

SEVILLA

IDA

**IDA: ADVANCED  
DOCTORAL RESEARCH  
IN ARCHITECTURE**



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**IDA: ADVANCED  
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Antonio Tejedor Cabrera, Marta Molina Huelva (comp.)

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## **FORMAT**

### **Thematic tables**

The thematic tables are places to present the methodologies and experiences of young doctors and doctoral students from different universities. They are managed by the doctorate students themselves, who generate conclusions to be debated and reworked in the final plenary session. The sessions are developed simultaneously with the presentation of the papers selected in the call, organized in four areas or thematic lines:

1. Architectural technologies
2. Housing, city and territory
3. Heritage and Rehabilitation
4. Analysis and advanced projects

### **Workshop**

The workshop of the Congress is oriented towards the analysis of the problems and management needs of the Doctorate Programs, with the objective of arriving at conclusions that may be useful to the Universities involved. The coordinators of the Doctorate in Architecture programs and the doctoral students' representatives will participate in the workshop. The following are topics for debate: lines of research, methodologies, organizational needs of the doctoral programs, the International Doctorate and the Industrial Doctorate, and the future of doctoral research.

### **Plenary Sessions**

The plenary sessions are held at the beginning and end of the Congress. In the first session of welcome and introduction to the Congress, researchers from the national and international scene and the coordinators of the doctorate programs are invited to participate. In the second plenary session an open debate is proposed for the going over of the proposals drawn from the workshop and the thematic tables. It also serves as a closing ceremony with the presentation of the final conclusions of the 2017 IDA\_Sevilla Congress.



## OBJECTIVES

1. Analyze the research lines of the various programs and build a map of doctoral research in Spain with the support of coordinators, tutors / thesis supervisors, doctoral students and young doctors in the disciplines related to Architecture and their related areas.
2. To know the status of doctoral theses in progress or defended in the last three years, selected by means of a call with blind peer evaluation of the doctoral programs participating in the congress.
3. Discuss the structure and university management of doctoral programs in relation to employment challenges, collaboration with the productive sector and national research programs.
4. Exchange experiences with other international doctoral research programs on international mobility management, theses with international mention, co-supervised theses, theses with industrial mentions, etc.
5. No less important, consolidate a national and international network of Doctoral Programs related to Architecture, Urban Planning, Heritage, Landscape, Technologies and related disciplines.



**LT 1**

ARCHITECTURE  
TECHNOLOGIES

**LT 2**

HOUSING, CITY  
AND TERRITORY

**LT 3**

HERITAGE AND  
REHABILITATION

**LT 4**

ANALYSIS AND  
ADVANCED PROJECTS

All manuscripts have been submitted to blind peer review, all content in this publication has been strictly selected, the international scientific committee that participates in the selection of the works is of international character and of recognized prestige, an scrupulous method of content filtering has been followed in terms of its veracity, scientific definition and plot quality.



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## FOREWORD

The Instituto Universitario de Arquitectura y Ciencias de la Construcción (IUACC), in collaboration with the Escuela Técnica Superior de Arquitectura (ETSAS) and the Escuela Internacional de Doctorado (EIDUS) of the University of Seville are pleased to welcome the heads of research from both Spanish and overseas universities, consolidated researchers and young doctoral researchers to the First International Congress of Doctorates in Architecture IDA Sevilla, from 27th to 28th November 2017.

The **IDA\_Sevilla 2017** Congress offers a general perspective of doctoral studies in the field of Architecture and its related disciplines: urban planning, heritage, landscape, construction technologies and sustainability. In the new context generated after the elimination of the doctoral programs prior to RD 99/2011, it is necessary to carry out an analysis of the complex panorama that the former programs and the new doctoral programs have drawn up, in order to know in detail both what has been achieved so far, as well as the challenges of the future of advanced doctoral research in Spain, in the European and international context.

The startling changes that are taking place in our society call for a vision of research that is not compartmentalised into traditional disciplines or areas of knowledge. Doctoral research in Architecture must adapt to changes in society and to the sustainable productive needs of territory.

The congress will take place at the Escuela Técnica Superior de Arquitectura de Sevilla, organised in four simultaneous thematic tables, a workshop on the administration of doctoral programs and two plenary sessions.

The **thematic tables** are aimed at young doctors and doctoral students of the different participating universities who will present their experiences and methods of their research - in development or recently concluded. The participation in the thematic tables is carried out through the selection procedure with blind peer review established in the call for papers and through express invitations to the debate. The almost 70 communications have been structured in four thematic areas representative of the PhD programs in Architecture.

The **open workshop** will be held in two sessions with the participation of the coordinators of each of the collaborating programs of the Congress, and professors with extensive doctoral experience. Its objectives are multiple: to discuss the experiences undertaken in the different universities, exchange ideas about the approaches and models applied, address the challenges of internationalization and management, launch the new Industrial Doctorate with companies and public agencies, and so on.

There are two **plenary sessions**: one, a plenary session of introduction to the congress, with the participation of coordinators of national and foreign doctoral programs; and a closing plenary session, with an open debate for the going-over of the conclusions drawn from the thematic tables and the workshop, and the presentation of final conclusions.

We thank the Escuela Internacional de Doctorado of the University of Seville, and the Escuela Técnica Superior de Arquitectura de Sevilla for the support they have provided for the holding of this meeting, which contributes so much to the clarification of the future of doctoral studies in Spanish universities in the face of the great challenge of internationalization and the continuous improvement of the quality of research in Architecture. We also thank those responsible for the participating Doctoral Programs, the Architecture library of the US and all the participants and attendees.

Antonio Tejedor Cabrera  
Marta Molina Huelva

## PRÓLOGO

El Instituto Universitario de Arquitectura y Ciencias de la Construcción (IUACC), con la colaboración de la Escuela Técnica Superior de Arquitectura (ETSAS) y la Escuela Internacional de Doctorado (EIDUS) de la Universidad de Sevilla, se complacen en recibir a los responsables de investigación de universidades españolas y extranjeras, a los investigadores consolidados y a los jóvenes investigadores de doctorado en el I CONGRESO INTERNACIONAL DE DOCTORADOS EN ARQUITECTURA IDA\_Sevilla, del 27 al 28 de noviembre de 2017.

El congreso **IDA\_Sevilla 2017** ofrece una perspectiva general de los estudios de doctorado en el campo de la Arquitectura y sus disciplinas afines: urbanística, patrimonio, paisaje, tecnologías de la construcción y sostenibilidad. En el nuevo contexto generado tras la extinción de los programas doctorales anteriores al RD 99/2011 es necesario realizar un análisis del complejo panorama que han construido los programas extintos y los nuevos programas de doctorado, con el objeto de conocer con detalle tanto lo conseguido hasta ahora como los retos que depara el futuro de la investigación doctoral avanzada en España, en el contexto europeo e internacional.

Los vertiginosos cambios que se están produciendo en nuestra sociedad reclaman una visión de la investigación no compartimentada en disciplinas o áreas de conocimiento tradicionales. La investigación doctoral en Arquitectura debe adaptarse a los cambios de la sociedad y a las necesidades productivas sostenibles en el territorio.

El congreso se celebra en la Escuela Técnica Superior de Arquitectura de Sevilla organizado en cuatro mesas temáticas simultáneas, un taller sobre la gestión de los programas de doctorado y dos sesiones plenarias.



Las **mesas temáticas** están dirigidas a los jóvenes doctores y a estudiantes de doctorado de las diferentes universidades participantes que exponen sus experiencias y métodos sobre las investigaciones en desarrollo o recientemente concluidas. La participación en las mesas temáticas se realiza por el procedimiento de selección con revisión por pares ciegos establecido en la *call for papers* y por medio de invitaciones expresas al debate. Las casi 70 comunicaciones se han estructurado en cuatro áreas temáticas representativas de los programas de doctorado en Arquitectura.

El **taller** de puesta en común se realiza en dos sesiones con la participación de los coordinadores de cada uno de los programas colaboradores del Congreso y de profesores con amplia experiencia doctoral. Sus objetivos son múltiples: debatir sobre las experiencias desarrolladas en las distintas universidades, intercambiar ideas sobre los enfoques y los modelos aplicados, abordar los retos de internacionalización y de gestión, poner en marcha el nuevo Doctorado Industrial con empresas y agencias públicas, etc.

Las **sesiones plenarias** son dos: una sesión plenaria de introducción al congreso, con la intervención de coordinadores de programas de doctorado nacionales y extranjeros; y una sesión plenaria de clausura, con un debate abierto para la reelaboración de las conclusiones extraídas de las mesas temáticas y del workshop y la presentación de las conclusiones finales.

Agradecemos a la Escuela Internacional de Doctorado de la Universidad de Sevilla y a la Escuela Técnica Superior de Arquitectura de Sevilla el apoyo que han proporcionado para la realización de este encuentro que tanto contribuye a clarificar el futuro de los estudios doctorales en las universidades españolas ante el gran reto de la internacionalización y la continua mejora de la calidad de la investigación en Arquitectura. Damos las gracias también a los responsables de los Programas de Doctorado participantes, a la Biblioteca de Arquitectura de la US y a todos los participantes y asistentes.

Antonio Tejedor Cabrera  
Marta Molina Huelva

## OBJETIVOS

1. Analizar las líneas de investigación de los diversos programas y construir el mapa de la investigación doctoral en España con el apoyo de los coordinadores, los tutores/directores de tesis, los doctorandos y los jóvenes doctores en las disciplinas relacionadas con la Arquitectura y sus áreas afines.
2. Conocer el estado de las tesis doctorales en marcha o defendidas en los últimos tres años, seleccionadas por medio de una *call* con evaluadores por pares ciegos de los programas de doctorado participantes en el congreso.
3. Debatir sobre la estructura y la gestión universitaria de los programas de doctorado en relación con los retos de empleo, colaboración con el sector productivo y los programas nacionales de investigación.
4. Intercambiar experiencias con otros programas de investigación doctoral a escala internacional sobre gestión de la movilidad internacional, tesis con mención internacional, tesis en cotutela, tesis con mención industrial, etc.
5. No menos importante, consolidar una red nacional e internacional de Programas de Doctorado relacionados con la Arquitectura, la Urbanística, el Patrimonio, el Paisaje, las Tecnologías y sus disciplinas afines.



## **FORMATO**

### **Mesas temáticas**

Las mesas temáticas son lugares de presentación de las metodologías y las experiencias de jóvenes doctores y de estudiantes de doctorado procedentes de las diferentes universidades. Son gestionadas por los propios estudiantes de doctorado que generan unas conclusiones para ser debatidas y reelaboradas en la sesión plenaria final. Las sesiones se desarrollan de manera simultánea con la presentación de los *papers* seleccionados en la *call*, organizados en cuatro áreas o líneas temáticas:

1. Tecnologías de la Arquitectura
2. Vivienda, Ciudad y Territorio
3. Patrimonio y Rehabilitación
4. Análisis y Proyectos Avanzados

### **Taller**

El workshop del Congreso se orienta hacia el análisis de los problemas y las necesidades de gestión de los Programas de Doctorado con el fin de extraer conclusiones que pueden ser útiles a las Universidades implicadas. En el workshop participan los coordinadores de los programas de Doctorado en Arquitectura y los representantes de los doctorandos. Son temas de debate: las líneas de investigación, las metodologías, las necesidades organizativas de los programas de doctorado, el Doctorado Internacional y el Doctorado Industrial, y el futuro de la investigación doctoral.

### **Sesiones Plenarias**

Las sesiones plenarias se realizan al inicio y al final del Congreso. En la primera sesión de bienvenida e introducción al Congreso se invita a participar a expertos investigadores del panorama nacional e internacional y a los coordinadores de los programas de doctorado. En la segunda sesión plenaria se propone un debate abierto para la reelaboración de las propuestas extraídas del taller y de las mesas temáticas. Sirve también de clausura con la presentación de las conclusiones finales del Congreso IDA\_Sevilla 2017.

**ICR**

SEVILLA

# LT 2

VIVIENDA, CIUDAD  
Y TERRITORIO

## HOUSING, CITY AND TERRITORY / VIVIENDA, CIUDAD Y TERRITORIO

p. 257-266: **DOCUMENTARY ANALYSIS. TO LIVE WITH A RIVER IN THE RURAL ENVIRONMENT IN THE LAST 180 YEARS. OF CONVIENIENCE TO COEXISTENCE THE CASE OF THE RIVER ESGUEVA AND THE PEOPLES OF ITS VALLEY** / p. 267-276: **ANÁLISIS DOCUMENTAL. HABITAR JUNTO A UN RÍO EN EL MEDIO RURAL EN LOS ÚLTIMOS 180 AÑOS. DE LA CONVENIENCIA A LA CONVIVENCIA EL CASO DEL RÍO ESGUEVA Y LOS PUEBLOS DE SU VALLE**

*Espinosa Galindo, Arancha; del Caz Enjuto, Rosario*

p. 277-285: **MAN-MADE LANDSCAPES: FROM PICTURES TO THE AMERICAN TERRITORY** / p. 286-294: **PAISAJES CONSTRUIDOS: DE LA IMAGEN AL TERRITORIO AMERICANO**

*Santamarina-Macho, Carlos*

p. 295-303: **LOCAL ORDER, CITY AND POST-CONFLICT TERRITORIES IN COLOMBIA** / p. 304-314: **ORDENAMIENTO LOCAL, CIUDAD Y TERRITORIOS DE POSCONFLICTO EN COLOMBIA**

*Burbano González, David*

p. 315-324: **REOPEN THE URBAN QUESTION. THE RIGHT TO THE CITY AS AN INSTITUENT PRACTICE** / p. 325-335: **REABRIR LA CUESTIÓN URBANA. EL DERECHO A LA CIUDAD COMO PRÁCTICA INSTITUYENTE**

*España Naveira, Enrique*

p. 337-346: **URBAN ECONOMY AND SPACE CONFIGURATION AS A CONSTRUCTION OF CONTEMPORARY CITY DYNAMICS** / p. 347-356: **ECONOMÍA URBANA Y CONFIGURACIÓN ESPACIAL COMO CONSTRUCCIÓN DE LA DINÁMICA DE CIUDAD CONTEMPORÁNEA**

*Sánchez García, Juan Andrés*

p. 357-366: **NATURE CONSERVATION AND HUMAN WELFARE: THE ROLE OF CITIZEN PARTICIPATION IN THE SOCIO-ECOLOGICAL TRANSITION OF THE URBAN AGLOMERATION OF SEVILLE** / p. 367-377: **CONSERVACIÓN DE LA NATURALEZA Y BIENESTAR HUMANO: EL PAPEL DE LA PARTICIPACIÓN CIUDADANA EN LA TRANSICIÓN SOCIO-ECOLÓGICA DE LA AGLOMERACIÓN URBANA DE SEVILLA**

*Donadei, Marta*

p. 379-393: **THE LOCAL UNIT NUMBER ONE IN PINO MONTANO. AN URBAN PROJECT NOT BUILT OF LUÍS RECASÉNS** / p. 394-408: **LA UNIDAD VECINAL NÚMERO UNO PARA PINO MONTANO. UN PROYECTO URBANO NO REALIZADO DE LUIS RECASÉNS**

*Redondo Redondo, Miguel*

p. 409-420: **THE INCARNATED LANDSCAPE. MERLEAU-PONTY AND THE PHENOMENOLOGY OF WILDNESS, MEMORY AND SELFHOOD IN NATURE THROUGH THE WORK OF JUSTINE KURLAND, ORI GERSHT AND LUISA LAMBRI** / p. 421-432: **EL PAISAJE ENCARNADO. MERLEAU-PONTY Y LA FENOMENOLOGÍA DE LO SALVAJE, LA MEMORIA Y EL ENSIMISMAMIENTO EN LA OBRA DE JUSTINE KURLAND, ORI GERSHT Y LUISA LAMBRI**

*Montero Sanchez de Corral, Paula*

p. 433-441: **ARCHITECTURE AGAINST CITY. ENCOUNTERS BETWEEN COLLECTIVE HOUSING AND PUBLIC SPACE** / p. 442-451: **ARQUITECTURA CONTRA CIUDAD. ENCUENTROS ENTRE LA VIVIENDA COLECTIVA Y EL ESPACIO PÚBLICO**

*Álvarez Arce, Raquel*

p. 453-464: **VISIONS AND PROPOSALS TOWARDS AN EMERGING URBAN PLANNING. A JOURNEY THROUGH "THE LIVING CITY", 2006-2016** / p. 465-476: **VISIONES Y PROPUESTAS HACIA UN URBANISMO EMERGENTE. UN VIAJE POR "LA CIUDAD VIVA" 2006-2016**

*Gallegos Rodríguez, Reyes*

p. 477-487: **METHODOLOGICAL PROPOSAL FOR THE ANALYSIS OF URBAN OBSOLESCENCE PROCESSES: THE CASE OF SPANISH HOUSING ESTATES** / p. 488-498: **PROPUESTA METODOLÓGICA PARA EL ANÁLISIS DE PROCESOS DE OBSOLESCENCIA URBANA: EL CASO DE LOS POLÍGONOS ESPAÑOLES**

*García-Pérez, Sergio*

p. 499-510: **URBANIZING NATURE: VEGETATION AND GARDEN SPACES IN THE THINKING BEHIND THE DEVELOPMENT AGENTS OF THE CITY OF MACEIÓ (1816-1930)** / p. 511-522: **URBANIZAR LA NATURALEZA: LA VEGETACIÓN Y LOS ESPACIOS AJARDINADOS EN EL IDEARIO DE LOS AGENTES CONSTRUCTORES DE LA CIUDAD DE MACEIÓ (1816-1930)**

*Leão, Tharcila M. S.; Ferrare, Josemary O. P.; Cavalcanti, Veronica R.*

p. 523-532: **PROJECT MANAGEMENT OF INTEGRATED REGENERATION OF DEPRIVED NEIGHBOURHOODS THROUGH THE PMBOK METHODOLOGY. LIFE CYCLE, PROJECT CHARTER AND IDENTIFY STAKEHOLDERS IN PROJECTS** / p. 533-543: **GESTIÓN DE PROYECTOS DE REGENERACIÓN INTEGRADA DE BARRIADAS A TRAVÉS DE LA METODOLOGÍA PMBOK. CICLO DE VIDA, ACTA DE CONSTITUCIÓN E IDENTIFICACIÓN DE LAS PARTES INVOLUCRADAS EN EL PROYECTO**

*Ledesma de la Rosa, Carolina; Galán Marín, Carmen; García Vázquez, Carlos; Morón Serna, Elena*

p. 545-553: **VERTICAL ARCHITECTURE. COMPLEXITY AND SCALE IN CONTEMPORARY CITY** / p. 554-562: **ARQUITECTURA VERTICAL. COMPLEJIDAD Y ESCALA EN LA CIUDAD CONTEMPORÁNEA**

*Gor Gómez, Agustín*

**DOCUMENTARY ANALYSIS.**  
**TO LIVE WITH A RIVER IN THE RURAL ENVIRONMENT IN THE LAST 180**  
**YEARS.**  
**OF CONVENIENCE TO COEXISTENCE**  
**THE CASE OF THE RIVER ESGUEVA AND THE PEOPLES OF ITS VALLEY.**  
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**Abstract:** This research is developed through a documentary analysis that describes the evolution that has occurred in the relationship between a river and its environment in the rural environment. The "Valle Esgueva" is selected because of the proximity of the sample to the researcher, which allows for easy study, as well as, for the entity of the sample, with sufficient diversity. The Esgueva river runs between 29 rural municipalities, flowing into the Pisuerga River in the city of Valladolid, all in the basin of the River Duero in the Community of Castile and Leon, Spain. The analysis of the sample is used as a methodology in an approximate period of time of 180 years.

The documentation is divided into three time periods where the evolution of this relationship is described. It is observed that there has been a diverse relationship with the river: from a functional and economic dependence in the nineteenth century, to a certain detachment during much of the twentieth century (beyond the collection of water for supply and irrigation), until in the present, to the search, again, of a closer relation, although of different character. The same functional and economic dependence does not exist, but there is an increasingly necessary approach from environmental and landscape approaches (including the tourism component).

The diffusion of the conclusions to the municipalities through workshops is another objective. The recognition of the river, as an integral linear element, allows the user to evaluate it from scientific aspects.

**Keywords:** **Urbanism.** Rural environment, Landscape, Rivers, Water.

## 1. Introduction

The search for this work is to favor the positive community assessment of the rural fluvial environment of the inhabitant. It is considered that only a scientific knowledge of the physical reality can contribute useful diagnoses to current problems as the depopulation of the rural environment, the incorrect interventions in the landscape, the degradation of the channels of the rivers and the recovery for the respectful enjoyment of the natural environment that surrounds them.

## 2. Methodology

The choice of this methodology, attends to its adequacy to analyze the relation and transformation that has existed between the river and the rural municipalities; a comparative analysis is proposed from historical documents in three periods in the last 180 years.

With this comparison we want to respond to different issues such as:

- What relationship has existed between the municipalities and the river?
- How has this relationship changed over time?
- What were the aspects that motivated the modifications?
- What particular elements of the valley have contributed to this?

The answers allow to make a diagnosis, in order to indicate, measures that allow to enhance those positive traits or to protect those in danger, delimiting factors that pose a risk for the fundamental values. For the reading of the landscape of the analyzed space, riverine, an integral point of view has been used. Although visual components are important, this work also seeks an objective analysis. Therefore, the importance of geographic analysis, of what is not seen with the naked eye.

As tools for the development of the methodology, in addition to the analysis of the documents, field notebooks, drawings and photography have been used; with them, impressions have been expressed "in situ". The cartographic documentation and its analysis is another part of the basic tools used, not only for its analysis but for the field data collection; the bibliographic study has been the previous basis for the visits, according to "protocols for territorial and urban analysis" facilitated by D. Luis Vicente García Merino.

### 3. Analysis

#### 3.1. Description of the sample and knowledge of its multidisciplinary composition

As it could not be otherwise, the first part of the study consists of documenting from a multidisciplinary point of view the sample, "the River Esgueva Valley". The linear structure of the river leads us to work in three provinces: Valladolid, Palencia and Burgos, along an east-west axis, to the east of the Autonomous Community of Castilla y León.

The 29 rural municipalities of the "Valle Esgueva" studied are the following:

In the Province of Burgos:

Briongos, Espinosa de Cervera, Valdeande, Santa Maria del Mercadillo, Pinilla Trasmonte, Bahabón de Esgueva, Santibáñez de Esgueva, Cabañes de Esgueva, Pinillos de Esgueva, Terradillos de Esgueva, Villatuelda, Torresandino, Villovela de Esgueva and Tórtolos de Esgueva.

In the Province of Palencia:

Castrillo of Don Juan.

In the Province of Valladolid:

Encinas de Esgueva, Canillas de Esgueva, Fombellida, Torre de Esgueva, Castroverde de Cerrato, Villaco de Esgueva, Amusquillo, Villafuerte de Esgueva, Esguevillas de Esgueva, Piña de Esgueva, Villanueva de los Infantes, Olmos de Esgueva, Villarmentero de Esgueva, Castronuevo of Esgueva, Renedo de Esgueva (Valladolid capital will be considered in terms of completion of the course of the Esgueva River, focusing the study in the rural environment).

The situation of the River Esgueva takes us to the "Cuenca del Duero" basin of the water system of Castilla y León, within the subbasin of the Pisuerga River. As physical aspects more remarkable we would emphasize: its length, with 127,37 km. exceeds the average length in position 18, of the 53 rivers that make up the basin (not including the Portuguese part), maximum length 287 m and minimum 25 m; its flow is the lowest with 69.8 hm<sup>3</sup> / year. Only 12 of the 53 rivers in the basin have less flow.

This first view of the river reveals a long river with little flow that crosses the rural environment, running between small municipalities relatively close to it, on both sides; with low flow especially in summer seasons; with important floods that abruptly modify its behavior that characterizes it. This situation makes the vegas very rich soils for agriculture: already in his day, according to Pascual Madoz, this indicated: "these lands are the best in Spain."

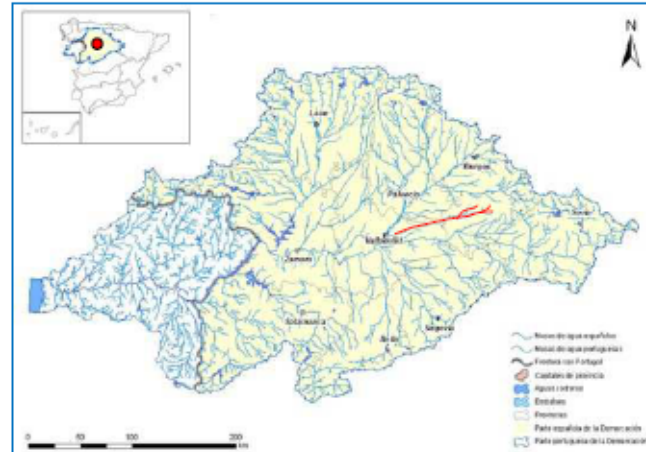
The research needs some previous multidisciplinary studies; the relief, base on which the landscape of the study is based; hydrology, which allows us to understand the basic dynamics of the main natural element of the study; the vegetation, in this case, typical of an extreme Mediterranean environment, where holm oaks and vegetation represent potential, has been modified as a result of situations such as transhumance and livestock, along with the output of wood for naval sawmills and expansion agricultural with the ruption of large areas before trees, being the cause of the disappearance of forests; in the slopes of the Esgueva Valley, in the 1940s and 1990s, reforestation was carried out, becoming socio-recreational areas, trying to repopulate with holm oak and nowadays. The fauna and its relation with the river is rich: herons, azulones, washerwomen, carriceros, storks or lapwings in the labor lands as well as barbs and crabs in the river; the climate and the environmental conditions define it as Mediterranean, characterized by dry summers with high temperatures and agostamiento of herbaceous plants; the population, its shape and size whose main characteristic is the proximity between the different municipalities and generally its proximity to the river, as well as its distribution in space adapting to the relief (as seen in images 2 and 3) or complementary elements to the nuclei in this case related to the river as fountains, mills, ..; other linear elements such as: communications network, antennas, electric lines, roads, canyons that in some cases run parallel to or cross the river; the plot of land and urban cultivation; the rules applicable to the area, and even the collection of literary and cultural information: in any case a multidisciplinary analysis from a scientific perspective.

We find **the sample** within the Duero basin (Image 1.) As can be seen, the hydrological interest of the basin is high, being the largest area of the Iberian peninsula, according to the Duero Hydrographic Confederation. The sample is considered "one type" so the study methodology is considered extrapolable to any river in the basin.



From the source of the River Esgueva, in a modest relief of the Cretaceous border around the Demand (in the high of the Valdosa and Peñas de Cervera, in the Term of Tejada) the first municipality in its passage, to 1,412 m of altitude (Briongos-Burgos), until its mouth in the Río Pisuerga in Valladolid Capital (698 m), the existing gap is approximately 714 m. Fig.

**Fig. 1.** Location of the sample in the Duero basin, both Spanish and Portuguese.



In its course can be distinguished three sections: the head or birth, middle section and low section and mouth, with different characteristics each one. From the head or birth (1,412 m) to Torresandino (995 m), there is the most steep course, with a V-shaped valley, difficult to use in agriculture and forming a closed valley; in the middle section, from Torresandino to Esguevillas (895 m) and with less slope, the valley is more open and is characterized by the existence of slopes where crops are cut; the valley in this section is U-shaped, counting with great breadth and important viewpoints over the Valley; the low section, from Esguevillas to Valladolid (698 m), runs in an open, almost flat valley, where the fields of the Esgueva Valley and the Pisuerga River meet and where the flooding is characterized by the low depth of the channel. It is in this section where the land is more conducive to agricultural use. At the entrance of Valladolid the river is divided into two branches that originally formed a delta of wet land and muddy in its encounter with the Pisuerga River. The deposits at this point of the river, according to Professor Enrique Serrano, over time caused the meanderings of the Pisuerga River, of great beauty. The Duero basin and, within it, Esgueva is not excluded, it has a great natural attraction, it is when approaching the cities when this interest diminishes when the environment is more contaminated by the appearance of industries, as collected by D. José Manuel Fernández Delgado, a recently deceased researcher and geographer, in his posthumous book "Nature and Environment in Castilla y León".

**Fig. 2 and Fig. 3.** Images of the relationship between the river and the municipalities. The visual integration of the linear element is observed that is constant in any part of the valley. The strength of the natural corridor is observed. Photographs of the author of the text.



The Esgueva River, as a tributary of the Pisuerga River and at the confluence of the capital Valladolid, has been the reason why authors such as D. Jesús García Fernández have called it "the City of Esgueva", as it is crossed by the two branches of this, fact that marked the development of the city;

the relationship between the Esgueva river and the city is worthy of its own extensive research (studies and theses are mentioned in the bibliography), so that in this research it is decided to consider only the part of the river that runs through the rural, that few studies are found.

In spite of the influence of the river in the configuration of the city, the urban space of the city of Valladolid has not shown, over time, no affection for the river: it was first used as a sewer, and then it disappeared in the same way that today, even in the layout of the streets can not be clearly recognized the course of the river, in the opinion of D. Luis García García Merino, Geographer, with whom I share the analysis.

The final stretch of the River Esgueva, divided into two branches, has been characterized by creating great problems and destruction; one of the branches passed away from the city and the other passed through. For this reason, the city was damp; in summer the flow decreased, circulating under bed (as is characteristic of the rest of the valley). The fog, for this reason, is another characteristic between the arms of the Esgueva. The branches, especially the north, constituted the network of sanitation of the city, being realized at the time of Charles V, at the point where the branches separated, a gate called "Puente la Reina" that served to regulate the flow. The aquifer, being superficial (general characteristic of the river), allows the opening of wells for supply, reason why the houses used them for domestic uses, or to facilitate the irrigation of the crops of the gardens of the houses or the convents, something comfortable but which, as Madoz already points out, caused frequent epidemics and diseases: intermittent fevers or malaise, malaria (now malaria - mal-air), always in relation to mosquitoes in marshy areas. Another characteristic of this type of encounter of the two rivers is the "motas" (natural elevation of low altitude that rises in the plain) that stood out more before the fillings of later lands. According to the analysis of D. Jesús García Fernández, three motes constituted the origin of the morphology of the city, which fled both the Pisuegra and the southern branch of "La Esgueva", to the point that, in the 19th century, bourgeoisie decides to cover the latter. The dynamics of Pisuegra-Esgueva, therefore, has been decisive in the configuration of Valladolid capital.

Once outside the urban area, and entering the rural environment along the course of the river, we can distinguish several situations:

- **The peri-urban area**, up to Renedo and Castronuevo, characterized by the urbanizations and the population employed in Valladolid, and also by transformations of the traditional nuclei.
- **The middle area of the river**, from Olmos to Santibáñez, where two sectors are distinguished: the stretch to Piña or Villafuerte, heavily influenced by Valladolid, and the section of Tórtoles and Torresandino, more related to Roa, Lerma or even Aranda, although not completely independent of Valladolid.
- Finally **the section of head**, between the N I and Espinosa de Cervera, with a more complex relief, more difficult conditions for the agrarian activity and a very different landscape from the rest, according to D. Luis Vicente García Merino.

### 3.2. Documentary study in three temporal phases of the analysis

In order to analyze the evolution and transformation of the relationship of the River Esgueva with the municipalities in its path, it was decided to divide the study into three temporary spaces associated to a series of documents that give a scientific vision of what happens in each phase; are considered to structure the most influential moments in evolution, what I have called: an evolution of convenience to coexistence, as we can discover in each phase.

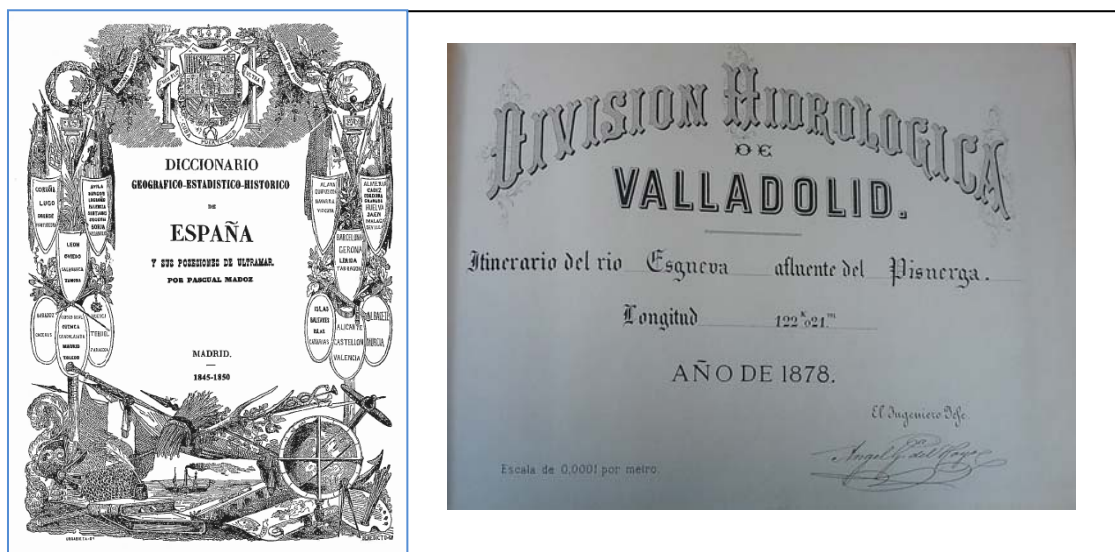
#### 3.2.1 Phase 1- The river and its municipalities in the mid-nineteenth century

"Diccionario Geográfico Estadístico Histórico de España y sus posesiones de Ultramar", Pascual Madoz (1845-1850) as a documentary source of the first order, we obtain concrete information from each municipality of the study, which allows comparisons between they are data lists. The work of P. Madoz, wants a numerical information of the resources existing in the State; contemplates all the municipalities of Spain starting from forms (fillings on each municipality thanks to 1.000 collaborators between friends and political opponents of Madoz-in Valladolid counted on the collaboration of **Matías Sangrador Vitores**, official Cronista of the town and in those moments professor university- ). These questionnaires provide qualitative and quantitative information on all the municipalities of the study, regarding: judicial party, situation with respect to the river, dominant winds, climate, houses, diseases, schools, churches, hermitages, limits with other municipalities, sources (generally, this section describes river-related devices identified as industry such as mills, mills, mills, mills, bridges, land quality, roads, mail, ...), population and municipal budget. With this, information can be obtained from elements directly related to the river, and climatic and environmental data of the moment. This

information is elaborated with a few **Fichas**, in which the total characteristics of each municipality are classified (15 Fichas of the rural municipalities for the province of Valladolid, 1 for the province of Palencia and 13 for the one of Burgos); each of the points analyzed by Pascual Madoz is sketched, obtaining some indicators that are used for its analysis and to compare with other historical documents such as those existing in the Archive of the Confederación Hidrográfica del Duero (hereinafter CHD). Following the consultation of several archives, a document of great interest to the study, such as the **"Itinerary of the River Esgueva"**, made by the Hydrographic Division in 1878 (signed by the Chief Engineer D. Angel García del Hoyo) and assumed in the archives of the current CHD, after disappearing that organism as such. In this last document, all the actions along the channel are accurately collected. The Hydrographical Division and all its archives were incorporated to the one of the Confederation in 1927.

The **"Itinerary of the Esgueva River"** is a meticulous collection of data "in situ" along the river Esgueva, considering all those elements that serve the river or affect its channel. In this sense they are noted and numbered: the mills, their state, describes their category as the number of stones; describe the bridges, gates and materials thereof; crossing paths, drains, canals and a series of data of heights, dams and artifacts powers; also places each element in its kilometer point. This document is of great interest, because in addition to all the data it provides, it allows us to cross information with that obtained from the Dictionary of P. Madoz; both documents, made in the near future (one from 1845 and another from 1878) are also interested in being elaborated by two different entities and with different criteria, so that the crossing of information allows us to verify which data are coincident or the reason for the discrepancies, which adds even more interest to the analysis. Locates the remains of the elements described.

**Fig. 4 and Fig.5.** Headers of the two analysis papers in Phase 1 of the study:  
 4 Historical statistical geographic dictionary of Spain and its overseas properties of Pascual Madoz 1845-1850.  
 5 Itinerary of the River Esgueva of the year 1878 of the Hydrological Division.



From the information provided by P. Madoz, we find data from each of the municipalities of the study, as well as from each province as a whole; this allows identifying the influence of each province on its corresponding municipalities within the Esgueva valley; economic, social, environmental and architectural factors.

**Table 1.** Summary of the total of fichas made to all municipalities with part of the information provided by P. Madoz, selecting, on each municipality, the most related data between the Esgueva river and the municipalities.

<b>Pascual Madoz 1845-1850</b>		
<b>Valley of the River Esgueva. 29 Rural municipalities analyzed.</b>		
<b>Valladolid</b>	<b>Palencia</b>	<b>Burgos.</b>
	<b>1 rural municipality</b>	<b>13 Rural municipalities.</b>

<p><b>15 rural and 1 city</b> (Valladolid Capital) *. <u>Middle and lower part of the channel.</u></p> <p>Open valley, joins the Pisuerga valley.</p>	<p><u>Middle section of the channel.</u> <u>Semi-open valley.</u></p>	<p><u>Upper and middle part of the channel.</u></p> <p>Valley closed.</p>
<b>Industria relacionada con el río /artefactos</b>		
<ul style="list-style-type: none"> <li>- - Flour mills (<b>10</b>).</li> <li>- One and two wheels.</li> <li>- - Factory of paper of brown. (<b>1</b>)</li> </ul>	<ul style="list-style-type: none"> <li>- - Traditional accommodation (<b>1</b>) two-wheel</li> <li>- - Hemp weavers (<b>4</b>)</li> </ul>	<ul style="list-style-type: none"> <li>- - Flour mills (<b>14</b>)</li> <li>- )- Batanes (<b>7</b>)</li> <li>- - Dyeing plant (<b>1</b>)</li> </ul>

**Table 2.** Summary of the total of fichas realized with the information provided in the Itinerary of the river Esgueva.

<b>"Itinerario del río Esgueva" 1,878 *</b> <b>Hydrographic Division</b>		
<b>Valladolid</b>	<b>Palencia</b>	<b>Burgos</b>
<b>Numbering and identification of 36 mills. Fountains, streams, steps and bridges.</b>		
<p><b><u>15 rural municipalities.</u></b></p> <p><u>Mills from No. 26 to No. 36.</u></p> <p>Mills (<b>11</b>) Two of them flour factories. Of 1, 2, 4 and 5 stones. Two unused One of mill and clean</p> <p>Paper factory. (<b>1</b>)</p>	<p><b><u>1 rural municipality</u></b></p> <p><u>Mill No. 25.</u></p> <p>Two stone mill (<b>1</b>)</p>	<p><b><u>14 Rural municipalities.</u></b></p> <p><u>Mills from No. 1 to No. 24.</u></p> <p>Mills (<b>24</b>) Batanes (<b>4</b>) in arroyo ovens and monastery or private</p> <p>4 with prey 6 mills and clean 2 unused 1 single 2 stone mill</p>
<b>Other elements related to the river: bridges, gates, tajeas</b>		
<p><b>4 Gates</b> <b>16 Bridges:</b> 2 of a recessed bow 4 out of 2 arcs 1 out of 3 arches 1 in ruin</p>	<p><b>3 Bridges:</b> 2 of beams 1 of three bows</p>	<p><b>1 Natural Island of the River</b> <b>6 Steps</b> <b>2 Gates</b> <b>12 Bridges</b> From 1 arc <b>3</b> 2 arches and 2 tajeas <b>2</b> 2 arches <b>2</b> From 3 arcs <b>1</b> Of 4 bows and 2 tajeas <b>3</b> 1 in ruin 5-point arcs <b>1</b></p>

The comments on each province are analyzed to have a generic vision and to verify if it affected or not the provincial situation to the municipal one.

On **Valladolid**, for example, there is a greater economic development, since at that time it is a center of distribution of grains and merchandise; has significant economic and demographic growth. The new industrial activities make it an exporter of grains and flours through the Canal de Castilla leaving Santander and Cuba. This situation, there are many flour mills, (as we can see in the tables provided). Railways favor export. This information allows us to understand the reason that in almost all municipalities there was a flour mill, even some as a factory.

The province of **Palencia** is part of a traditional economy far from transformation and commercial activities. It has wheat production and a good position for transport. Herrera, for example, in 1804 has the development of transport by carts, carts, galleys and mules. The arriería has great expansion in the Palencia mountain. The implementation of the Canal de Castilla (1842), northern and southern branches of Valladolid, eventually modified the type of transport, now by boat. They are created around the channel flour industries. It is curious to observe how in this municipality is located 1 mill of two wheels and 4 weavers of hemp. The weavers have not been found in the valley area except in the Palencia municipality.

Provincial impressions on **Burgos**, transmitted by P. Madoz, are of a less developed economic structure, based on cereal agriculture, and industries of wool blankets and effects of jalmería (pack for pack cavalry). Socially, it conveys the existence of a middle class. Does this affect the municipalities of the Valley? I understand that it can influence this provincial situation, but also, to find ourselves in the upper part of the Valley with a more complex geography than in the other provinces, with smaller and less developed municipalities. P. Madoz collects in his dictionary the existence of seven batanes, a factory of dyes and 14 mills of flour. The impression is of the existence of small mills for supplying the villages since many mills are neighbors. Se analizan los comentarios sobre cada provincia para tener una visión genérica y comprobar si afectó o no la situación provincial a la municipal.

**Analysis Phase 1. A close relationship between the river and the municipalities is observed. The river is a basic source of energy for life. There is a relationship of dependence.**

It is observed in the Esgueva Valley a relation between the economy of the municipalities and the provincial one; in the province of Valladolid there are numerous flour mills with more than one wheel and flour mills; as we enter the urban area, we see a greater industrialization. In the province of Palencia also, although counting on only one municipality, the existence of a flour mill, important, since it counted on two stones; there are weavers related to transformation activities typical of the province. In the same way it happens in the section of Burgos where it is located practically a mill by municipality (although these of local character more related to the autoconsumo) and batanes related to a provincial textile industry.

In all cases, **a relationship of physical and economic dependence** is observed with the river, survival depends on the energy that is obtained from the river with the artifacts that through mechanisms transform the force of water into energy to produce elements of first necessity as is the flour.

### **3.2.2 Phase 2- The Rio and its municipalities in the middle of the XX century**

In this phase an analysis of historical cartography is carried out; in archives of Diputación and Junta de Castilla y León on executed projects; analysis of land subdivisions before and after the land consolidation where the transformation of the territory is observed with the opening of new roads and the disappearance of others; CHD file as the main source of projects for performances in the river. Different projects are studied, such as river pipelines, water catchment ways, farms, hillside reforestation, opening of new roads and others.

In this phase some projects have been analyzed. Two of the most significant are commented on; one of them referring to silvicultural actions in order to adapt the protective masses of the slopes of the Esgueva Valley, which affects both the landscape image. The aim of these projects is to improve the pine masses as they exceed the densities required for a Mediterranean environment, which is a fire hazard, which is why the complement with holm oak and centipede, which are more typical of the climate, is studied. The main functions of these actions are productive, protective of the environment and recreational, with social use.

Another aspect on projects analyzed are those referring to the behavior of the river, overflows. In this sense, projects such as the construction of floodplain rafts in the River Esgueva basin have been located and analyzed. Especially the final course of the river, which is the most affected. Despite being channeled in these stretches, there are overflows, such as the most critical occurred in December 1997. Until now, intentional flooding upstream to avoid the overflow of the river in the more urban areas, which led to complaints and major compensation.

**Analysis Phase 2.** An abandonment of the traditional artifacts related to the river is observed in this period. You live the depopulation of the countryside. Many of the actions on the river are to: improve

its water stability, clearings of the channel and are responsible for the loss of most of the remains of the abandoned mills.

From the study of the different projects in these years it is possible to indicate that the relations that have existed in these years with the river refer to different exploitations of the river for irrigation, actions on vegetation of the environment and actions on the river itself such as channeling, regulation of overflows and cleanings; some of the cleanings or conduits have meant the removal of remains of part of the traditional heritage. A more industrialized relationship with the river is observed in these years, not related so directly to the survival but with the production, indicating that the economic development has been **little respectful with part of the traditional heritage, hence its disappearance.**

### **3.2.3. Phase 3- The River and its municipalities from the 90's of the XX century to the present**

This phase of the study analyzes the existing urban planning and the results of the actions carried out. New forms of dialogue with the river are observed: walks, places of recreation, viewpoints, spaces for contemplation; a corridor parallel to the river for bicycles and walking, as an alternative to the use of the road.

From the analysis of current Planning in the valley as a whole, the following classification of planning types and affected municipalities is observed:

**PGOU.** General Urban Planning Plan. **1.** Valladolid.

**NSM / NUM.** Municipal Subsidiary Standards / Municipal Urban Development Standards (4/8).

**12** municipalities: near to Valladolid or in crossings of communication of major importance.

**DSU.** Urban Land Delimitation. **4:** 1 With Ordinances and 3 Without ordinances.

**SPG NSMAP.** Without General Planning. Application of Subsidiary Municipal Regulations of the Provincial Area. **11** Municipalities in the upper part of the valley.

**MINOR ENTITY.** Linked to another municipality. **3** Municipalities of the middle and upper part of the channel.

In a report prepared in 2003 by the Junta de Castilla y León, solutions are proposed for a 80 km stretch between Torresandino and Valladolid, proposing: to reduce the flow through the rolling reservoirs, to improve the cleaning of the channel and to improve the specific regulation. Valladolid is currently part of a European project to "renaturalize" the city through sustainable actions, one of which is the "Esgueva Flood Park", a large garden on the banks of the river Esgueva that will absorb flood water and reduce the risk of flooding within the Urban Green Up Project.

At present, the last actions analyzed denote a recovery of the humanization of the relationship with the natural environment as a whole; there is a greater interest in projects related to the recovery of the natural environment, leisure and social use; such as the green path that runs along the Esgueva River from Valladolid to Villanueva de los Infantes, a distance of 19.10 km (minimum compared to the 122 km of the river). Other elements such as the existence of a leisure center and the attempts of an interpretation center in these closed moments now put in focus these intentions today.

**Analysis Phase 3. At present, it tends to recover the relation with the river, as a natural corridor of leisure, valuing its environmental characteristics; at the same time, a deficient regulation is maintained on the municipalities of minor order and a nonexistent strategy on the river as a whole, which allows each municipality to carry out autonomous actions without relation between them.**

In this third phase of documentary analysis two issues are observed: on the one hand, from the analysis of municipal planning, except in the municipalities around Valladolid, in general, municipal regulatory frameworks are elementary; many of the municipalities (eleven), more than a third of the valley, do not have specific regulations except very generic regulatory frameworks, norms at the Provincial level. Justified by the lack of urban development of the same. This situation poses a lack of concrete strategies and analysis in each municipality in relation to the river; being governed by very generic regulations. In my opinion, after the analysis of these municipalities, not only an update of the planning should be carried out, but also **a planning master plan for the group formed by the river and its municipalities** should be drawn up in a more detailed way. and, mainly, the link between the river and the rural centers of the Valley, for the recovery of the natural environment as a whole as a **natural corridor.**

## **4. Conclusions**

At the moment of making this communication, the scientific knowledge of the sample, ie its physical reality, its evolution and main transformations in the relationship between the municipalities and the

river in the last 180 years has been advanced. As conclusions, until this moment, the following are provided:

- **Over the last 180 years, the relationship between the river and rural areas has existed and has been transformed.** In the first period the river is considered as a basic means of subsistence. Energy is obtained to acquire basic elements with an elementary industry or gadgets like mills or batanes; other elements, bridges or dams, formed part of this relationship of dependence with the natural element where, through experience, hydrological control was reached: communications or defense were allowed, with the natural dynamics of the element itself. This relationship, in the second period studied, industrialization, was transformed; there were procedures where personal effort could be replaced by mechanical elements, where it is no longer necessary to approach the river, to touch it, to use it. The relationship loses direct contact, the traditional elements are abandoned, bringing this situation to the loss of the existing traditional heritage; the actions, at that moment, are of control over the natural element making new channeling, performing cleanings where they are modestly removed traces of traditional elements. In the current period, the direct relationship with the river is recovered, but this time valuing the natural element, reaching a relationship of enjoyment. Therefore, it is considered an evolution that starts from **a relation of convenience to one of coexistence.**

- **At the sociocultural level** it is considered that this natural tendency to coexist with the natural environment should be used to promote respect for nature and good environmental practices based on the knowledge of the natural element as a whole; the river, linking the different municipalities, despite their singularities, and to a larger unit, the entire valley. It is considered a fundamental action, for it, the workshops to favor the community valuation of the space to the 29 municipalities.

- **At the administrative level**, the weakest points of the environment, such as the depopulation of the rural environment, incorrect interventions in the landscape, degradation of river channels and a non-respectful enjoyment of the natural environment, should affect one third of municipalities, still do not have specific planning or development, and there are not even a minimum protection provisions. The lack of a joint action plan or strategy means that the actions are not coordinated under a common thread; it is proposed in this study that this conductive thread be the river itself. The proposal is the delimitation of a natural corridor for the whole.

**As a final conclusion** of the work indicates that the current trend of evolution is beneficial to enhance the area as a natural medium in a strategy for the 29 municipalities whose regulatory element revolves around **a linear structural axis of the territory, its river.**

I understand that the economic activation that this strategy offers could influence the depopulation of the rural environment with new economic alternatives; that the delimitation of a natural corridor can be one of the normative ways to improve the protection of the environment, linked to a strategy, where, to put in value, the existing natural attractiveness, before losing more significant elements; attention to the recovery of the river bed with respect to the history linked to it, his biography, provides new incentives that, if not put in value, will be lost to the new generations; and that the need for awareness for a respectful enjoyment of the natural environment is an investment of the future.

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