeinfraestructuras@concordcongresos.com)

Public institutions and agencies together with non-governmental organisations have been invited to provide ongoing presentations at the visual room exhibition which will be opened to attendants during Meeting.

## **Organisation – contacts**

### **Council of Europe Cultural Heritage, Landscape and Spatial Planning Division (DGIV)**

Mrs Maguelonne DEJEANT-PONS  
Head of Cultural Heritage, Landscape and  
Spatial Planning Division  
Council of Europe, DG IV  
F-67075, STRASBOURG Cedex  
Tel: + 33 (0) 3 88 41 23 98  
Fax: + 33 (0) 3 88 41 37 83  
E-mail: maguelonne.dejeant-pons  
@coe.int

Mrs Béatrice SAUVAGEOT  
Assistant  
Cultural Heritage, Landscape and Spatial  
Planning Division  
Council of Europe, DG IV  
F-67075 STRASBOURG Cedex  
Tel: +33 (0)3 88 41 22 53  
Fax: +33 (0)3 88 41 37 83  
E-mail: beatrice.sauvageot@coe.int

Ms Tania BRAULIO  
Assistant  
Cultural Heritage, Landscape and Spatial  
Planning Division  
Council of Europe, DG IV  
F-67075 STRASBOURG Cedex  
Tel: +33 (0)3 90 21 51 55  
Fax: +33 (0)3 88 41 37 83  
E-mail: tania.braulio@coe.int

### **Government of the Spain Ministry of Public Works Ministry of Culture Ministry of Environment and Rural and Marine Affairs Junta de Andalucía, Department of Public Works and Transports**

Mr Florencio ZOIDO NARANJO  
Head of the Center for Landscape and  
Territory of Andalucía  
Patio de Banderas, 14  
ES- 41004 – SEVILLA  
Tel: + 34 (0) 9 54 71 25 44  
Fax: + 33 (0) 9 54 71 25 55  
E-mail: florencio.zoido.ext@  
juntadeandalucia.es

Mr Ignacio ESPANOL ECHANIZ  
Senior Lecturer in Landscape and  
Infrastructure  
Polytechnic University of Madrid  
ES- 28040 – MADRID  
Tel: + 34 (0) 91 542 67 07  
Fax: + 33 (0) 9 54 71 25 55  
E-mail: ignacioespanol@yahoo.es

Mrs Rebeca MORA  
FERNANDEZ-VEGNE  
Responsible of International Congress  
Concord Congressos  
Torrijos 10  
ES- 14003 CÓRDOBA  
Tel: +34 (0) 902 123 411  
Fax: +34 (0) 902 123 412  
E-mail: paisajeinfraestructuras  
@concordcongresos.com

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## **THURSDAY 15 APRIL 2010**

### **9.00 – 9.30 REGISTRATION OF THE PARTICIPANTS**

#### **OPENING SESSION**

### **9.30 – 10.00 WELCOME SPEECHES**

**Mr Eduardo PALLARDÓ COMAS**, Deputy Director of Planning of Transport and Infrastructures, General Directorate of Planning of the Ministry of Public Works, Spain

**Mrs Maguelonne DEJEANT-PONS**, Head of Cultural Heritage, Landscape and Spatial Planning Division of the Council of Europe

**Mr Andreas STALDER**, Vice-President of the Steering Committee for Cultural Heritage and Landscape (CDPATEP), Representative of Switzerland for the European Landscape Convention

**Mr Jean-François SEGUIN**, President of the Council of Europe Conference on the European Landscape Convention

**Mr Andres OCANA RABADAN**, Mayor of the Local Council of Córdoba

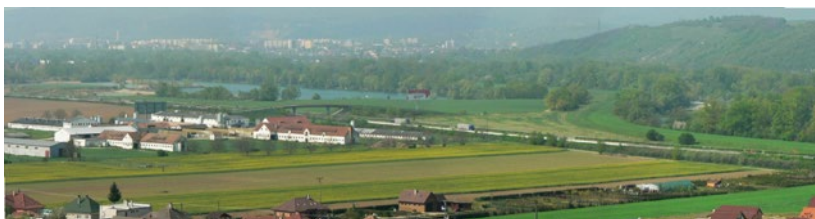
**Ms Rosa AGUILAR RIVERO**, Regional Ministry of Public Works and Housing, Junta de Andalucía

#### **KEYNOTE PRESENTATION OF THE MEETING**

### **10.00 – 10.20 Infrastructures policies from the European Landscape Convention viewpoint**

**Mr Florencio ZOIDO NARANJO**, Director of the Center for Landscape and Territory Studies, Seville, Spain

### **10.20 – 10.50 COFFEE BREAK**



**– WORKSHOP 1 –**  
**EUROPEAN NETWORKS AND LANDSCAPE**

*The aim of this Workshop is to approach European landscapes from the mobility point of view. An integrated vision on transport and mobility of people is seek within the European Landscape Convention framework. European experiences in the field will be presented and discussed.*

**10.50 – 13.00 hours**

**Chairs:** **Mrs Anita BERGENSTRÄHLE-LIND**, Member of the Steering Committee for Cultural Heritage and Landscape (CDPATEP) of the Council of Europe and Deputy Head of Department for Sustainable Management, Swedish National Heritage Board

**Mrs Margarita ORTEGA**, Ministry of Environment, Agriculture and Rural and Marine Affairs, Representative of Spain for the Committee of Senior Officials of the Council of Europe Conference of Ministries responsible for Spatial/Regional Planning - CEMAT

**OPENING PRESENTATION OF THE SESSION**

**10.50 – 11.10** Infrastructure networks in the landscape

**Mr Ignacio ESPANOL ECHANIZ**, Professor in Landscape and Civil engineering, University Polytechnic of Madrid, Spain



## PRESENTATIONS

- 11.10 – 11.25** Natural, artificial, sensible logics: highways, railways, airports, channels  
**Mr Bernard LASSUS**, Landscape architect, France
- 11.25 – 11.40** Landscape planning as an information basis for environmental impact assessment for pipelines in the Baikal Region  
**Mr Adrian HOPPENSTEAD**, Professor, Member of the European Federation of Landscape Architects (EFLA) and  
**Mr Valery KRAVTSCHENKO**, Member of the Academy of Science, Russian Federation
- 11.40 – 11.55** Landscape and renewal energy production - Conflict of objectives, conceptual approaches  
**Mr Andreas STALDER**, Vice-President of the Steering Committee for Cultural Heritage and Landscape (CDPATEP), Representative of Switzerland for the European Landscape Convention
- 11.55 – 12.10** Networks and landscape in planning  
**Mr Ignacio POZUELO MEÑO**, Department of Public Works and Housing, Junta de Andalucía
- 12.10 – 12.25** Through a new landscape strategy in Andalucía in the context of cooperation on landscape of European Local and Regional Authorities  
**Mr Andreas HILDENBRANDT SCHEID**, Regional Department of Publics Works and Housing of the Junta de Andalucía and **Mr Riccardo PRIORE**, Director of the European Network of Local and Regional Authorities RECEP-ENELC
- 12.35 – 13.00** **DISCUSSION**  
*Moderators:* **Mrs Mireille DECONINCK**, Representative of Belgium for the European Landscape Convention

**Mr Joan GANYET**, General Director for Architecture and Landscape of the Generalitat de Catalunya, Spain

### **INTRODUCTION SPEECH TO DEBATE**

**Speaker:** **Mr Michael STARRETT**, Chief Executive of the Heritage Council, Representative of Ireland for the European Landscape Convention

*with the participation of:*

- *Members of the CDPATEP and of the Council of Europe Conference on the European Landscape Convention*
- *National Representatives of Ministries*
- *Regional and Local Representatives*
- *Representatives of the NGOs and Training institutions*
- *Spanish and international Experts*

### **END OF THE SESSION**

**13.00 – 15.00 LUNCH**



**– WORKSHOP 2 –**  
**INFRASTRUCTURES AND LANDSCAPE IN A SUSTAINABLE  
MODEL**

*Transport infrastructures for people and energy play a main role in the construction of sustainable landscapes. Main infrastructures issues will be reviewed within the sustainable landscape vision.*

**15.00 – 18.30 hours**

**Chairs:** **Mrs Maria José FESTAS**, Deputy President of the Council of Europe Conference on the European Landscape Convention, Ministry of Environment and Spatial Planning of Portugal  
**Mr Audun MOFLAG**, Representative of Norway to the European Landscape Convention, Ministry of the Environment, Department for Regional Planning of Norway

**OPENING PRESENTATION OF THE SESSION**

**15.00 – 15.20** The landscape conforming project of metropolitan roads: the case of Andalucía

**Mr Damián ALVAREZ SALA**, Department of Public Works and Housing, Junta de Andalucía

**PRESENTATIONS**

**15.20 – 15.35** Policy of Infrastructures and the landscape of Turkey

**Mrs Serap KARGIN** and **Mr Abdurrahman GUZELKELES**, Representatives of Turkey to the

European Landscape Convention, Ministry of Environment and Forest of Turkey

**15.35 – 15.50**

Landscape for photovoltaic energy production

**Mr Matias MERIDA**, Professor, Department of Geography, University of Malaga, Spain

**15.50 – 16.20**

**COFFEE BREAK**

**16.20 – 16.45**

Landscape as a reference to sustainable policies: the case of Nansa Valley

**Mr Rafael MATA OLMO**, Professor, Autonomous University of Madrid and

**Mrs Angela DE MEER**, Lecturer, University of Cantabria

**16.45 – 17.00**

The aesthetics of sustainable landscape infrastructure

**Mrs Kathryn MOORE**, Representative of the European Foundation of Landscape Architecture (EFLA)

**17.00 – 17.15**

Infrastructures in the landscape: the case of Mallorca

**Mrs Maria Luisa DUBON**, Councillor of the Territory, Island Council of Majorca, Balearic Islands, Spain

**17.15 – 17.45**

Summary of papers submitted to the workshop

**Rapporteur:**

**Mr Pascual RIESCO CHUECA**, Senior lecturer of the High Technical School of Industrial Engineering, University of Seville, Spain

**17.45 – 18.15**

**DISCUSSION**

**Moderators:**

**Mrs Daniela SANDRONI**, Ministry for Cultural Heritage and activities, Director of landscape quality and preservation, Representative of Italy for the European Landscape Convention

**Mr Eduardo TAMARIT**, Department of Public Work and Housing, Junta de Andalucía

*with the participation of:*

*- Members of the CDPATEP and of the Council of Europe Conference on the European Landscape Convention*

- *National Representatives of Ministries*
- *Regional and Local Representatives*
- *Representatives of the NGOs and Training institutions*
- *Spanish and international Experts*

**END OF THE SESSION**

**19.00**

**VISIT TO THE MOSQUE DE CORDOBA**

**21.00**

**OFFICIAL RECEPTION HOSTED BY THE LOCAL  
COUNCIL OF CORDOBA**

## **FRIDAY 16 APRIL 2010**



### **– WORKSHOP 3 –**

#### **LANDSCAPE CRITERIA FOR INFRASTRUCTURE DESIGN**

*Landscape has become a main reference for planning and design of infrastructures. European experiences in infrastructure integration into landscape will be presented together with positive criteria for infrastructure landscape enhancement.*

#### **9.00 – 13.00 hours**

**Chairs:** **Mr Andranik HOVHANNISYAN**, First Secretary, Ministry of Foreign Affairs, Republic of Armenia  
**Mr Hugh LLEWELYN**, Director, Department for Environment, Food and Rural Affairs, Representative of the United Kingdom for the European Landscape Convention

#### **OPENING PRESENTATION OF THE SESSION**

**9.00 – 9.20** Road design for landscape integration.

**Mr Justo BORRAJO SEBASTIÁN**, Head of Highway Department, Ministry of Public Works, Spain

#### **PRESENTATIONS**

**9.20 – 9.35** Land transport infrastructures, landscape and ecosystems interaction

**Mr Yves LUGINBÜHL**, Professor at the University of Paris, France

- 9.35 – 9.50** Landscape, nature and road integration in Greece  
**Mr Kimon HADJIBIROS**, Professor at the Technical national University of Athens, Greece
- 9.50 – 10.05** Treerows roads in landscape  
**Mrs Chantal PRADINES**, Civil engineer, École Centrale Paris, Member of the “Trees and Roads“ Association
- 10.05 – 10.25** **COFFEE BREAK**
- 10.25 – 10.40** Criteria for road design in sensitive areas  
**Mr Luis RAMAJO**, Department of Environment of the Public Agency for Infrastructures of Andalucía S.A. (GIASA), Department of Public Work and Housing, Junta de Andalucía
- 10.40 – 10.55** Design infrastructures for pedestrian landscapes  
**Mr Jeppe Aagaard ANDERSEN**, Landscape Architect, Former President of the European Federation of Landscape Architects (EFLA), Denmark
- 10.55 – 11.10** Landscape paths in Czech Republic  
**Mrs Julia TOBIKOVA**, Ministry of the Environment, Representative of Czech Republic to the European Landscape Convention
- 11.10-11.25** Landscape in road construction projects by the Junta de Andalucía  
**Mr José Antonio GOMEZ CASADO**, Director of Engineer and Sustainability of the Public Agency of Infrastructures of Andalucía S.A. (GIASA) Department of Public Work and Housing, Junta de Andalucía
- 11.25 – 12.15** Summary of papers submitted to the workshop  
**Rapporteur:** **Mr Diego FERNANDEZ BELMONTE**, Centre of Studies Landscape and Territory of Andalucía, Spain

**12.15 – 13.00      DISCUSSION**

**Moderators:**      **Mrs Lionella SCAZZOSI**, Professor at the University of Milano

**Mrs Pavlina MISIKOVA**, Ministry of the Environment, Representative of the Slovak Republic to the European Landscape Convention

*with the participation of:*

- *Members of the CDPATEP and of the Council of Europe Conference on the European Landscape Convention*
- *National Representatives of Ministries*
- *Regional and Local Representatives*
- *Representatives of the NGOs and Training institutions*
- *Spanish and international Experts*

**END OF THE SESSION**

**13.00 – 15.00      LUNCH**





**– WORKSHOP 4 –**  
**INFRASTRUCTURES FOR THE LANDSCAPE**  
**AND ITS RESTORATION**

*Infrastructures can bring people closer to landscape values if this dimension is positively incorporated at early stages of planning and design procedures. Besides, restoration techniques play a main role in landscape recovery.*

**15.00 – 18.30 hours**

**Chairs:** **Mrs Linarejos CRUZ PEREZ**, Institute for Culture, Ministry of Culture of Spain, Member of the Steering Committee for Cultural Heritage and Landscape (CDPATEP) of the Council of Europe  
**Mr Graham FAIRCLOUGH**, European Association of Archaeologists (EEA)

**OPENING PRESENTATION OF THE SESSION**

**15.00 – 15.20** Vías verdes: greenways on abandoned railways in Spain  
**Mrs Carmen AYCART**, Director of the Spanish Railways Foundation, European Greenways on behalf of the Ministry of Public Works, Spain

**PRESENTATIONS**

**15.20 – 15.35** The programme of landscape roads in Andalucía, Spain  
**Mr Juan José MARTIN RODRIGUEZ**, Department of Public Works and Housing of the Junta de Andalucía and

**Mr Jesus RODRIGUEZ RODRIGUEZ**, Head of Research, Center of Studies Landscape and Territory of Andalucía, Spain

**15.35 – 15.50** Roads in mountain landscapes, restoration and recovery: the case of Andorra

**Mrs Anna MOLES**, Representative of Andorra for the European Landscape Convention, Ministry of Spatial Planning and Environment of Andorra

**15.50 – 16.10** **COFFEE BREAK**

**16.10 – 16.25** The roman road from Bologna to Cologne: la chaussée romaine Boulogne-Cologne

**Mrs Marie-Jeanne GHENNE**, Head of the Secretariat of the Hainaut Province Chamber, Royal Commission on Monuments, Sites and Excavations, Walloon Region, Belgium

**16.25 – 16.40** Landscape design of bicycle and pedestrian traffic lanes in Finland

**Ms Laura SOOSALU**, Landscape Architect, Destia Ltd., Planning Services, Landscape Design

**16.40 – 16.55** Innovation in landscape recovery techniques

**Mr José Luis ROSUA CAMPOS**, Professor, Faculty of Biology, University of Granada

**16.55 – 17.15** Summary of papers submitted to the workshop

**Rapporteur:** **Ms Elena Maria MUNOZ ESPINOSA**, Lecturer, University of Castilla-La-Mancha, Spain

### **DISCUSSION**

**Moderators:** **Mrs Kapka PANTCHEVA**, Adviser to the Ministry of Environment and Water, Bulgaria

**Mr Phaedon ENOTIADES**, Representative of Cyprus for the European Landscape Convention, Planning Officer, Department of Town Planning and Housing of the Ministry of Interior, Cyprus

*with the participation of:*

- *Members of the CDPATEP and of the Council of Europe Conference on the European Landscape Convention*
- *National Representatives of Ministries*
- *Regional and Local Representatives*
- *Representatives of the NGOs and Training institutions*
- *Spanish and international Experts*

**END OF THE SESSION**

**17.15 – 18.30 CLOSING SESSION**

**Chairs:** **Mrs Daniela SANDRONI**, Ministry for Cultural Heritage and activities, Director of landscape quality and preservation, Representative of Italy for the European Landscape Convention

**Mr Enrico BUERGI**, Former Chair of the Council of Europe Conference on the European Landscape Convention

**Moderators:** **Mr Pedro RODRIGUEZ ARMENTEROS**, Department of Public Works and Housing, Junta de Andalucía

**Mr Jerker MOSTROM**, Department for Sustainable Management, Swedish National Heritage Board

**17.15 – 18.00 ROUND TABLE**

The European Landscape Convention as a base for sectoral policies on infrastructures (discussion without power-point led by moderators)

**Mr Felix BENITO**, Professor of History of Town, European University of Madrid, Spain

**Mr Johan BERGQVIST**, Landscape Architect and Senior Adviser at the Swedish Transport Administration

**Mrs Anne-Marie CHAVANON**, Chair of the Sustainable Territorial Development Committee of the Conference of INGOs of the Council of Europe

**Mr Jacobo DIAZ PINEDA**, Director of the Spanish Association for Roads

**Mr Abdelouahab IDELHADJ**, Professor at the University Abdelmalek Essaadi, Rural Tourism and Cultural Heritage, Responsible of the Club Heritage, Development, Citizenship, Sustainable Development, Tanger-Tétouan, Morocco

**Mr Gabor KISS**, Representative of Hungary for the European Landscape Convention, Ministry of Environment and Water

**Mr Ricardo MARQUES**, President of the Cycling Association “Acontramano”, Sevilla

**Mr Giorgio PIZZILO**, Professor at the University of Architecture of Florence, Italy, Director of the Atelier Paesaggio Mediterraneo

**Mrs Karin SCHIBBYE**, Head of Unit, Department for Sustainable Management, Swedish National Heritage Board

**18.00 – 18.30      GENERAL CONCLUSIONS OF THE WORKSHOPS**

**Mr Ignacio ESPANOL ECHANIZ**, Senior Lecturer in Landscape and Civil Engineering, University Polytechnic of Madrid. With the co-operation of the chairs and rapporteurs from each session.

**CLOSING SPEECHES**

**Mr Jean-François SEGUIN**, President of the Council of Europe Conference on the European Landscape Convention  
**Mrs Maguelonne DEJEANT-PONS**, Head of the Cultural Heritage, Landscape and Spatial Planning Division, Council of Europe

**Mr Eugenio DOMINGUEZ VILCHES**, Director of the Public Agency for Infrastructures of Andalucía S.A.(GIASA) Department of Public Work and Housing, Junta de Andalucía

**FREE EVENING**

## **SATURDAY 17 APRIL 2010**

### **STUDY VISITS**

**Department of Geography, University of Cordova. Alfonso Mulero Mendigorri. Head of Department**

#### **Tour A. Old Cordova and the Royal Town of Madinat Al-Zahara**

Responsible experts: **Alfonso Mulero Mendigorri – Martín Torres Márquez**

The tour starts at the roman bridge where the recent restoration works will be explained. A brief stroll around the historic center of Cordova will provide a view on the history of the town. After a coffee break we will be taken by bus to value the landscape integration works carried out for the western sector of the Cordova ring road.. Later, we will be shown the main transport infrastructures along the Guadalquivir valley from the breathtaking castle of Almodovar del Río where we will have lunch (14.00). After lunch, we will be taken to the ruins of Madinat Al-Zahara Royal Palace Town where we will have the chance of appreciating the landscape sensitivity of the old Jalifas of Córdoba. All visits will be commented by specialists from Cordoba University and the Andalusian administration. It is expected to be back at Cordoba around 18.30. Changes in this itinerary can be introduced later according to the availability of services. in the places which are to be visited.

#### **Tour B. Countryside and towns of the Sierras Subbeticas**

Responsible experts: **José Naranjo Ramírez – Gema Florido Trujillo**

Along the A-4 road we will be taken to Cortijo Los Libros (old traditional Andalusian farm) from where the landscape of the countryside will be viewed and explained. A drive along the N-333 will allow us to appreciate the landscape of the lower country (around the towns of Fernan Núñez and Montemayor). Before a coffee break, the features and structure of this agrarian landscape will be commented at their sight from this privileged viewpoint. Driving through olive groves and crops we will get to the abandoned railway station of Cabra which today houses a visitor centre for the Green Path of the Subbeticas (an abandoned railway which has been

adapted as a green path). We will have lunch at Cabra (14.00). From Cabra the tour will proceed towards Priego and up to the top of the Picacho peak where we will visit the Sanctuary of Virgen de La Sierra. Going down to Zuheros we will stop at the view point of Zuheros and, later, by the gorge of the Bailón river. Back in Zuheros town we will be able to stroll along its streets before going back to Córdoba. All visits will be commented by specialists from Córdoba University and the Andalusian administration. It is expected to be back at Córdoba around 19.30. Changes in this itinerary can be introduced later according to the availability of services in the places which are to be visited.

### **Tour C. Montoro and the Sierra Morena**

Responsible experts : **Manuel Rivera Mateos – Rafael Garzón García**

Along the A4 will get to the pintoresque town of Montoro located on a rock and surrounded by a stuck meander of Guadalquivir river. There we will visit the new bridge (in service since last summer) over the river. After a coffee break we will stop by the XVI century Puente de las Donadas (Begiven ladies bridge) of roman origin. There we will be explained the landscape of this special spot of Montoro, the river meander, the rock where the town settles and the urban structure and history. We will move towards Cardeña in the Sierra Morena, a stop by the access to the Nature Park of Cardeña and Montoro will allow us to be told about the olive landscapes at the bottom and their transition to the forestry and game landscapes of the sierra. Following an antique cattle path we will get up to El Cerezo in the core of the Nature Park, where we will appreciate the dehesas (cleared forest), the Mediterranean forest, the quartz sierras and the valley of river Yeguas (mares). It is expected to get to Villanueva de Córdoba around 14.30 to have lunch there. In the way back to Córdoba we will stop at the Commons (Montes Comunales) of Adamuz where will have an explanation on the landscapes. A second stop at the riverside of Matapuerca will allow us to enjoy a refreshing view on the river forest and the panoramas of the lower Sierra Morena, Guadalquivir valley and country. All visits will be commented by specialists from Córdoba University and the Andalusian administration. It is expected to be back at Córdoba around 19.30. Changes in this itinerary can be introduced later according to the availability of services in the places which are to be visited.







## CONVENTION EUROPÉENNE DU PAYSAGE

### Convention de Florence

### *NEUVIÈME RÉUNION DU CONSEIL DE L'EUROPE DES ATELIERS POUR LA MISE EN ŒUVRE DE LA CONVENTION EUROPÉENNE DU PAYSAGE III CONGRÈS INTERNATIONAL SUR LE PAYSAGE ET LES INFRASTRUCTURES*

*Organisée durant la présidence espagnole de l'UE en 2010*



- PROGRAMME FINAL -

### *Paysage et infrastructure pour la société*



Cordoue

**Cordoue, Espagne, 15-16 avril 2010**

Palacio de Congressos

**Visites d'étude, 17 avril 2010**

Document de la Division du patrimoine culturel, du paysage et de l'aménagement du territoire  
du Conseil de l'Europe

La réunion est organisée par le Conseil de l'Europe – Division du patrimoine culturel, du paysage et de l'aménagement du territoire, et Direction de la culture et du patrimoine culturel et naturel – en coopération avec le Gouvernement espagnol – Ministère des Travaux publics, Ministère de la Culture, Ministère de l'Environnement et du milieu rural et marin –, la *Junta de Andalucía*, Département des Travaux publics et du Logement, et le Centre d'étude du paysage et du territoire d'Andalousie, Séville, Espagne.

### **Introduction**

La Convention européenne du paysage du Conseil de l'Europe a été adoptée à Florence (Italie) le 20 octobre 2000 et est entrée en vigueur le 1<sup>er</sup> mars 2004 dans l'objectif de promouvoir la protection, la gestion et l'aménagement des paysages, et d'organiser la coopération européenne dans ce domaine. La Convention est le premier traité international exclusivement consacré à l'ensemble des dimensions du paysage européen. Elle s'applique à tout le territoire des Parties et porte sur les espaces naturels, ruraux, urbains et périurbains. Elle concerne donc de la même façon les paysages pouvant être considérés comme remarquables, que les paysages du quotidien et les paysages dégradés.

La Convention représente une importante contribution à la mise en œuvre des objectifs du Conseil de l'Europe, qui sont de promouvoir la démocratie, les droits de l'homme, la prééminence du droit ainsi que de rechercher des solutions communes aux grands problèmes de société de l'Europe. En prenant en compte les valeurs paysagères, naturelles et culturelles du territoire, le Conseil de l'Europe cherche à préserver la qualité de vie et le bien-être pour tous.

Sur les 47 Etats membres du Conseil de l'Europe, 30 ont ratifié la Convention : Arménie, Belgique, Bulgarie, Croatie, Chypre, République tchèque, Danemark, Finlande, France, Hongrie, Irlande, Italie, Lettonie, Lituanie, Luxembourg, Moldova, Monténégro, Pays-Bas, Norvège, Pologne, Portugal, Roumanie, Saint-Marin, République slovaque, Slovénie, Espagne, « l'ex-République yougoslave de Macédoine », Turquie, Ukraine, Royaume-Uni. Sept Etats l'ont également signée, mais pas encore ratifiée : Azerbaïdjan, Bosnie-Herzégovine, Grèce, Malte, Serbie, Suède et Suisse.

Organisées périodiquement depuis 2002 par le Conseil de l'Europe, les réunions des Ateliers pour la mise en œuvre de la Convention européenne du paysage

ont pour objectif de faire un point précis sur l'application de la Convention. Les expériences réalisées par l'Etat qui accueille la réunion sont tout spécialement présentées. Véritable forum d'échange de pratiques et d'idées, ces réunions permettent de présenter de nouveaux concepts et réalisations en application de la Convention. Les actes de ces ateliers sont publiés dans la Série du Conseil de l'Europe « Aménagement du territoire européen et paysage ». Ci-après, les réunions des Ateliers du Conseil de l'Europe pour la mise en œuvre de la Convention européenne du paysage qui ont été organisées depuis 2002 :

23-24 mai 2002, Strasbourg : « *Politiques du paysage : contribution au bien-être des citoyens européens et au développement durable (approches sociale, économique, culturelle et écologique) ; Identification, qualification du paysage et objectifs de qualité paysagère, en tirant parti des ressources culturelles et naturelles ; Sensibilisation, éducation et formation ; Instruments novateurs en vue de la protection, de la gestion et de l'aménagement du paysage* » ;

27 et 28 novembre 2003, Strasbourg : « *L'intégration du paysage dans les politiques et programmes internationaux et les paysages transfrontaliers ; Paysage et bien-être individuel et social ; Paysage et aménagement du territoire* » ;

16-17 juin 2005, Cork (Irlande) : « *Des paysages pour les villes, les banlieues et les espaces périurbains* » ;

11 et 12 mai 2006, Slovénie (Ljubljana) : « *Paysage et société* » ;

28-29 septembre 2006, Gironne (Espagne) : « *Les objectifs de qualité paysagère, de la théorie à la pratique* » ;

20-21 septembre 2007, Sibiu (Roumanie) : « *Paysage et patrimoine rural* » ;

24-25 avril 2008, Piestany (République slovaque) : « *Le paysage dans les politiques de planification et la gouvernance : vers un aménagement intégré du territoire* » ;

8-9 octobre 2009, Malmö (Suède) : « *Paysage et forces déterminantes* ».

Site internet de la Convention européenne du paysage : [www.coe.int/conventioneuropennedupaysage](http://www.coe.int/conventioneuropennedupaysage)

## **Organisateurs**

Le Conseil de l'Europe souhaite remercier pour leur coopération le Gouvernement espagnol – le Ministère des Travaux publics, le Ministère de la Culture, et le Ministère de l'Environnement et du milieu rural et marin –, la *Junta de Andalucía*, Département des Travaux publics et du Logement, et le Centre d'étude du paysage et du territoire d'Andalousie, Séville, Espagne.

Le Conseil de l'Europe remercie également pour son soutien l'Office fédéral suisse de l'environnement, des forêts et du paysage.

## **Organisations partenaires**

AYUNTAMIENTO DE CÓRDOBA



DIPUTACIÓN PROVINCIAL DE CÓRDOBA



UNIVERSIDAD DE CÓRDOBA



UNIVERSIDAD INTERNACIONAL DE ANDALUCÍA (UNIA)



GESTIÓN DE INFRAESTRUCTURAS DE ANDALUCÍA S.A. (GIASA)



CENTRO DE ESTUDIOS PAISAJE Y TERRITORIO DE ANDALUCÍA



## **L'objet de la réunion des Ateliers**

Le thème choisi pour cette réunion fournit le cadre d'une discussion commune sur les développements en cours dans le domaine des politiques relatives aux infrastructures et sur la manière dont celles-ci intègrent le paysage en tant qu'élément inhérent fondamental.

Afin d'établir des politiques solides et orientées sur le long terme, des stratégies et des mesures effectives en faveur de la gouvernance du paysage, il apparaît nécessaire d'explorer et de comprendre les forces qui sous-tendent les transformations du paysage. Ces questions sont hautement importantes pour la mise en œuvre de l'ensemble de la Convention européenne du paysage, et notamment son article 5d. :

*« Chaque Partie s'engage à intégrer le paysage dans les politiques d'aménagement du territoire, d'urbanisme et dans les politiques culturelle, environnementale, agricole, sociale et économique, ainsi que dans les autres politiques pouvant avoir un effet direct ou indirect sur le paysage ».*

La structure de la réunion a pour objet de combiner et d'échanger des informations sur les avancées, perspectives et pratiques ainsi que sur les approches théoriques aux niveaux européen, national, régional et local.

## **Informations sur les sites internet des autorités espagnoles**

Ministère des Travaux publics : [www.fomento.es](http://www.fomento.es)

Ministère de la Culture : [www.mcu.es](http://www.mcu.es)

Ministère de l'Environnement et du milieu rural et marin : [www.marm.es](http://www.marm.es)

*Junta de Andalucía*, Département des Travaux publics et du Logement :

[www.juntadeandalucia.es/obraspublicasytransportes](http://www.juntadeandalucia.es/obraspublicasytransportes)

[www.juntadeandalucia.es/viviendayordenaciondelterritorio/](http://www.juntadeandalucia.es/viviendayordenaciondelterritorio/)

Centre d'étude du paysage et du territoire d'Andalousie, Séville, Espagne :

[www.paisajeyterritorio.es](http://www.paisajeyterritorio.es)

## **Lieu**

La réunion se tiendra au *Palacio de Congreso de Córdoba*, Andalousie, Espagne :

Torrijos, 10 - Palacio de Congresos - Tél.: 957471235 - [www.andalucia.org](http://www.andalucia.org)

Office de tourisme de Cordoue : [www.turismodecordoba.org](http://www.turismodecordoba.org), Plaza de la Tendillas, 5, Tlf. 957491677



## **Participants**

La réunion des Ateliers s'adresse aux représentants des gouvernements, des pouvoirs locaux et régionaux, aux universitaires, professionnels et organisations gouvernementales et non gouvernementales travaillant dans le domaine du paysage et de l'aménagement durable du territoire. Le nombre de participants est limité à 250.

## **Langues de travail**

Les langues de travail sont le français, l'anglais et l'espagnol.

## **Événements parallèles**

Des expositions sur des initiatives en lien avec les infrastructures et le paysage seront proposées durant la réunion.

Une exposition photographique sur le thème de l'infrastructure et du paysage sera également présentée.

Durant toute la durée de la réunion, animation d'un espace d'exposition au *Palacio de Congresos de Córdoba* – présentation de posters, tables de livres ; de plus, des communications peuvent être transmises au Centre d'étude du paysage et du territoire au plus tard le 28 février 2010. *Concernant les événements parallèles, veuillez prendre contact avec Mme Rebeca MORA FERNANDEZ-VEGNE, responsable du Centre international de congrès Concord Congresos, Torrijos 10, 14003 Cordoue, ESPAGNE, Tél.: +34 (0) 902 123 411, Fax: +34 (0) 902 123 412*

Courriel : [paisajeeinfraestructuras@concordcongresos.com](mailto:paisajeeinfraestructuras@concordcongresos.com)

Les agences et les institutions publiques, de même que les organisations non gouvernementales, ont été invitées à proposer des présentations dans la salle d'exposition visuelle qui sera ouverte aux participants à la réunion.

## Organisation – contacts

### **Conseil de l'Europe Division du patrimoine culturel, du paysage et de l'aménagement du territoire (DGIV)**

Mme Maguelonne DEJEANT-PONS  
Chef de la Division du patrimoine  
culturel, du paysage et de  
l'aménagement du territoire  
DG IV  
F-67075, STRASBOURG Cedex  
Tél.: + 33 (0) 3 88 41 23 98  
Fax: + 33 (0) 3 88 41 37 83  
Courriel : maguelonne.dejeant-pons  
@coe.int

Mme Béatrice SAUVAGEOT  
Assistante  
Division du patrimoine culturel, du  
paysage et de  
l'aménagement du territoire  
DG IV  
F-67075 STRASBOURG Cedex  
Tél.: +33 (0)3 88 41 22 53  
Fax: +33 (0)3 88 41 37 83  
Courriel : beatrice.sauvageot@coe.int

Mme Tania BRAULIO  
Assistante  
Division du patrimoine culturel, du  
paysage et de l'aménagement du  
territoire  
DG IV  
F-67075 STRASBOURG Cedex  
Tél.: +33 (0)3 90 21 51 55  
Fax: +33 (0)3 88 41 37 83  
Courriel: tania.braulio@coe.int

### **Gouvernement d'Espagne Ministère des Travaux publics Ministère de la Culture Ministère de l'Environnement et du milieu rural et marin Junta de Andalucía, Département des Travaux publics et des transports**

M. Florencio ZOIDO NARANJO  
Directeur du Centre d'étude du paysage  
et du territoire d'Andalousie  
Patio de Banderas, 14  
ES-41004 – SEVILLA  
Tél.: + 34 (0) 9 54 71 25 44  
Fax: + 33 (0) 9 54 71 25 55  
Courriel: florencio.zoido.ext@  
juntadeandalucia.es

M. Ignacio ESPANOL ECHANIZ  
Professeur d'infrastructure du paysage  
Université polytechnique de Madrid  
ES-28040 – MADRID  
ESPAÑA  
Tel: + 34 (0) 91 542 67 07  
Fax: + 33 (0) 9 54 71 25 55  
E-mail: ignacioespanol@yahoo.es

Mme Rebeca MORA  
FERNANDEZ-VEGNE  
Responsable du Centre international de  
congrès Concord Congressos  
Torrijos 10  
ES-14003 CÓRDOBA  
Tél.: +34 (0) 902 123 411  
Fax: +34 (0) 902 123 412  
Courriel: paisajeeinfraestructuras  
@concordcongresos.com

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## **JEUDI 15 AVRIL 2010**

### **9h00 – 9h30 INSCRIPTION DES PARTICIPANTS**

#### **SESSION D'OUVERTURE**

### **9h30 – 10h00 ALLOCUTIONS DE BIENVENUE**

**M. Eduardo PALLARDÓ COMAS**, Directeur adjoint de la planification du transport et des infrastructures, Direction générale de la planification du Ministère des travaux publics, Espagne

**Mme Maguelonne DEJEANT-PONS**, Chef de la Division du patrimoine culturel, du paysage et de l'aménagement du territoire du Conseil de l'Europe

**M. Andreas STALDER**, Vice-président du Comité directeur du patrimoine culturel et du paysage (CDPATEP), représentant pour la Suisse de la Convention européenne du paysage

**M. Jean-François SEGUIN**, Président de la Conférence du Conseil de l'Europe sur la Convention européenne du paysage

**M. Andres OCANA RABADAN**, Maire de Cordoue

**Mme Rosa AGUILAR RIVERO**, Ministère régional des Travaux publics et du logement, *Junta de Andalucía*

#### **EXPOSÉ INTRODUCTIF**

**10h00 – 10h20** Les politiques relatives aux infrastructures du point de vue de la Convention européenne du paysage

**M. Florencio ZOIDO NARANJO**, Directeur du Centre d'étude du paysage et du territoire, Séville, Espagne

### **10h20 – 10h50 PAUSE CAFÉ**





– ATELIER 1 –  
**PAYSAGE ET RÉSEAUX EUROPÉENS**

*L'objectif de cet atelier est d'approcher le paysage européen sous l'angle de la mobilité. La Convention européenne du paysage préconise une vision intégrée des transports et de la mobilité. Les expériences européennes en la matière seront présentées et examinées.*

**10h50 – 13h00**

**Présidentes :** **Mme Anita BERGENSTRÄHLE-LIND**, Membre du Comité directeur du patrimoine culturel et du paysage (CDPATEP) du Conseil de l'Europe et Chef adjointe du Département de gestion durable, Direction nationale suédoise du patrimoine

**Mme Margarita ORTEGA**, Représentante pour l'Espagne du Comité des hauts fonctionnaires de la Conférence du Conseil de l'Europe des ministres responsables de l'aménagement du territoire - CEMAT, Ministère de l'Environnement et du milieu rural et marin

**OUVERTURE DE LA SESSION**

**10h50 – 11h10** Les réseaux d'infrastructures dans le paysage

**M. Ignacio ESPANOL ECHANIZ**, Professeur de génie civil et paysages, Université polytechnique de Madrid, Espagne

## **PRÉSENTATIONS**

**11h10 – 11h25** Logiques naturelles, artificielles, sensibles : autoroutes, voies ferrées, aéroports, canaux

**M. Bernard LASSUS**, Architecte paysagiste, France

**11h25 – 11h40** L'aménagement des paysages, base d'information pour l'évaluation de l'impact des pipelines sur l'environnement dans la région Baïkal

**M. Adrian HOPPENSTEAD**, Professeur, Membre de la Fondation européenne pour l'architecture du paysage (EFLA) et

**M. Valery KRAVTSCHENKO**, Membre de l'Académie des sciences, Fédération de Russie

**11h40–11h55** Paysage et production d'énergies renouvelables – conflits d'objectifs, approches conceptuelles

**M. Andreas STALDER**, Vice-président du Comité directeur du patrimoine culturel et du paysage (CDPATEP), Représentant de la Suisse pour la Convention européenne du paysage

**11h55 – 12h10** Réseaux et paysage dans l'aménagement

**M. Ignacio POZUELO MEÑO**, Directeur général de la planification et de la durabilité au Département des Travaux publics et du logement, *Junta de Andalucía*

**12h10 – 12h25** A travers une nouvelle stratégie paysagère en Andalousie dans le contexte de la coopération en la matière des autorités européennes locales et régionales

**M. Andreas HILDENBRANDT SCHEID**, Département des Travaux publics et du logement de la *Junta de Andalucía* and Mr Riccardo PRIORE, Directeur du Réseau européen des autorités locales et régionales RECEP-ENELC

**12h35 – 13h00** **DISCUSSION**

**Modérateurs :** **Mme Mireille DECONINCK**, Représentante pour la Belgique de la Convention européenne du paysage

**M. Joan GANYET**, Directeur général d'architecture et paysage à la *Generalitat de Catalunya*, Espagne

### **RÉSUMÉ DES DOCUMENTS PRÉSENTÉS LORS DE L'ATELIER**

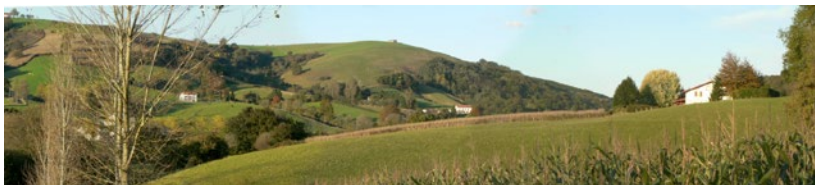
**Rapporteur :** **M. Michael STARRETT**, Directeur du Conseil du patrimoine, représentant pour l'Irlande de la Convention européenne du paysage

*avec la participation de :*

- *membres du CDPATEP et de la Conférence du Conseil de l'Europe pour la Convention européenne du paysage*
- *représentants nationaux des ministères*
- *représentants des autorités locales et régionales*
- *représentants d'ONG et instituts de formation*
- *experts espagnols et internationaux*

### **FIN DE LA SESSION**

**13h00 – 15h00 DÉJEUNER**



**– ATELIER 2 –**

**INFRASTRUCTURES ET PAYSAGE SELON UN MODÈLE DURABLE**

*Les infrastructures en matière de transport ainsi que la question de l'énergie jouent un rôle crucial dans la construction de paysages durables. Les grandes questions en matière d'infrastructures seront examinées à la lumière de l'objectif de paysages durables.*

**15h00 – 18h30**

**Présidents :** **Mme Maria José FESTAS**, Vice-présidente de la Conférence du Conseil de l'Europe pour la Convention européenne du paysage, Ministère de l'environnement et de l'aménagement du territoire du Portugal  
**M. Audun MOFLAG**, Représentant de la Norvège pour la Convention européenne du paysage, Département de l'aménagement du territoire du Ministère de l'environnement

**OUVERTURE DE LA SESSION**

**15h00 – 15h20** L'adaptation du paysage au projet de routes métropolitaines : le cas de l'Andalousie

**M. Damián ALVAREZ SALA**, Département des travaux publics et du logement de la *Junta de Andalucía*

**PRÉSENTATIONS**

**15h20 – 15h35** Les politiques de la Turquie dans le domaine des infrastructures et du paysage

**Mme Serap KARGIN** et **M. Abdurrahman GUZELKELES**, Représentants pour la Turquie de la Convention européenne du paysage, Ministère de l'Environnement et des forêts de Turquie

**15h35 – 15h50** Paysage et production d'énergie photovoltaïque  
**M. Matias MERIDA**, Professeur, faculté de géographie, Université de Malaga, Espagne

**15h50 – 16h20** **PAUSE CAFÉ**

**16h20 – 16h45** Le paysage, une référence pour les politiques durables : le cas de la vallée de Nansa  
**M. Rafael MATA OLMO**, Professeur, Université autonome de Madrid  
**Mme Angela DE MEER**, Chargée de cours, Université de Cantabrie

**16h45 – 17h00** L'esthétique des infrastructures paysagères durables  
**Mme Kathryn MOORE**, Représentante de la Fondation européenne pour l'architecture du paysage (EFLA)

**17h00 – 17h15** Les infrastructures dans le paysage : le cas de Majorque  
**Mme Maria Luisa DUBON**, Conseillère territoriale, Conseil de Majorque, Iles Baléares, Espagne

**17h15 – 17h45** Résumé des documents présentés lors de l'atelier  
**Rapporteur :** **M. Pascual RIESCO CHUECA**, Maître de conférences à l'Ecole supérieure de génie industriel, Université de Séville, Espagne

**17h45 – 18h15** **DISCUSSION**  
**Modérateurs :** **Mme Daniela SANDRONI**, Directrice de la qualité et de la préservation du paysage, Ministère du Patrimoine culturel et des activités culturelles, Représentante pour l'Italie de la Convention européenne du paysage

**M. Eduardo TAMARIT**, Département des Travaux publics et du logement, *Junta de Andalucía*

*avec la participation de :*

- *membres du CDPATEP et de la Conférence du Conseil de l'Europe pour la Convention européenne du paysage*
- *représentants nationaux des ministères*
- *représentants des autorités locales et régionales*
- *représentants d'ONG et instituts de formation*
- *experts espagnols et internationaux*

**FIN DE LA SESSION**

**19h00**

**VISITE DE LA GRANDE MOSQUÉE DE CORDOUE**

**21h00**

**RÉCEPTION OFFICIELLE DONNÉE PAR LA MAIRIE DE CORDOUE**

## VENDREDI 16 AVRIL 2010



### – ATELIER 3 –

## CRITÈRES PAYSAGERS POUR LA CONCEPTION DES INFRASTRUCTURES

*Le paysage est devenu une référence incontournable dans la planification et la conception des infrastructures. L'atelier permettra de présenter les expériences européennes de l'intégration des infrastructures dans le paysage, ainsi que des critères clairs pour guider le développement de ces infrastructures.*

### 9h00 – 13h00

**Présidents :** **M. Andranik HOVHANNISYAN**, Premier Secrétaire, Ministère des Affaires Etrangères, République d'Arménie  
**M. Hugh LLEWELYN**, Directeur, Département de l'environnement, de l'alimentation et des affaires rurales, Représentante du Royaume-Uni pour la Convention européenne du paysage

### OUVERTURE DE LA SESSION

### 9h00 – 9h20

Conception des routes et intégration du paysage

**M. Justo BORRAJO SEBASTIÁN**, Chef du Département des autoroutes, Ministère des Travaux publics, Espagne

### PRÉSENTATIONS

### 9h20 – 9h35

Les infrastructures de transport terrestre, interactions avec le paysage et les écosystèmes

**M. Yves LUGINBÜHL**, Professeur à l'Université de Paris, France

**9h35 – 9h50**

Paysage, nature et intégration des routes en Grèce

**M. Kimon HADJIBIROS**, Professeur à l'Université technique d'Athènes, Grèce

**9h50 – 10h05**

Les alignements d'arbres de bord de route

**Mme Chantal PRADINES**, Ingénieur civil, Ecole Centrale Paris, membre de l'Association « Arbres et routes »

**10h05 – 10h25**

**PAUSE CAFÉ**

**10h25 – 10h40**

Critères pour la conception des routes dans les zones sensibles

**M. Luis RAMAJO**, Département de l'environnement à l'Agence publique des infrastructures d'*Andalucía*, S.A. (GIASA), Espagne

**10h40 – 10h55**

Conception des infrastructures pour les paysages pédestres

**M. Jeppe Aagaard ANDERSEN**, Architecte paysagiste, Ancien Président de la Fondation européenne pour l'architecture du paysage (EFLA), Danemark

**10h55 – 11h10**

Paysage et chemins en République tchèque

**Mme Julia TOBIKOVA**, Ministère de l'Environnement, représentante pour la République tchèque de la Convention européenne du paysage

**11h10 – 11h25**

Le paysage dans les projets de construction de routes, par la Junta de Andalucía

**M. José Antonio GOMEZ CASADO**, Directeur de l'équipement et de la durabilité à l'Agence publique des infrastructures d'*Andalucía*, S.A. (GIASA)

**11h25 – 12h15**

Résumé des documents présentés lors de l'atelier



**Rapporteur :** **M. Diego FERNANDEZ BELMONTE**, Centre d'étude du paysage et du territoire d'Andalousie, Séville, Espagne

**12h15 – 13h00 DISCUSSION**

**Modérateurs :** **Mme Lionella SCAZZOSI**, Professeur à l'Université de Milan

**Mme Pavlina MISIKOVA**, Ministère de l'Environnement, représentante pour la République slovaque de la Convention européenne du paysage

*avec la participation de :*

- membres du CDPATEP et de la Conférence du Conseil de l'Europe pour la Convention européenne du paysage*
- représentants nationaux des ministères*
- représentants des autorités locales et régionales*
- représentants d'ONG et instituts de formation*
- experts espagnols et internationaux*

**FIN DE LA SESSION**

**13h00 – 15h00 DÉJEUNER**



– ATELIER 4 –  
**INFRASTRUCTURES POUR LE PAYSAGE  
ET SA RESTAURATION**

*Les infrastructures sont susceptibles de rapprocher les individus des valeurs paysagères, si tant est que cette dimension est intégrée explicitement à un stade précoce de leur planification et de leur conception. Par ailleurs, les techniques de restauration jouent un rôle fondamental dans la réhabilitation du paysage.*

**15h00 – 18h30**

**Présidents :** **Mme Linarejos CRUZ PEREZ**, Institut pour la culture, Ministère espagnol de la Culture, Membre du Comité directeur du patrimoine culturel et du paysage (CDPATEP) du Conseil de l'Europe  
**M. Graham FAIRCLOUGH**, Association européenne d'archéologues (AEA)

**OUVERTURE DE LA SESSION**

**15h00 – 15h20** *Vías verdes* : des voies vertes sur les voies ferrées abandonnées en Espagne

**Mme Carmen AYCART**, Directrice de la Fondation espagnole des voies ferrées, Association européenne des voies vertes (AEVV), au nom du Ministère des Travaux publics, Espagne

## PRÉSENTATIONS

- 15h20 – 15h35** Le programme de routes dans le paysage en Andalucía, Espagne  
**M. Juan José MARTIN RODRIGUEZ**, Département des Travaux publics et du logement, *Junta de Andalucía*  
**M. Jesus RODRIGUEZ RODRIGUEZ**, Directeur de recherche, Centre d'étude du paysage et du territoire d'Andalousie, Espagne
- 15h35 – 15h50** Les routes dans les paysages de montagne, restauration et réhabilitation : le cas de l'Andorre  
**Mme Anna MOLES**, Représentante pour l'Andorre de la Convention européenne du paysage, ministère de l'Aménagement du territoire et de l'environnement, Andorre
- 15h50 – 16h10** **PAUSE CAFÉ**
- 16h10 – 16h25** La chaussée romaine Boulogne-Cologne  
**Mme Marie-Jeanne GHENNE**, Chef du Secrétariat de la Chambre Provinciale du Hainaut, Commission royale des monuments, sites et fouilles, Ministère de la région wallonne, Belgique
- 16h25 – 16h40** Conception paysagère des voies de circulation pour cyclistes et piétons en Finlande  
**Mme Laura SOOSALU**, Architecte paysagiste, Destia Ltd., Services d'aménagement, Conception paysagère
- 16h40 – 16h55** Innovations dans les techniques de réhabilitation du paysage  
**M. José Luis ROSUA CAMPOS**, Professeur, faculté de biologie, Université de Grenade
- 16h55 – 17h15** Résumé des documents présentés lors de l'atelier

**Rapporteur :** **Mme Elena Maria MUNOZ ESPINOSA**, Chargée de cours, Université de Castilla-La-Mancha, Espagne

### **DISCUSSION**

**Modérateurs :** **Mrs Kapka PANTCHEVA**, Conseillère au Ministère de l'Environnement et de l'Eau, Bulgarie

**M. Phaedon ENOTIADES**, Représentant pour Chypre de la Convention européenne du paysage, Urbaniste en Chef, Département de l'Urbanisme et du Logement du Ministère de l'Intérieur, Chypre

*avec la participation de :*

- membres du CDPATEP et de la Conférence du Conseil de l'Europe pour la Convention européenne du paysage*
- représentants nationaux des ministères*
- représentants des autorités locales et régionales*
- représentants d'ONG et instituts de formation*
- experts espagnols et internationaux*

### **FIN DE LA SESSION**

### 17h15 – 18h30 SESSION DE CLÔTURE

**Présidents :** **Mme Daniela SANDRONI**, Directrice de la qualité et de la préservation du paysage, Ministère du Patrimoine culturel et des activités culturelles, Représentante pour l'Italie de la Convention européenne du paysage

**M. Enrico BUERGI**, ancien Président de la Conférence du Conseil de l'Europe sur la Convention européenne du paysage

**Modérateurs :** **M. Pedro RODRIGUEZ ARMENTEROS**, Directeur général des infrastructures routières au Département des Travaux publics et des transports, *Junta de Andalucía*

**M. Jerker MOSTROM**, Département de gestion durable, Direction nationale suédoise du patrimoine

### 17h15 – 18h00 TABLES RONDES

*La Convention européenne du paysage comme socle des politiques sectorielles en matière d'infrastructures (discussions avec présentation PowerPoint, encadrée par des modérateurs)*

**M. Felix BENITO**, Professeur sur l'histoire de la ville, Université européenne de Madrid, Espagne

**M. Johan BERGQVIST**, Architecte du paysage et Conseiller principal à l'Administration des transports, Suède

**Mme Anne-Marie CHAVANON**, Présidente de la Commission du développement territorial durable de la Conférence des OING du Conseil de l'Europe

**M. Jacobo DIAZ PINEDA**, Directeur de l'Association espagnole pour les routes

**M. Abdelouahab IDELHADJ**, Professeur à l'Université Abdelmalek Essaadi, Tourisme rural et patrimoine culturel, responsable du club « Patrimoine, développement, citoyenneté, développement durable », Tanger-Tétouan, Maroc

**M. Gabor KISS**, Représentant pour la Hongrie de la Convention européenne du paysage, Ministère de l'Environnement et de l'eau

**M. Ricardo MARQUES**, Président de l'Association de cyclisme "Acontramano", Séville

**M. Giorgio PIZZIOLLO**, Professeur à l'Université d'architecture de Florence, Italie, Directeur de l'*Atelier Paesaggio Mediterraneo*

**Mme Karin SCHIBBYE**, Chef d'Unité, Département de la gestion durable, Direction nationale suédoise du patrimoine

**18h00 – 18h30** Conclusions générales des ateliers

**M. Ignacio ESPANOL ECHANIZ**, Maître de conférences en paysage et génie civil, Université polytechnique de Madrid. *Avec la coopération des présidents et rapporteurs de chacune des sessions*

### **ALLOCUTIONS DE CLÔTURE**

**M. Jean-François SEGUIN**, Président de la Conférence du Conseil de l'Europe pour la Convention européenne du paysage

**Mme Maguelonne DEJEANT-PONS**, Chef de la Division du patrimoine culturel, du paysage et de l'aménagement du territoire, Conseil de l'Europe

**M. Eugenio DOMINGUEZ VILCHES**, Directeur de l'Agence des Infrastructures Publiques d'Andalousie

### **SOIRÉE LIBRE**

## SAMEDI 17 AVRIL 2010

### VISITES D'ÉTUDE

*Faculté de géographie de l'Université de Cordoue. Alfonso Mulero Mendigorri. Directeur.*

#### **Itinéraire A. Le vieux Cordoue et la Cité palatine de Madinat al-Zahra**

Experts responsables : **Alfonso Mulero Mendigorri – Martín Torres Márquez**

La visite commencera par le pont romain, avec des explications au sujet des récents travaux de restauration. Une petite promenade autour du centre historique de Cordoue nous donnera un aperçu de l'histoire de la ville. Après une pause café, en autobus, nous irons admirer les travaux d'intégration paysagère mis en œuvre dans la partie occidentale de la rocade de Cordoue. Ensuite, nous irons voir les grandes infrastructures de transport le long de la vallée du Guadalquivir depuis le somptueux château d'Almodovar del Río, où nous déjeunerons (14h00). Après le repas, nous irons visiter les ruines du Palais royal de Madinat Al-Zahara, où nous pourrions apprécier la sensibilité paysagère du Califat de Cordoue. L'ensemble de la visite sera commenté par des spécialistes de l'Université de Cordoue et l'administration d'Andalousie. Nous devrions être de retour à Cordoue vers 18h30. Des changements pourraient être apportés à cet itinéraire selon la disponibilité des services sur les lieux que nous prévoyons de visiter.

#### **Itinéraire B. Campagne et villes des Sierras Subbéticas**

Experts responsables : **José Naranjo Ramírez – Gema Florido Trujillo**

Nous suivrons l'A-4 pour nous rendre à Cortijo Los Libros (ancienne ferme andalouse traditionnelle), où les experts nous présenteront les paysages ruraux qui nous entourent. Le long de la N-333, nous pourrions admirer le paysage de la partie basse du pays (autour des villes de Fernán Núñez et Montemayor). Avant la pause café, les experts commenteront les caractéristiques et la structure du paysage agricole de ce point de vue privilégié. Traversant les champs d'oliviers et les cultures, nous atteindrons la gare ferroviaire abandonnée de Cabra qui héberge aujourd'hui un centre touristique consacrée à la voie verte de Subbéticas (voie ferrée abandonnée transformée en voie verte). Nous déjeunerons à Cabra (14h00). Ensuite,

nous continuerons vers Priego et jusqu'au sommet d'El Picacho, où nous visiterons le sanctuaire de la Virgen de La Sierra (vierge de la sierra). En descendant à Zuheros, nous nous arrêterons pour profiter du point de vue sur Zuheros, puis sur les gorges de la rivière Bailón. De retour à Zuheros, nous nous promènerons dans ses rues avant de retourner à Cordoue. L'ensemble de la visite sera commenté par des spécialistes de l'Université de Cordoue et l'administration d'Andalousie. Nous devrions être de retour à Cordoue vers 19h30. Des changements pourraient être apportés à cet itinéraire selon la disponibilité des services sur les lieux que nous prévoyons de visiter.

### **Itinéraire C. Montoro et la Sierra Morena**

Experts responsables : **Manuel Rivera Mateos – Rafael Garzón García**

En suivant l'A4, nous atteindrons la ville pittoresque de Montoro sise sur un promontoire cerné d'un méandre de la rivière Guadalquivir. Nous visiterons le nouveau pont sur la rivière (en service depuis l'été dernier). Après une pause café, nous ferons un arrêt au Puente de las Donadas (« pont des donatrices »), d'origine romaine. Là, les experts nous fourniront des explications sur le paysage de ce lieu particulier, Montoro, les méandres de la rivière, le rocher sur lequel la ville a été construite, sa structure et son histoire. Nous nous rendrons ensuite à Cardeña dans la Sierra Morena ; lors d'un arrêt au parc naturel de Cardeña et Montoro, les experts nous parlerons des paysages d'oliviers en haut, qui laissent ensuite la place à la forêt et aux paysages des réserves de la sierra. En suivant un chemin autrefois emprunté par les troupeaux, nous monterons à El Cerezo au cœur du parc naturel, où nous admirerons les dehesas (forêts défrichées), la forêt méditerranéenne, les sierras granitiques et la vallée de la rivière Yeguas (mares). Nous devrions arriver à Villanueva de Cordoba vers 14h30 pour y déjeuner. En rentrant sur Cordoue, nous nous arrêterons aux Montes Comunales de Adamuz, où les experts nous expliqueront les paysages qui nous entourent. Un deuxième arrêt sur la rive de Matapuerca nous offrira une vue rafraîchissante sur la forêt qui borde la rivière et les panoramas sur la basse Sierra Morena et la vallée de Guadalquivir. L'ensemble de la visite sera commenté par des spécialistes de l'Université de Cordoue et l'administration d'Andalousie. Nous devrions être de retour à Cordoue vers 19h30. Des changements pourraient être apportés à cet itinéraire selon la disponibilité des services sur les lieux que nous prévoyons de visiter.







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*Le Conseil de l'Europe regroupe aujourd'hui 47 Etats membres, soit la quasi-totalité des pays du continent européen. Son objectif est de créer un espace démocratique et juridique commun, organisé autour de la Convention européenne des Droits de l'Homme et d'autres textes de référence sur la protection de l'individu. Créé en 1949, au lendemain de la seconde guerre mondiale, le Conseil de l'Europe est le symbole historique de la réconciliation*